



Notice of Public Meeting

The Board of Retirement

of the San Mateo County Employees' Retirement Association will meet on
Tuesday, March 26, 2019, at 10:00 A.M.

PUBLIC SESSION – The Board will meet in Public Session at 10:00 a.m.

- 1. Call to Order, Roll Call and Miscellaneous Business**
- 2. Oral Communications**
 - 2.1 Oral Communications from the Board
 - 2.2 Oral Communications from the Public
- 3. Approval of the Minutes**
 - 3.1 Approval of Regular Board Meeting Minutes from February 26, 2019
- 4. Approval of the Consent Agenda***

4.1 Disability Retirements (3) <ul style="list-style-type: none">• Justice, Gary• Justice, Jerry• Ngantian, Eleanor	4.6 Member Account Refunds
4.2 Survivor Death Benefits	4.7 Member Account Rollovers
4.3 Service Retirements	4.8 Member Account Redeposits
4.4 Continuances	4.9 Report of Trustee Education Received
4.5 Deferred Retirements	4.10 Approval of Resolutions Amending Definitions of Compensation Earnable and Pensionable Compensation
	4.11 Report on Proxy Voting Summary for the Period Ended December 31, 2018
- 5. Benefit & Actuarial Services**
 - 5.1 Consideration of Agenda Items, if any, removed from the Consent Agenda
- 6. Investment Services**
 - 6.1 Preliminary Monthly Portfolio Performance Report for the Period Ended February 28, 2019
 - 6.2 Presentation by Cliff Asnes of AQR
 - 6.3 Report on Cash Overlay (Parametric) Annual Review
 - 6.4 Report on Global Custodian (Northern Trust) Annual Review
 - 6.5 Report on Update of Verus Capital Market Assumptions
 - 6.6 Report on SamCERA's Plan Liquidity
 - 6.7 Approval of Resolution to Update SamCERA's Investment Policy Statement
- 7. Board & Management Support**
 - 7.1 Approval of Resolution Authorizing Contract with Brown Armstrong
 - 7.2 Report on April 2019 Board-Staff Retreat Planning
 - 7.3 Approval to Reschedule the July 23, 2019 Board Meeting
 - 7.4 Approval of and Direction to SamCERA Voting Delegate and Alternate for SACRS Spring 2019 Business Meeting
- 8. Management Reports**
 - 8.1 Chief Executive Officer's Report
 - 8.2 Assistant Executive Officer's Report

Notice of Public Meeting

Page 2 of 2

8.3 Chief Investment Officer's Report

8.4 Chief Legal Counsel's Report

CLOSED SESSION – The Board may meet in closed session prior to adjournment

C1 Consideration of Disability Items, if any, removed from the Consent Agenda

10. Adjournment in Memory of the Following Deceased Members:

Rogers, Carolyn	February 20, 2018	Human Services Agency
Terwilliger, Mary	February 6, 2019	Controller's
Maddox, William	February 8, 2019	Probation
Greulich, Rudolf	February 9, 2019	Social Services
Underwood, Paul	February 9, 2019	Library
Chetty, Sandra	February 10, 2019	Aging & Adult Services
Loschiavo, Joseph	February 13, 2019	Sheriff
De Klerk, Hans	February 20, 2019	Public Works
Hollenbeck, Luzviminda	February 20, 2019	General Services
Mergens, Kathleen	February 22, 2019	Human Services Agency
Okazaki, John	February 26, 2019	Public Works
Lim, Marie	March 3, 2019	Medical Center
Wiese, Mary	March 10, 2019	Public Health
Lynam, Richard	March 7, 2019	Probation



Scott Hood, Chief Executive Officer

Posted: March 20, 2019

(* ALL ITEMS ON THE CONSENT AGENDA ARE APPROVED BY ONE ROLL CALL MOTION UNLESS A REQUEST IS MADE BY A BOARD MEMBER THAT AN ITEM BE WITHDRAWN OR TRANSFERRED TO THE REGULAR AGENDA. ANY ITEM ON THE REGULAR AGENDA MAY BE TRANSFERRED TO THE CONSENT AGENDA. ANY 4.1 ITEMS REMOVED FROM THE CONSENT AGENDA WILL BE TAKEN UP UNDER CLOSED SESSION; ALL OTHER ITEMS REMOVED FROM THE CONSENT AGENDA WILL BE TAKEN UP UNDER ITEM 5.1.)

THE BOARD MEETS AT 100 MARINE PARKWAY, SUITE 160, WHICH IS LOCATED ON THE SE CORNER OF TWIN DOLPHIN & MARINE PARKWAY IN REDWOOD CITY. Detailed directions are available on the "Contact Us" page of the website www.samcera.org. *Free Parking is available in all lots in the vicinity of the building. A copy of the Board of Retirement's open session agenda packet is available for review at the SamCERA offices and on our website unless the writings are privileged or otherwise exempt from disclosure under the provisions of the California Public Records Act. Office hours are Monday through Thursday 7 a.m. – 6 p.m.*

IN COMPLIANCE WITH THE CALIFORNIA GOVERNMENT CODE AND THE AMERICANS WITH DISABILITIES ACT: *SamCERA's* facilities and board and committee meetings are accessible to individuals with disabilities. Contact *SamCERA* at (650) 599-1234 at least three business days prior to the meeting if (1) you need special assistance or a disability-related modification or accommodation, including auxiliary aids or services, in order to participate in this meeting; or (2) you have a disability and wish to receive the agenda, meeting notice, agenda packet or other writings that may be distributed at the meeting in an alternative format. Notification in advance of the meeting will enable *SamCERA* to make reasonable arrangements to ensure full accessibility to this meeting and the materials related to it.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
FEBRUARY 26, 2019 – REGULAR BOARD MEETING MINUTES

1902.1 **Call to Order, Roll Call and Miscellaneous Business**

Call to Order: Ms. Sandie Arnott, Chair, called the Regular Meeting of the Board of Retirement to order at 10:00 a.m.

Roll Call:

Present: Sandie Arnott, Mark Battey, Ben Bowler, Al David, Paul Hackleman, Kurt Hoefer, Katherine O'Malley, Robert Raw and Eric Tashman.

Absent: None.

Alternates present: Susan Lee and Alma Salas.

Staff: Scott Hood, Gladys Smith, Michael Coultrip, Elizabeth LeNguyen, Brenda Carlson, Lili Dames, Doris Ng and Anne Trujillo.

Consultants and speakers: Nick Collier (Milliman) and John Nicolini (Verus).

1902.2.1 **Oral Communications from the Board:** None.

1902.2.2 **Oral Communications from the Public:** Ms. Smith introduced Kammy Vong, SamCERA's new Retirement Senior Accountant, to the Board.

1902.3.1 **Approval of the Minutes:** Ms. Arnott asked if there were any changes, corrections, or objections to the meeting minutes from the Board meeting held on January 29, 2019. There were none.

Action: Mr. Hoefer moved to approve the minutes from the Board Meeting on January 29, 2019. The motion was seconded by Mr. David and carried with a vote of 6-0, with trustees Arnott, Battey, David, Hoefer, O'Malley and Raw all in favor; Hackleman and Tashman abstained; none opposed.

1902.4.0 **Approval of the Consent Agenda:** Ms. Arnott removed the disability application of Rick Tippins from the Consent Agenda and asked if there were additional items to be removed. No other items were removed. The disability application of Rick Tippins was heard in closed session.

Action: Mr. Tashman moved to approve the remaining items on the Consent Agenda, and the motion was seconded by Mr. David. The motion carried with a vote of 6-0, with trustees Arnott, Battey, David, Hoefer, O'Malley and Raw all in favor; none opposed.

Mr. Bowler arrived at 10:03 a.m. and took his seat at the dais.

1902.4.1 **Disability Retirements:**

- a) The Board found that Araceli Nevarez was (1) permanently incapacitated from the performance of her usual and customary duties as a Medical Office Assistant II, (2) found that her disability was the result of an injury arising out of and in the course of her employment and (3) granted her application for a service-connected disability retirement.

1901.4.2 **Survivor Death Benefits:** None.

1902.4.3 **Service Retirements:**

The Board ratifies the service retirement for the individuals listed below as follows:

Name	Effective Retirement Date	Department
Aubry, Suzanne	December 29, 2018	Behavioral Health
Bay, Duane	November 3, 2018	Deferred from Housing
Bloomquist, Cary	December 29, 2018	Deferred from Dept of Public Works
Carlisle, Paul	December 7, 2018	Deferred from Hospital
Carman, Robert	December 29, 2018	Deferred from Sheriff's
Catalan, Jocelyn	December 29, 2018	Hospital
Chin, Margaret	December 11, 2018	Deferred from Courts
Davenport, Donald	December 17, 2018	Deferred from Sheriff's
Espera, Annie	December 9, 2018	Deferred from Hospital
Faust, Brian	January 1, 2019	Hospital
Garcia, Vicky	December 30, 2018	Hospital
Giusti, Christina	December 27, 2018	Medical Center
Gonzalez Pavez, Sergio	December 17, 2018	Behavioral Health
Green, Lynda	January 1, 2019	Deferred from County Manager
Greer, Michael	December 11, 2018	Probation
Levy, David	December 29, 2018	County Counsel
McElroy-White, Greta	December 29, 2018	Deferred from Elections
McNeal, Tasha	December 8, 2018	Aging & Adult Services
Padilla, Deborah	December 22, 2018	District Attorney's Office
Padilla, Fredrick	December 29, 2018	Sheriff's
Palomino, Jessie	December 31, 2018	Probation
Santiago, Jose	December 15, 2018	Sheriff's
Smothers, Vicki	December 29, 2018	Family Health Services
Stout, Gregory	December 31, 2019	Deferred from Hospital
Tadla-Martin, Carol	December 29, 2018	Hospital
Thorin, Andrea	December 31, 2018	Deferred from HSA
Whitlock, William	December 29, 2018	Health IT
Yang, Yuchi	December 17, 2018	Deferred from Public Health

1902.4.4 **Continuances:**

The Board ratifies the actions as listed below for the following members regarding continuances:

Survivor's Name	Beneficiary of:
Mills, Rosa	Mills, Moses

1902.4.5 **Deferred Retirements:**

The Board ratified the actions as listed below for the following members regarding deferred retirements:

Member Name	Retirement Plan Type
Gutierrez, Donaji A.	G4, Vested - Reciprocity
Rocha, Edmundo	S5, Vested

1902.4.6 **Member Account Refunds:**

The Board ratified the actions as listed below for the following members regarding refunds:

Member Name	Retirement Plan Type
Orantes, Rhina	G7, Non-vested
Portis, Allena	G4, Vested
Spencer, Shawna	G4, Non-vested

1902.4.7 **Member Account Rollovers:**

The Board ratified the actions as listed below for the following members regarding rollovers:

Member Name	Retirement Plan Type
Au, Monica	G7, Non-vested
Chow, Janice	G7, Non-vested
Gunning, Jodi	G7, Non-vested
Jurek, Anne	G7, Non-vested
Malig, Denise	G4, Non-vested
Perez, Victoria	G7, Non-vested
Perryman, Samuel	G7, Non-vested
Portis, Allena	G4, Vested
Salazar, Deborah	G7, Non-vested
Wong, Alton	S7, Non-vested

1902.4.8 **Member Account Redeposits:** None.

1902.4.9 **Acceptance of Trustees' Reports of Educational Activities:** None.

1902.4.10 **Semi-Annual Compliance Certification Statement for the State Street Global Advisors (SSGA) as of December 31, 2018:** The Board accepted the semi-annual Compliance Certification Statements for SSGA as of December 31, 2018.

1902.4.11 **Resolution Authorizing the Chief Executive Officer to Execute a Fifth Amendment to the Agreement with the Northern Trust Company for Global Custody Services:** The Board approved a resolution authorizing the CEO to execute a Fifth Amendment to the Agreement with the Northern Trust Company for Global Custody Services.

The meeting went into closed session at 10:04 a.m. to consider the items 1902.4.1 for Rick Tippins (C1) and 1902.6.4 (C2). See reports on C1 and C2 below.

After the closed session, the Board took a five-minute break at 11:13 a.m. Mr. David left the meeting at that time. The meeting reconvened in open session at 11:18 a.m.

1902.5.1 (C1) **Consideration of Agenda Items, if any, removed from the Consent Agenda:** The disability application for Rick Tippins was removed from the Consent Agenda and voted upon separately.

Ms. Carlson reported the Board referred the service connected disability application of Rick Tippins to a hearing officer for proposed findings and recommendations.

The vote of was 9-0, with trustees Arnott, Battey, Bowler, David, Hackleman, Hoefer, O'Malley, Raw and Tashman all in favor; none opposed.

- 1902.5.2 **Presentation by Milliman, Inc. on SamCERA Cash Flow Projections:** Mr. Collier presented the projections for SamCERA's future cash flows and answered questions from the Board. This item was informational and for discussion only, no action was taken.
- 1902.6.1 **Report on Preliminary Monthly Portfolio Performance for the Period Ended January 31, 2019:** Mr. Coultrip reported that January was a positive month for most asset classes as market sentiment abruptly reversed higher. Mr. Coultrip also discussed the preliminary monthly performance report with the Board. He reported that SamCERA's net preliminary return for January 2019 was 4.6%, while the preliminary trailing twelve-month return ending January 2019 was -2.5%. This item was informational and for discussion only, no action was taken.
- 1902.6.2 **Report on Quarterly Investment Performance Report for the Period Ended December 31, 2018:** Ms. Jadallah presented the quarterly investment performance report for the period ended December 31, 2018 and answered questions from the Board. This item was informational only, no action was taken.
- 1902.6.3 **Discussion of Delegation of Authority on Terminating Investment Managers:** Mr. Coultrip discussed the potential changes to delegation of authority for terminating managers. These changes would include Board updates throughout the process and under certain circumstances, delegating authority to terminate existing managers to the Chief Executive Officer. This item was informational and for discussion only, no action was taken.
- 1902.6.4 **Approval of Proposed Alternative Investment (Confidential Under Gov. Code §54956.81 and §6254.26, (C2) to be heard in Closed Session):** Ms. Carlson reported that the Board approved a re-up commitment of \$25 million to Taurus Mining Financial Fund II. The motion unanimously passed with a vote of 9-0.

Ayes: Arnott, Battey, Bowler, David, Hackleman, Hoefer, O'Malley, Raw and Tashman.

Noes: None.

The Board adjourned for lunch at 12:07 p.m. and the meeting reconvened at 12:23 p.m.

- 1902.7.1 **Preliminary Financial Statements for the Six-Month Period Ended December 31, 2018:** Ms. Chow reported SamCERA's preliminary financial statements for the six-month period ended December 31, 2018. She reported SamCERA's financial position declined slightly over the six months ended December 31, 2018. Its net position decreased \$122 million, or 3% to approximately \$4.3 billion, mainly because the return on SamCERA's investments declined toward negative territory due mostly to concerns over a global economic slowdown. This information was informational and for discussion only, no action was taken.
- 1902.7.2 **Preliminary Report on Budget-to-Actual for the Six-Months Ended December 31, 2018:** Ms. Chow reported that SamCERA's overall budget is on track with regard to the preliminary report on budget-to-actual for the six-months ended December 31, 2018. This item was informational and for discussion only, no action was taken.
- 1902.7.3 **2019 Board-Staff Retreat Topics:** Mr. Hood reviewed and discussed with the Board the proposed agenda on the upcoming Board-Staff Retreat in April. This item was informational and for discussion only, no action was taken.

1902.7.4 **Approval of Change to Start Time of the April 2019, Regular Board Meeting:** Mr. Hood discussed staff's recommendation to formally change the date and time of the April Board meeting in order to publish the meeting notice and reflect the new information on SamCERA's website.

Action: Mr. Hackleman moved to approve the change of start time of the April 2019 Regular Board Meeting to 8:30 a.m. and to cancel the April 24, 2019 meeting. The motion was seconded by Mr. Battey and carried with a vote of 8-0, with trustees Arnott, Battey, Bowler, Hackleman, Hoefer, O'Malley, Raw and Tashman all in favor; none opposed.

1902.8.1 **Chief Executive Officer's Report:** Mr. Hood called to attention a few items in the Board's Day of Folder including the SACRS Election Memo and Pension Bridge Flyer. He mentioned the upcoming CALAPRS General Assembly, Advanced Principles of Pension Management for Trustees and SACRS Spring Conference.

Mr. Hood called to attention to the Wharton's Emerging Markets Conference and the SACRS UC Berkeley Program, which will be taking place the week of the July Board meeting and inquired whether the Board wanted to reschedule the meeting. Mr. Hackleman suggested this item be placed in next month's agenda based on interest.

Mr. Hood noted that he met with Mosquito and Vector Control District's finance committee and will soon meet with its Board to provide them a funding status on their supplemental contribution account. He also reported that proposals for auditing services have been received and a recommendation for an auditor will be made to the Board next month along with a finalized Board/Staff Retreat agenda.

1902.8.2 **Assistant Executive Officer's Report:** Ms. Smith reminded the Board about the expiration of three elected and two appointed seats. There will be an election in June for the elected seats and called to attention the election schedule found in the Board's Day of Folders. She mentioned UAT testing for the system upgrade will begin on March 18th. Ms. Smith reported that the application for the fiduciary liability has been submitted and the non-recourse payments by Board members will be collected shortly. She also noted that the Retiree Newsletter should be released within the next two weeks. Ms. Trujillo shared the upcoming educational events with the Board.

1902.8.3 **Chief Investment Officer's Report:** Mr. Coultrip provided the Board an update on a private equity energy manager and that further information will be given to the Board once additional data points are obtained. Mr. Coultrip commented on a few items that would appear on next month's agenda including a presentation by AQR, capital market assumptions update from Verus, a presentation of liquidity analysis and a recommendation for NEA. He also stated that annual reviews of Parametric and Northern Trust will be held on March 4th.

1902.8.4 **Chief Legal Counsel's Report:** Ms. Carlson reminded the Board that its annual Form 700 filings are due and to reach out if there are any questions.

C1 **Consideration of Disability Items, if any, removed from the Consent Agenda:** See agenda item 5.1.

C2 **Approval of Proposed Alternative Investment (Confidential Under Gov. Code §54956.81 and §6254.26):** See agenda item 6.4

1902.10 **Adjournment:** Ms. Arnott adjourned the meeting at 12:46 p.m. in memory of the deceased members listed below.

Wyro, Muriel	December 28, 2018	District Attorney
Domagalski, Sylvia	January 9, 2019	Medical Center
Johnson, Laron	January 10, 2019	Courts
Berndtson, Theodore	January 11, 2019	Sheriff
May, Jessie	January 16, 2019	General Services
Rogers, Calvin	January 16, 2019	Mosquito
O' Neil, Jeanne	January 17, 2019	Library
Shannon, Ardale	January 19, 2019	Chope Hospital
Ashton, Charles	January 23, 2019	Library
Dean, Esther	January 24, 2019	Crystal Springs Rehab Ctr
Hardiman, Lenore	January 26, 2019	Hospital
Graham, Betty	January 28, 2019	Social Services
McMillan, Constance	January 28, 2019	Social Services
Carlson, Irma	January 29, 2019	Health Services
Pryor Johnson, Renee	February 6, 2019	BHRS

Scott Hood
Chief Executive Officer

Anne Trujillo
Retirement Executive Secretary

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Items 4.1- 4.8

TO: Board of Retirement

FROM: Elizabeth LeNguyen, Retirement Benefits Manager



SUBJECT: Approval of Consent Agenda Items 4.1 – 4.9

4.1 Disability Retirements

- a) The Board find that **Gary Justice** is (1) permanently incapacitated from the performance of his usual and customary duties as a Correctional Officer, (2) find that his disability was the result of an injury arising out of and in the course of his employment and (3) grant his application for a service-connected disability retirement.
- b) The Board find that **Jerry Justice** is (1) permanently incapacitated from the performance of his usual and customary duties as a Sheriff Sergeant, (2) find that his disability was the result of an injury arising out of and in the course of his employment and (3) grant his application for a service-connected disability retirement.
- c) The Board find that **Eleanor Ngantian** is (1) permanently incapacitated from the performance of her usual and customary duties as a Senior Accountant, (2) find that her disability was the result of an injury arising out of and in the course of her employment and (3) grant her application for a service-connected disability retirement.

4.2 Survivor Death Benefits

None.

4.3 Service Retirements

The Board ratifies the service retirement for the individuals listed below as follows:

Name	Effective Retirement Date	Department
Aktar, Kalim	January 7, 2019	San Mateo Medical Center
Austen, Valerie	January 5, 2019	Assessor's Office
Batiste, Cheryl	January 26, 2019	Probation
Belova, Lyudmila	January 12, 2019	San Mateo Medical Center
De La Rosa, Renee	January 31, 2019	Family Health Services

Farrell, Barbara	January 17, 2019	Deferred from San Mateo Medical Center
Gee, Timothy	January 26, 2019	Courts
Hart, Paul	January 25, 2019	QDRO of Faith Fichie
Harven, William	January 31, 2019	Human Services Agency
Heinrich, Anne	February 1, 2019	Health
Hernandez, Christina	January 12, 2019	Courts
Hoffmann, Leslie	January 22, 2019	QDRO of Terence Medina
Honda Tsuye, Julie	January 12, 2019	Probation
Jack, Betsy	January 3, 2019	County Manager
Kremer, Sandra	January 26, 2019	Human Services Agency
Lindner, Jerome	January 5, 2019	Human Services Agency
Lynch, Peter	January 3, 2019	District Attorney's Office
Margulis, Larisa	January 26, 2019	Housing
Medina, Terence	January 13, 2019	Deferred from ARC
Melville, Mark	January 13, 2019	Sheriff's
Modesto, Clarita	January 31, 2019	San Mateo Medical Center
Molas, Ana	January 5, 2019	Human Services Agency
Ortiz, Luis	January 28, 2019	Deferred from Probation
Potter, Gina	February 1, 2019	Courts
Richie, Faith	January 2, 2019	Deferred from Behavioral Health
Rosenmiller, Alan	January 23, 2019	Sheriff's
Tawde, Anuradha	January 9, 2019	Deferred from Public Health
Taylor, Kenneth	February 1, 2019	Sheriff's
Usher, Rebekah	January 5, 2019	Probation
Weiss, Anne	January 4, 2019	Human Resources

4.4 Continuances

The Board ratifies the granting of a continuance to the following individuals:

Survivor's Name	Beneficiary of:
Berndtson, Silvia	Berndtson, Ted

Duval, Madel	Duval, Kenneth
O' Neill, Marshall	O' Neill, Jeanne

4.5 Deferred Retirements

The Board ratifies the deferred retirements as listed below for the following individuals:

Name	Retirement Plan Type
Blake Jr., Larry E	G4, Vested - Reciprocity
Bolich, Beatrice	G7, Vested - Reciprocity
Carlay, Denicia C.	G4, Vested – Auto Defer - Code 31700
Diaz, Lorraine K	G4, Vested – Auto Defer - Code 31700
Duran Leon, Maria Teresa	G4, Vested - Reciprocity
Escobar, Tanya G	G4, Vested – Auto Defer - Code 31700
Hing-Lewis, Janna L	G5, Vested – Auto Defer - Code 31700
Marin, Maria Guadalupe	G4, Vested - Reciprocity
Moreira-Orantes, Eduardo	G4, Vested – Auto Defer - Code 31700
Patel, Nayan	G4, Vested
Sievert, Ann	G4, Vested – Auto Defer - Code 31700
Zalesky, Hannah	G7, Vested – Auto Defer - Code 31700

4.6 Member Account Refunds

The Board ratifies the refunds as listed below for the following individuals:

Name	Retirement Plan Type
Biggs, Arter	G7, Non-vested
De la Cruz, Monica	G4, Non-vested
Drane, Leslie	G7, Non-vested
Gonzales, Crystle Mae	G7, Non-vested
Johnson, Tura	G7, Non-vested
Kwok, Anna	G7, Non-vested
Lenvik, Patricia	G2, Non-vested
McCrate, Jody	G7, Non-vested
Morris, Lisa	G2, Non-vested

Patel, Hasmig	G7, Non-vested
Perez, Leonor	G5, Non-vested
Romero-Betancourt, Jose	G7, Non-vested
Venci, Julian	G5, Non-vested
Winchester, Katie	G7, Non-vested
Wood, April	G7, Non-vested

4.7 Member Account Rollovers

The Board ratifies the rollovers as listed below for the following individuals:

Name	Retirement Plan Type
Breen, Natalie	G7, Non-vested
Levy, Felix	G7, Non-vested

4.8 Member Account Redeposits

None.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 4.9

TO: Board of Retirement
FROM: Anne Trujillo, Retirement Executive Secretary
SUBJECT: Trustee's Reports of Educational Activities



Recommendation

Accept the following reports from Board of Retirement trustees who have recently attended educational events.

Background

SamCERA's Education Policy Section 1D states "Prior to the next regularly scheduled meeting of the Board following the Board member's participation in an educational activity, the Board member shall submit for inclusion on the Consent Agenda, a summary written report on the content of educational activities. The report shall substantially reflect the information contained in the attached sample report."

Discussion

SamCERA Trustees attended the following educational events, and their reports are attached:

CALAPRS General Assembly

- Susan Lee

Attachments

Trustee's Education Proof of Participation Certificates and Summaries

SamCERA Board of Retirement Trustee Education
Proof of Participation Certificate and Summary



Trustee Name Susan Lee		Date(s) of Event 3/3/19-3/5/19
Education Event Name General Assembly		
Event Provider CALAPRS		
Type of Participation: Attended Event <input checked="" type="checkbox"/> Listened to Audio/Watched Video <input type="checkbox"/>		Eligible Credit: Total hours for sessions you participated in: <u>10</u> <i>(Staff may adjust hours if the provider issues an education certificate that reflects different hours.)</i>

This event satisfies the following requirements of the Board of Retirement's Education Policy and Government Code section 31522.8:

Topic: (Check all that apply)

- | | |
|--|---|
| <input checked="" type="checkbox"/> Fiduciary responsibilities | <input type="checkbox"/> Disability evaluation |
| <input type="checkbox"/> Ethics | <input type="checkbox"/> Fair hearings |
| <input checked="" type="checkbox"/> Benefits administration | <input type="checkbox"/> Pension fund governance |
| <input type="checkbox"/> Actuarial matters | <input type="checkbox"/> New board member orientation |
| <input checked="" type="checkbox"/> Pension funding | <input type="checkbox"/> Other: _____ |
| <input checked="" type="checkbox"/> Pension fund investments and investment program management | |

Summary Report

What concepts or information did you learn about?

Remembering the public employees value & role in the community and being appreciative of each other.
Frank Diana's presentation on the future trends of the world & humanity was very interesting.

Would you recommend this event to other trustees?

- Yes No Maybe

You may provide additional comments to SamCERA's CEO.

By signing below, I certify that I participated in the activities described above and am entitled to claim the indicated amount of education credit hour(s).

Trustee Signature (print this form and sign) 	Date 3/12/19
---	------------------------

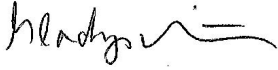
NOTE: Please return this completed form to SamCERA's Executive Secretary prior to the mailing of the Board packet, so it can be included in that month's Consent Agenda.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 4.10

TO: Board of Retirement

FROM: Gladys Smith, Assistant Executive Officer 

SUBJECT: Approval of Resolutions Amending Definitions of Compensation Earnable and Pensionable Compensation.

Recommendation

Approve adding a new non-pensionable earnings code for backflow testing with certification and playground inspection with certification to be effective February 24, 2019. This earnings code will be added to the Board's Resolutions governing Compensation Earnable, pursuant to Government Code §31461 for members who are not subject to Government Code §7522.34 and Pensionable Compensation for members who are subject to Government Code §7522.34.

Background

Depending upon a member's date of hire and other factors, a member is either subject to Government Code §31461 in the County Employees Retirement Law ("CERL") or §7522.34 of the Public Employees' Pension Reform Act (PEPRA). Under CERL, compensation earnable is used: (1) to calculate final compensation in order to determine a member's pension benefit and (2) to calculate the ongoing contributions to be paid by the member and the employer. For PEPRA members, "pensionable compensation" is used for the same purpose. The Board determines which elements of compensation are to be included and which elements are not included for both compensation earnable and pensionable compensation.

Discussion

The Human Resources Department recently notified staff that as a result of recent negotiations, there are the two new salary differentials that only affect 5 employees.

- Up to two (2) Stationary Engineers assigned at the sole discretion of department management to perform backflow testing and repair, who maintain a current California Backflow Prevention Tester Certification, shall receive a one-step (5.74%) salary differential paid only for such hours spent performing backflow tests, backflow repair and related work.
- Up to three (3) Park Rangers assigned by department management as California Playground Inspectors, who maintain a current California Playground Inspector Certification, shall receive a one-step (5.74%) salary differential paid only for such hours spent performing playground inspections and related work.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

Government Code section 31461(a), which governs general members not in Plan 7, provides that: "Compensation earnable" is "the average compensation as determined by the board, for the period under consideration upon the basis of the average number of days **ordinarily worked by persons in the same grade or class of positions during the period, and at the same rate of pay.**" For Plan 7 PEPRA members, 7522.34 (a) similarly defines "Pensionable compensation" as "the normal monthly rate of pay or base pay of the member paid in cash **to similarly situated members of the same group or class of employment** for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedule."

These payments are not received by all members within the same grade or class but rather just those 5 employees assigned to the described duties and are thus not "compensation earnable" nor "pensionable compensation." This determination is reflected in the proposed resolutions.

Staff will address any specific questions that the Board may have. The attached resolutions each rescind the previous resolution and add the new earnings code to the updated resolution.

Attachments

Resolution Defining Compensation earnable pursuant to Government Code §31461

Resolution Defining Pensionable Compensation pursuant to Government Code §7522.34

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

RESOLUTION 2019-__

***RESOLUTION DEFINING COMPENSATION EARNABLE
PURSUANT TO GOVERNMENT CODE §31461 FOR MEMBERS
WHO ARE NOT SUBJECT TO GOVERNMENT CODE §7522.34.***

WHEREAS, for those current members who became active members prior to January 1, 2013, and those members who became active members on or after January 1, 2013, but who are not subject to Government Code §7522.34 of the California Public Employees' Pension Reform Act, the determination of compensation earnable for remuneration earned by those members is governed by Government Code §31461; and

WHEREAS, Government Code §31461 provides that compensation earnable by a member means the average compensation as determined by the Board, for the period under consideration upon the basis of the average number of days ordinarily worked by persons in the same grade or class of positions during the period, and at the same rate of pay; and

WHEREAS, Government Code §31461 provides that this Board determine which items of remuneration earned by members shall constitute "compensation earnable"; and

WHEREAS, the Board has reviewed the current pay items and has determined which of those items are to be included in "compensation earnable" and which items are not to be included; and

WHEREAS, it is necessary for this Board from time to time to amend its determinations of compensation earnable due to changes in the compensation schedules of SamCERA employers or changes in the law; and

WHEREAS, the County of San Mateo just notified this Board that when it upgraded its payroll system to Workday, some of the pay codes designations were changed; Therefore, be it

RESOLVED, that Resolution number 2016-21 is rescinded, and pursuant to Government Code §31461 as interpreted by the courts, the Board hereby makes the following determinations to be effective February 24, 2019, as to what is included in "compensation earnable" and items of remuneration that are not included:

1. Compensation earnable shall include:

Pay Code	Description
(001)	Regular hours worked
(00680)	84/12 Plan (Sheriff)
(010)	Release time with pay
(011)	Night shift differential-com dispatch
(013)	Night shift differential
(014)	Special night shift differential
(015)	Special duty hours
(019)	Charge nurse shift differential
(020)	Split shift
(021-L1)	Bilingual pay

Pay Code	Description
(021-L2)	Bilingual pay
(022)	Staffing differential
(023)	Weekend pay
(027)	On-call hours
(033)	Bomb squad [flight/observer/pilot]
(035)	Sick leave with pay
(041)	Vacation hours with pay
(043)	Holiday hours regular pay
(044)	Holiday worked at 1.5
(045)	Holiday hours worked at straight time
(045O)	Holiday hours worked at straight time-overflow
(048)	Accumulated holiday hours taken
(052)	Comp time hours used
(054)	Administrative leave
(055)	Jury duty with pay
(056)	Military-leave with pay
(057)	Education leave with pay
(058)	Other leave with pay
(059)	Disability leave with pay
(064)	Management overtime used
(080)	Uniform/tool allowance
(080A)	Uniform/tool allowance annual
(081)	Transportation allowance
(087)	Bi-weekly special pay
(088)	Miscellaneous special pay
(090)	Voluntary time off used
(093)	Furlough w/o pay used with payment of contributions
(102)	Annual in-service management administrative leave cash-outs
(104)	LTC shift differential
(104B)	LTC shift differential adjustment
(110)	Compulsory time off
(112)	Bereavement leave
(313)	LC4850 night shift differential
(315)	LC4850 special duty
(359)	LC4850 disability with pay
(502)	Admin leave cash out w/1-time deferred comp
(557)	Educational lv with pay
(827)	Special on call
(30680)	LC4850WC 84/12 plan shf

2. Compensation earnable, at a minimum, shall not include, in any case, the following pay items.

A. The following pay codes are not included:

Pay Code	Description
(007)	E.H. relief nurse shift differential
(009)	E.H. relief nurse shift differential
(016)	Inspection/Testing/Repair with a certification
(025)	Call back pay
(025S)	Call back pay SART nurses
(026)	Part-time double shift differential
(028)	On call E.H. relief nurse
(029)	Part-time double shift differential
(037)	Layoff sick leave
(040)	Terminal vacation
(046)	Holiday hours accrued
(047)	Holiday hours accrued at 1.5
(049)	Terminal holiday pay
(050)	Terminal compensatory pay
(051)	Comp Time Earned at 1.5
(053)	Comp time earned at straight time
(060)	Absent without leave
(061)	Leave without pay
(062)	Disability leave without pay
(063)	Terminal MOT Pay
(065)	Overtime training hours
(066)	Overtime at time and one-half
(069)	Overtime special duty desk officer
(070)	Overtime special duty
(073)	Overtime special duty night shift
(075)	Overtime night shift premium hours
(076)	Rest period differential
(079)	Overtime special shift differential
(083)	Worker's compensation payment
(084)	Employee incentives
(085)	Disability payment
(086)	Taxable benefits-DP
(089)	Relocation Allowance
(091)	Terminal VTO pay
(096)	County Deferred Comp Contribution
(097)	Miscellaneous terminal pay
(098)	Miscellaneous benefit refund
(101)	LTD payments
(103)	FMLA earnings

Pay Code	Description
(105)	Miscellaneous subsidies
(106)	FSLA adjustments
(106 80)	FSLA adjustment for 84/12
(106 980-P1)	FSLA adjustment 9/80 period 1
(106 980-P2)	FSLA adjustment 9/80 period 2
(107)	Overtime at straight time
(108)	Comp hours earned at straight time (OT)
(111)	Terminal compulsory time off
(125)	Call back pay st.
(203)	Wellness Dividend
(225)	Call back pay flat rate
(383)	LC4850 worker's compensation payment
(803)	SART nurses meeting/service-flat rate
(804)	SART nurses training and education-flat rate

B. Payments associated with the provision of insurance benefits, or other third party payments such as professional membership dues, that are not received in cash by a member.

C. Payments by a SamCERA employer of member-required contributions to the retirement system under Government Code sections 31581.1, 31630, 31639.85 or under a memorandum of understanding (MOU) between members (or their representatives) and the SamCERA employer.

3. Pursuant to Government Code §31461(b) compensation earnable, shall not include in any case the following:

A. Any compensation determined by the Board to have been paid to enhance a member's retirement benefit under that system. That compensation may include:

(1) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member, and which was converted to and received by the member in the form of a cash payment in the final average salary period.

(2) Any one-time or ad hoc payment made to a member, but not to all similarly situated members in the member's grade or class.

(3) Any payment that is made solely due to the termination of the member's employment, but is received by the member while employed, except those payments that do not exceed what is earned and payable in each 12-month period during the final average salary period regardless of when reported or paid.

B. Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, in an amount that exceeds that which may be earned and payable in each 12-month period during the final average salary period, regardless of when reported or paid.

C. Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.

D. Payments made at the termination of employment, except those payments that do not exceed what is earned and payable in each 12-month period during the final average salary period, regardless of when reported or paid.

4. Pursuant to Government Code §31641(c), the terms listed above in paragraph 3 are intended to be consistent with and not in conflict with the holdings in *Salus v. San Diego County Employees Retirement Association* (2004) 117 Cal.App.4th 734 and *In re Retirement Cases* (2003)110 Cal.App.4th 426.

BE IT FURTHER RESOLVED, that the above listed determinations by the Board of what is included or not included in compensation earnable, shall be in effect until such time as action taken by the Board or action by the Legislature or the Courts as a matter of law requires a different determination.

* * * * *

Regularly passed and adopted, by the San Mateo County Employees' Retirement Association, Board of Retirement, on March 26, 2019.

Ayes, Trustees:

Noes, Trustees:

Absent, Trustees:

Abstain, Trustees:

Al David, Board Secretary
SamCERA

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

RESOLUTION 2019-__

***RESOLUTION DEFINING PENSIONABLE COMPENSATION
PURSUANT TO GOVERNMENT CODE §7522.34 FOR MEMBERS
WHO ARE NOT SUBJECT TO GOVERNMENT CODE §31461***

WHEREAS, for those members who became active members on or after January 1, 2013, and who are subject to the California Public Employees' Pension Reform Act contained in Government Code §7522 et seq., the determination of their pensionable compensation is governed by Government Code §7522.34; and

WHEREAS, the pensionable compensation for those employee members who are subject to Government Code §7522.34 shall be the normal monthly rate of pay or base pay of the member paid in cash to similarly situated members of the same group or class of employment for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedules; and

WHEREAS, the Board has reviewed the current pay items and has determined which of those items are to be included in "pensionable compensation" and which items are not to be included; and

WHEREAS, it will be necessary for this Board, from time to time, to amend its determinations of pensionable compensation due to changes made by SamCERA employers in their compensation schedules as well as changes in the law; Therefore, be it;

RESOLVED, Resolution number 2016-22 is rescinded, and pursuant to Government Code §7522.34 as interpreted by the courts, the Board hereby makes the following determinations to be effective February 24, 2019, as to what is included in "pensionable compensation" and items of remuneration that are not included:

1. Pensionable compensation shall include:

Pay Code	Description
(001)	Regular hours worked
(00680)	84/12 Plan (Sheriff)
(010)	Release time with pay
(011)	Night shift differential-com dispatch
(013)	Night shift differential
(014)	Special night shift differential
(015)	Special duty hours
(019)	Charge nurse shift differential
(020)	Split shift

Pay Code	Description
(021-L1)	Bilingual pay
(021-L2)	Bilingual pay
(022)	Staffing differential
(023)	Weekend pay
(033)	Bomb squad [flight/observer/pilot]
(035)	Sick leave with pay
(041)	Vacation hours with pay
(043)	Holiday hours regular pay
(044)	Holiday worked at 1.5
(045)	Holiday hours worked at straight time
(048)	Accumulated holiday hours taken
(052)	Comp time hours used
(054)	Administrative leave
(055)	Jury duty with pay
(056)	Military leave with pay
(057)	Educational leave with pay
(058)	Other leave with pay
(059)	Disability leave with pay
(064)	Management overtime used
(087)	Bi-weekly special pay
(090)	Voluntary time off used
(093)	Furlough w/o pay used with payment of contributions
(104)	LTC shift differential
(104B)	LTC shift differential adjustment
(110)	Compulsory time off
(112)	Bereavement leave
(313)	LC4850 night shift differential
(315)	LC4850 special duty
(359)	LC4850 disability with pay
(557)	Educational lv with pay
(30680)	LC4850WC 84/12 plan shf

2. Pensionable compensation, at a minimum, shall not include, in any case, the following pay items.

A. The following pay codes are not included:

Pay Code	Description
(007)	E.H. relief nurse shift differential
(009)	E.H. relief nurse shift differential
(016)	Inspection/Testing/Repair with a certification
(025)	Call back pay
(025S)	Call back pay SART nurses
(026)	Part-time double shift differential

Pay Code	Description
(027)	On-call hours
(028)	On call E.H. relief nurse
(029)	Part-time double shift differential
(037)	Layoff sick leave
(040)	Terminal vacation
(0450)	Holiday hours worked at straight time-overflow
(046)	Holiday Hours accrued
(047)	Holiday hours accrued at 1.5
(049)	Terminal holiday pay
(050)	Terminal compensatory pay
(051)	Comp Time Earned at 1.5
(053)	Comp time earned at straight time
(060)	Absent without leave
(061)	Leave without pay
(062)	Disability leave without pay
(063)	Terminal MOT Pay
(065)	Overtime training hours
(066)	Overtime at time and one-half
(069)	Overtime special duty desk officer
(070)	Overtime special duty
(073)	Overtime special duty night shift
(075)	Overtime night shift premium hours
(076)	Rest period differential
(079)	Overtime special shift differential
(080)	Uniform/tool allowance
(080A)	Uniform/tool allowance annual
(081)	Transportation allowance
(083)	Worker's compensation payment
(084)	Employee incentives
(085)	Disability payment
(086)	Taxable benefits-DP
(088)	Miscellaneous special pay
(089)	Relocation Allowance
(091)	Terminal VTO pay
(096)	County Deferred Comp Contribution
(097)	Miscellaneous terminal pay
(098)	Misc benefit refund
(101)	LTD payments
(102)	Annual in-service mangmt administrative leave cash-outs
(103)	FMLA earnings
(105)	Miscellaneous subsidies
(106)	FSLA adjustments
(106 80)	FSLA adjustment for 84/12

Pay Code	Description
(106 980-P1)	FSLA adjustment 9/80 period 1
(106 980-P2)	FSLA adjustment 9/80 period 2
(107)	Overtime at straight time
(108)	Comp hours earned at straight time (OT)
(111)	Terminal compulsory time off
(125)	Call back pay st.
(203)	Wellness Dividend
(225)	Call back pay flat rate
(383)	LC4850 worker's compensation payment
(502)	Admin leave cash out w/1-time deferred comp
(803)	SART nurses meeting/service flat rate
(804)	SART nurses training and education flat rate
(827)	Special on call

B. Pursuant to Government Code §7522.34, pensionable compensation does not include the following:

- 1) Any compensation determined by the Board to have been paid to increase a member's retirement benefit.
- 2) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member and which was converted to and received by the member in the form of a cash payment.
- 3) Any one-time or ad hoc payments made to a member.
- 4) Severance or any other payment that is granted or awarded to a member in connection with or in anticipation of a separation from employment, but is received by the member while employed.
- 5) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, regardless of when reported or paid.
- 6) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.
- 7) Any employer-provided allowance, reimbursement, or payment, including, but not limited to, one made for housing, vehicle, or uniforms.
- 8) Compensation for overtime work, other than as defined in Section 207(k) of Title 29 of the United States Code.

- 9) Employer contributions to deferred compensation or defined contribution plans.
 - 10) Any bonus paid in addition to the compensation described in subdivision (a) of Government Code §7522.34.
 - 11) Any other form of compensation the Board determines is inconsistent with the requirements of subdivision §7522.34 (a).
 - 12) Any other form of compensation that this Board determines should not be pensionable compensation.
3. Pursuant to Government Code §7522.10, whenever pensionable compensation, as defined in §7522.34, is used in the calculation of a benefit, the pensionable compensation shall be subject to the monetary limitations set forth in subdivision §7522.10.

BE IT FURTHER RESOLVED, that the above listed determinations by the Board of what is included or not included in pensionable compensation, shall be in effect until such time as this Board, the Legislature, or the Courts take action that as a matter of law requires a different determination.

* * * * *

Regularly passed and adopted, by the San Mateo County Employees' Retirement Association, Board of Retirement, on March 26, 2019.

Ayes, Trustees:

Noes, Trustees:

Absent, Trustees:

Abstain, Trustees:


Al David, Board Secretary
SamCERA

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 4.11

TO: Board of Retirement

FROM: Doris Ng, Investment Analyst 

SUBJECT: Report on Proxy Voting Summary for the Year Ended December 31, 2018

Recommendation

Accept the Proxy Voting Summary Report for the year ended December 31, 2018.

Background

Consistent with SamCERA's Investment Policy, investment managers are delegated authority for the voting of proxies. Managers have been providing staff with quarterly reports on all proxies cast.

The summary report is a more streamlined and robust aggregation of the various reports and shows an overview of the proxy voting conducted by SamCERA's domestic and international equity managers on SamCERA's behalf for the period.

On the summary page, the first table shows statistics of the proposals voted and how they were voted relative to management's or proxy advisor's recommendations. The majority of proposals are typically cast in favor of management's recommendations. In the second table, we drill into the proposals cast against management's or proxy advisor's recommendations by proposal type.

Details of the subset of proposals voted against management's or proxy advisor's recommendations will be provided upon request.

Discussion

For the calendar year ended December 31, 2018, there were 28,640 proxy proposals. Of the total proposals, 5.4% were cast against management's recommendation, 93.1% with management's recommendation and 1.5% not voted. The top three categories of the votes cast against management's recommendation, of which the voting rationales were available, were Boards and Directors (61.1%), Remuneration and Benefits (22.4%), and Capital Structure, Mergers, Asset Sales and Other Special Transactions (11%). Within the Boards and Directors category, independence, performance and capacity were some of the common concerns. Within the Remuneration and Benefits category, alignment of shareholder interests, structure of remuneration arrangements, and insufficient information disclosure were some of the common concerns cited in the voting rationales. Lastly, within the Capital Structure, Mergers, Asset Sales and Other Special Transactions category, potential dilution of shareholder interest,

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

anti-takeover potential and giving the board excessive discretion on capital issuance were some of the common concerns.

Attachment

Proxy Voting Summary for Calendar Year Ended 12-31-2018

Year Ended 12/31/2018

Proxy Voting Summary Statistics

Investment Manager ¹	Strategy	Total Proposals	Proposals Not Voted	FOR Mgmt Rec	AGAINST Mgmt Rec	AGAINST Proxy Advisor Rec ²
Baillie Gifford	International Growth	972	54	874	44	0
Passive Core	Russell 1000, EAFE	22,839	368	21,376	1,095	0
Mondrian ³	International Value	812	0	786	26	6
Mondrian ³	Emerging Markets Equity Fund, L.P.	925	3	829	93	6
Quantitative Management Associates ⁴	Small Cap Core	3,092	0	2,803	289	260
Grand Total		28,640	425	26,668	1,547	272

¹ Note: Information not available for investment managers, D.E. Shaw and Eaton Vance Parametric, as related to the Large Cap Core 130/30 and Emerging Markets Core Equity portfolios, respectively.

² Information not available or applicable for all managers.

³ Voting rationale provided for only select proposals voted against management and/or proxy advisor due to manual process.

⁴ Voting rationale may not be provided for proposals voted against management, but consistent with manager's internal proxy voting policy.

Votes Against Management or Proxy Advisor

Summary	Investment Manager				Grand Total
	Baillie Gifford	Mondrian	Passive Core	Quantitative Management Associates	
Boards and Directors	16	4	633	189	842
Capital Structure, Mergers, Asset Sales and Other Special Transactions	20	2	114	16	152
General Corporate Governance Matters	3	2	58	3	66
Remuneration and Benefits	3	6	253	47	309
Social, Ethical and Environmental Issues			6		6
Auditors and Audit-Related Issues	2		1		3

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.1

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

SUBJECT: Preliminary Monthly Portfolio Performance Report for the Period Ended February 28, 2019

Recommendation

Accept the preliminary performance report dated February 28, 2019.

Background

This preliminary report is intended to provide a high-level view of the portfolio and its trends. It is not intended to provide short-term performance upon which the Board would act. As discussed previously, preliminary performance estimates are now included for AQR Risk Parity, AQR Delta, PanAgora Risk Parity, and Beach Point Select. The quarterly performance metrics are not yet available for our private equity, private credit, private real asset, and real estate portfolios. The performance for these portfolios will be reflected in the quarterly performance report generated by Verus.

The attached performance report shows both net and gross of fee returns for the total plan on page one, with net composite returns (pages 2-3) and net manager returns (pages 4-9) also shown.

Discussion

The fund's net preliminary return for February was 1.3%, bringing the preliminary trailing twelve-month return ending February 2019 to 1.2% net. The preliminary twelve-month net return is below both SamCERA's Plan Benchmark return of 2.2% and SamCERA's Actuarial Assumed Earnings Rate of 6.75%.

February was a positive month for most risk asset classes as risk markets continued their January rally. In U.S. equity markets, the broad U.S. equity market (as measured by the Russell 3000 Index) was up 3.5%. International markets were also higher on the month, with developed international equity (as measured by MSCI EAFE) up 2.5%, while emerging markets were up 0.2%.

Economic data was mixed in February. The initial estimate for real GDP grew at an annual rate of 2.6% in the fourth quarter, down from the rate of 3.4% in the third quarter but higher than consensus estimates of 2.2%. Consumer confidence rebounded in February, while non-farm payrolls and manufacturing activity both increased but at a lower rate than expected.

The general U.S. fixed income market returned -0.1% during the month as Treasury yields were higher across the board. The 10-year U.S. Treasury yield was higher during the month, with the yield increasing 10 basis points and ending at 2.73% by month-end.

Attachments

Verus Capital Markets Update

Northern Trust Performance Report



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

FEBRUARY 2019
Capital Markets Update

Market commentary

U.S. ECONOMICS

- U.S. real GDP grew at an annualized quarterly rate of 2.6% in the fourth quarter (3.1% YoY), beating estimates of 2.2%. Personal consumption drove growth, contributing 1.9% to the quarterly rate. Private investment activity also saw healthy gains. Spending on research and development grew 3.2% over the quarter (9.9% YoY) to \$425 billion, and now represents 2.3% of total U.S. GDP.
- Non-farm payrolls increased by 20,000 in February, far below expectations of 180,000. Net revisions from the past two months totaled +12,000, and the three-month average figure remained solid at 186,000 jobs added per month.
- Retail sales contracted 1.6% to \$503 billion in December, and expanded 0.2% in January. December's monthly drop was the largest since September 2009, and was led by the non-store sales component including e-commerce, which fell 5.0%.

U.S. EQUITIES

- The U.S. equity market continued its rebound from a tough fourth quarter. The S&P 500 Index returned 3.2%, and all sectors posted positive performance.
- With 494/500 companies reporting, S&P 500 Index constituents notched fourth quarter aggregate earnings and revenue growth of 12.1% and 6.0% YoY, respectively.
- According to FactSet, growth is expected to moderate in 2019. Q1 projections call for revenue growth of 5.2% and earnings contraction of 3.2%. For the calendar year 2019, top- and bottom-line growth estimates are 5.1% and 4.1% respectively.

U.S. FIXED INCOME

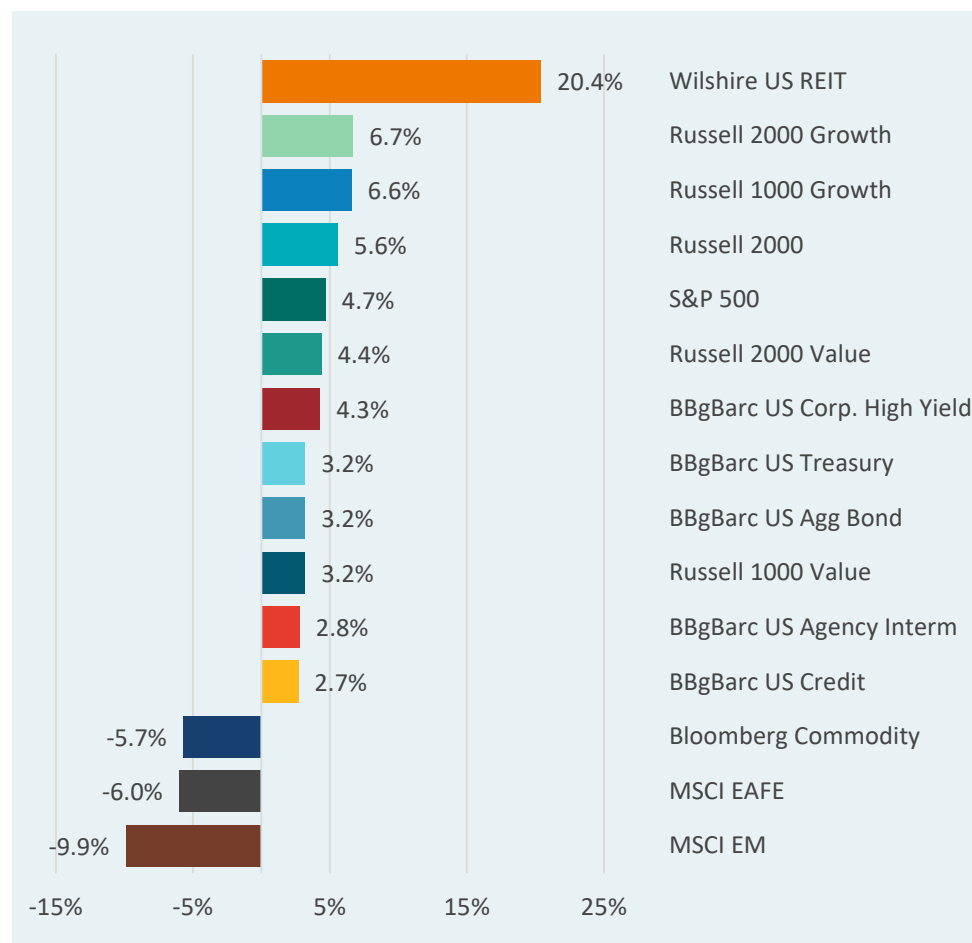
- The 10-year Treasury yields advanced from 2.63% to 2.72%, leading a slight steepening in the 10-2 yield spread from 18 bps to 20 bps.
- High yield debt (+1.7%) outperformed investment grade credit (-0.1%), as well as Treasury bills (+0.2%). High yield credit spread compression provided slight tailwinds for performance.
- U.S. credit spreads resumed their slide lower. Investment-grade corporate spreads fell 7 bps to 1.21% and high yield spreads declined 44 bps to 3.79%.

INTERNATIONAL MARKETS

- The spread between the JP Morgan Global Services and Manufacturing PMI's reached 2.7 in February, 1.9 above its mark last year. The recent elevation in the spread signals a divergence in growth between the services sector and the manufacturing sector.
- Growth expectations dipped significantly, as global economic institutions downgraded forward outlooks. The OECD's global GDP growth forecasts drifted from 3.5% to 3.3% for 2019 and from 3.5% to 3.4% for 2020. The European Commission's 2019 Euro-area growth forecast fell from 1.8% to 1.0%, and expectations for growth in Germany and Italy fell to 0.7% and -0.2%, respectively.
- The MSCI U.K. Index returned 3.4% in February, bringing YTD gains to 10.7%. Excluding the impact of currency, returns over the same periods were 2.3% and 6.0%, indicating that U.S. investors in British equities have benefitted from the relative strength of the British pound so far this year.

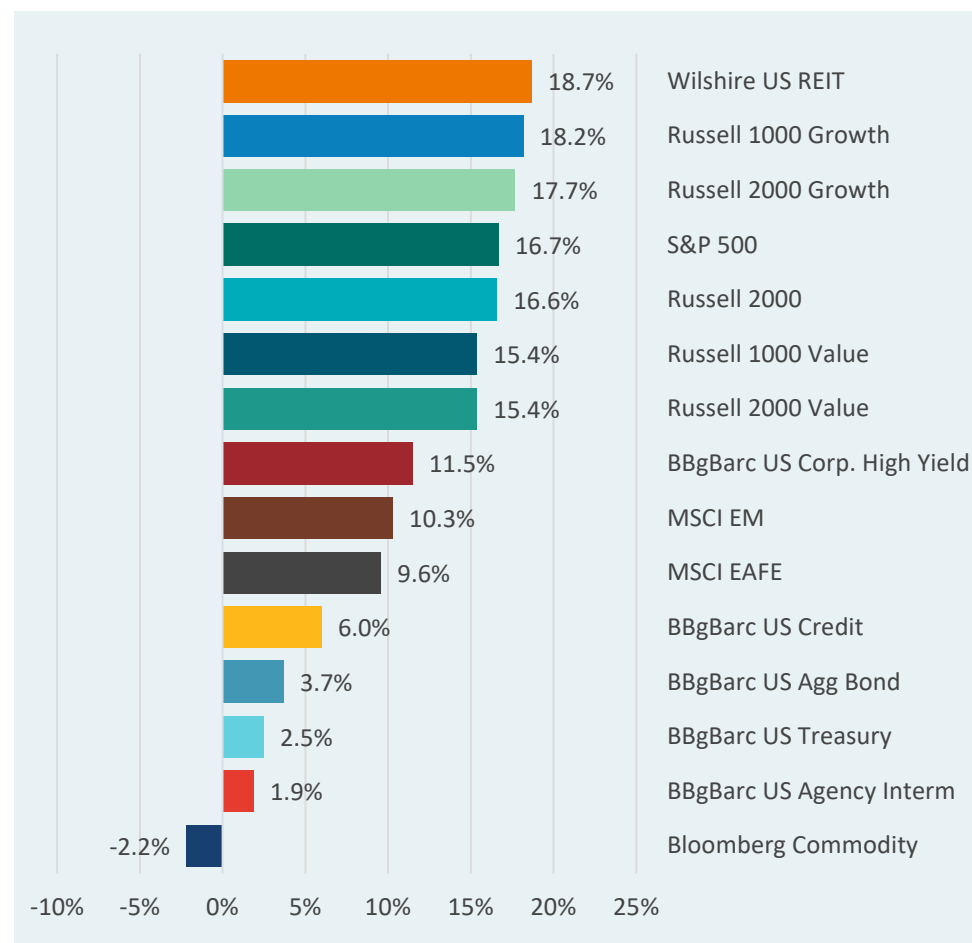
Major asset class returns

ONE YEAR ENDING FEBRUARY



Source: Morningstar, as of 2/28/19

TEN YEARS ENDING FEBRUARY



Source: Morningstar, as of 2/28/19

U.S. large cap equities

- The S&P 500 Index returned 3.2%, bringing its YTD gain to 11.5%. Information Technology (+6.9%) and Industrials (+6.4%) outperformed, while Consumer Discretionary (+0.8%) and Communication Services (+0.8%) lagged the overall index.
- Per FactSet, 99 S&P 500 companies have issued EPS guidance for Q1 2019. Of those 99 companies, 73 have issued negative guidance. The percentage of companies offering negative EPS guidance (74%) is slightly above the five-year average of 71%.
- The VIX index continued to drift lower. The implied volatility measure descended from 16.6 to 14.8, well below its recent high of 36.1 which was reached back in December.
- The one-year forward P/E ratio of the S&P 500 Index expanded from 15.7 to 16.3 over the month. Of the GICS sectors, Consumer Discretionary (20.1) was the most expensive based on the forward multiple, and the Financials sector (11.6) was cheapest.

S&P 500 PRICE INDEX



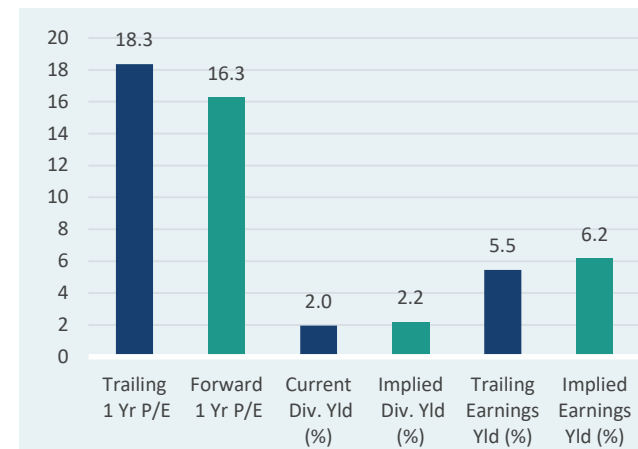
Source: Bloomberg, as of 2/28/19

IMPLIED VOLATILITY (VIX INDEX)



Source: CBOE, as of 2/28/19

S&P 500 VALUATION SNAPSHOT

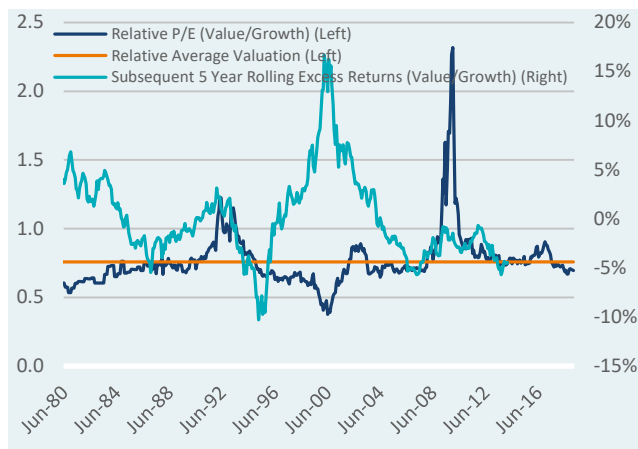


Source: Bloomberg, as of 2/28/19

Domestic equity size and style

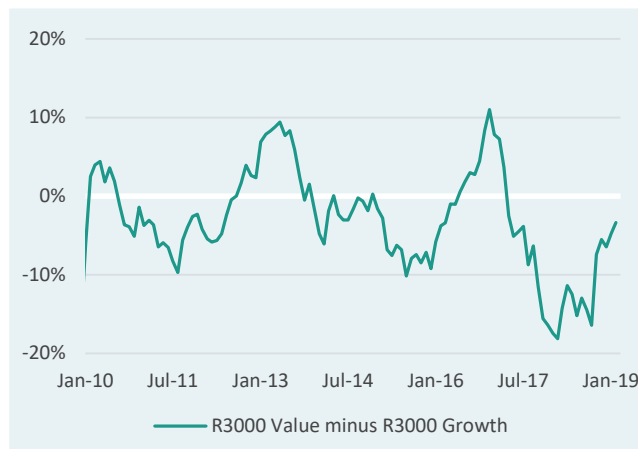
- Small cap equities outperformed large cap equities for the second month in a row. The Russell 2000 Index gained 5.2% while the Russell 1000 Index returned 3.4%.
- Outperformance of small-cap equities was broad. Energy (+0.3% excess return), producer durables (+1.8%), and utilities (+0.9%) were the only Russell sector indexes where large-cap equities outperformed small-cap equities.
- Forward one-year P/E ratios expanded materially in February. The forward multiple for the Russell 1000 Index moved from 16.0 to 16.5, while the multiple for the Russell 2000 Index moved from 21.1 to 22.5. The multiples were up 20.4% and 27.3% from their December 24th lows, respectively.
- Growth stocks outperformed value stocks across market-cap classifications. Overall, the Russell 3000 Growth Index (+3.8%) outperformed the Russell 3000 Value Index (+3.2%).

VALUE VS. GROWTH RELATIVE VALUATIONS



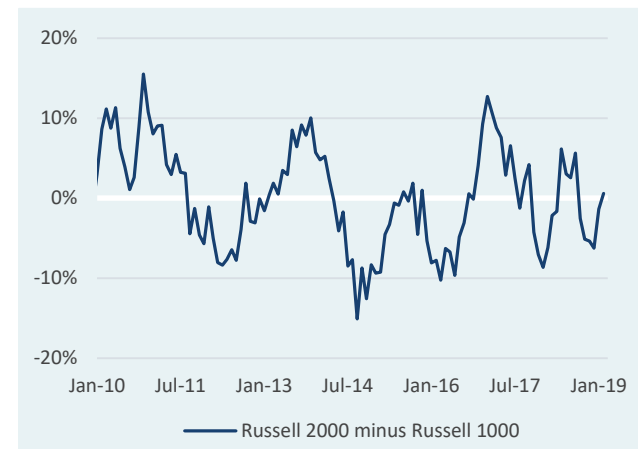
Source: Russell, Bloomberg, as of 2/28/19

VALUE VS. GROWTH 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE, as of 2/28/19

SMALL VS. LARGE 1-YR ROLLING RELATIVE PERFORMANCE

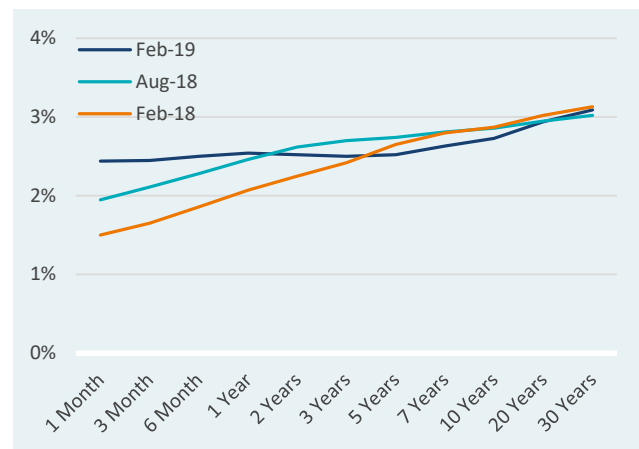


Source: FTSE, as of 2/28/19

Fixed income

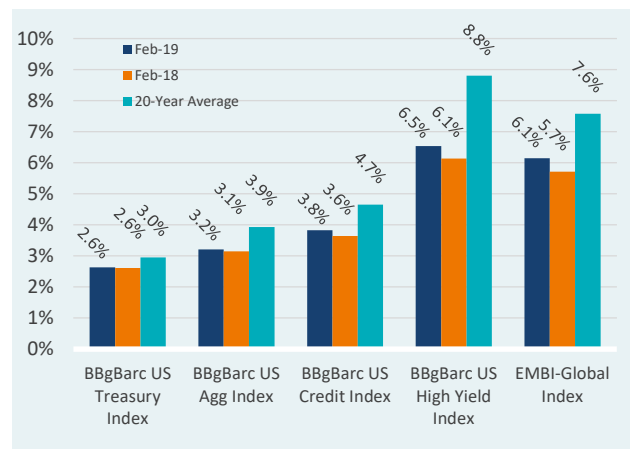
- The European Central Bank cut its 2019 Eurozone growth forecast from 1.7% to 1.1%, citing geopolitics and trade as headwinds. Officials also announced a third injection of stimulus via targeted longer-term refinancing operations (TLTROs), and offered dovish guidance on interest rates.
- Leveraged loans moved higher in February, gaining 1.6% MoM (+3.9% YTD). Some investors have expressed concern over the concentration of “cov-lite” issues, which according to Standard and Poor’s represented 85% of the U.S. market as of Q4 2018.
- The Bank of Japan cut its regular purchases of JGBs maturing in 10-to-25 years from ¥200 to ¥180 billion. Falling global growth expectations and dovish central bank language likely pressed JGB yields lower, and the BoJ’s purchase cut aligned with its goal of targeting 10-year yields around 0%.
- Breakeven inflation rates continued to climb higher from recent December lows. The 5- and 10- year rates rose 13 bps and 8 bps respectively, aided by the recent recovery in crude oil prices.

U.S. TREASURY YIELD CURVE



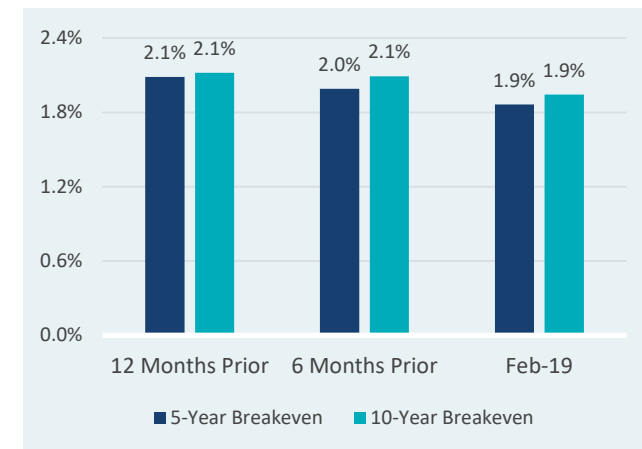
Source: Bloomberg, as of 2/28/19

NOMINAL YIELDS



Source: Morningstar, as of 2/28/19

BREAKEVEN INFLATION RATES

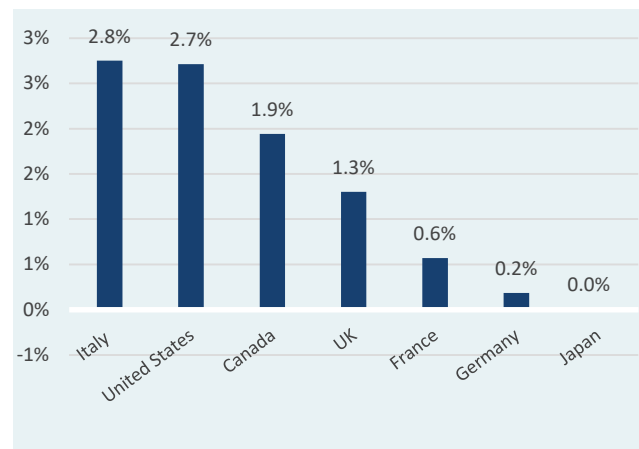


Source: Bloomberg, as of 2/28/19

Global markets

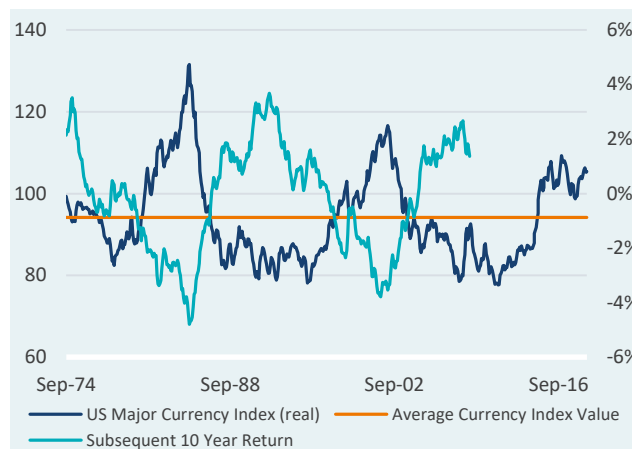
- President Trump waived the March 1st deadline for tariff rate hikes on \$200 billion of Chinese imports, citing “substantial progress” made during negotiations. Optimism picked up for some sort of formal trade resolution to be reached around the end of March, although the prospective terms remain unclear.
- Chinese mainland equities (CSI 300 Index) rallied 14.6%, bringing the YTD return to 21.9%. An improving outlook on trade, as well as more stimulative domestic policy likely contributed to the advance.
- Parliament will vote on Prime Minister May’s Brexit deal for the second time on March 12th. If the vote fails again, May has offered a vote on the extension of “Article 50”, which oversees the Brexit departure process. The shift in tone soothed fears of a “no-deal Brexit” and the British pound rallied on the news.
- The Citi Global Economic Surprise Index fell from -18.5 to -26.4 in February, its lowest level since May 2013. The low level of the index indicates that recent global economic data has disappointed relative to forecasts.

GLOBAL SOVEREIGN 10-YEAR YIELDS



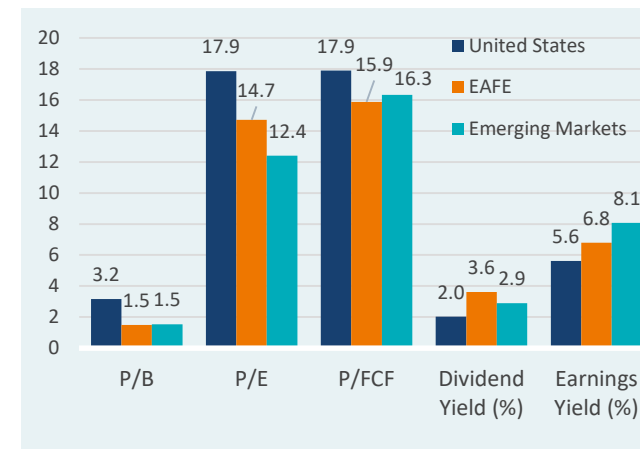
Source: Bloomberg, as of 2/28/19

U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Federal Reserve, as of 2/28/19

MSCI VALUATION METRICS (3-MONTH AVG)



Source: Bloomberg, as of 2/28/19

Commodities

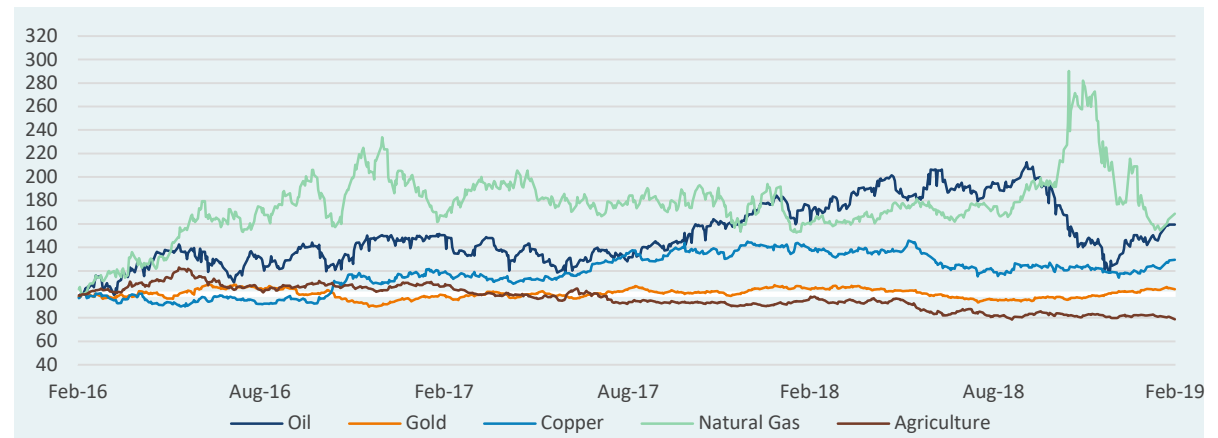
- The Bloomberg Commodity Index gained 1.0% over the month, driven by another strong month of performance in the energy sector (+5.4%).
- Energy (+5.4%) and petroleum (+7.8%) boosted the overall index higher. Four-year lows in OPEC+ crude oil supply, faster-than-expected production cuts in Russia and Saudi Arabia, and the imposition of U.S. sanctions on Venezuelan oil put upward pressure on crude prices. Additionally, positive rhetoric around U.S.-China trade relations likely buoyed expectations for global demand.
- Grains, which target a 23% weight in the overall index, underperformed, and lost 5.0% over the month. Wheat led the underperformance as soft wheat fell 11.9% and hard red winter wheat fell 12.6%. Analysts attributed the decline to a pickup in price competition ahead of large harvests in Europe and the Black Sea region.
- Industrial metals gained 3.5% in February, bringing the YTD gain to 11.8%. Rising optimism about a trade resolution with China has likely supported the recent rebound for the sector, which lost 19.5% in 2018.

INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	1.0	6.5	6.5	(5.7)	3.6	(8.8)	(2.2)
Bloomberg Agriculture	(3.9)	(1.0)	(1.0)	(16.8)	(5.9)	(11.1)	(2.0)
Bloomberg Energy	5.4	15.2	15.2	3.6	10.0	(17.1)	(10.0)
Bloomberg Grains	(5.0)	(3.3)	(3.3)	(16.7)	(7.9)	(12.2)	(3.6)
Bloomberg Industrial Metals	3.5	11.8	11.8	(8.1)	11.1	(0.4)	3.4
Bloomberg Livestock	(0.0)	(1.5)	(1.5)	(0.0)	(1.7)	(4.6)	(2.3)
Bloomberg Petroleum	7.8	22.7	22.7	0.4	13.3	(15.5)	(3.6)
Bloomberg Precious Metals	(1.1)	2.1	2.1	(1.9)	1.2	(2.3)	2.4
Bloomberg Softs	(3.5)	1.1	1.1	(16.7)	(6.3)	(12.5)	(2.4)

Source: Morningstar, as of 2/28/19

COMMODITY PERFORMANCE



Source: Bloomberg, as of 2/28/19

Appendix

Periodic table of returns

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	5-Year	10-Year
Small Cap Growth	38.7	66.4	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	18.8	12.6	18.2
Small Cap Equity	27.0	43.1	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	17.0	10.4	17.7
Small Cap Value	20.3	33.2	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	15.2	9.3	16.8
Large Cap Growth	19.3	27.3	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	12.9	8.2	16.6
Large Cap Equity	16.2	26.5	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	12.0	8.1	15.4
Large Cap Value	15.6	24.3	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	11.2	7.4	15.4
International Equity	8.7	21.3	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	9.3	6.5	10.3
Emerging Markets Equity	4.9	20.9	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	9.0	4.2	9.6
60/40 Global Portfolio	1.2	13.2	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	6.8	4.1	9.0
Commodities	-2.5	11.4	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	6.5	2.3	7.5
Hedge Funds of Funds	-5.1	7.3	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	3.3	2.1	3.7
US Bonds	-6.5	4.8	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	1.0	1.8	3.4
Cash	-25.3	-0.8	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	0.4	0.7	0.4
Real Estate	-27.0	-1.5	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	0.0	-8.8	-2.2

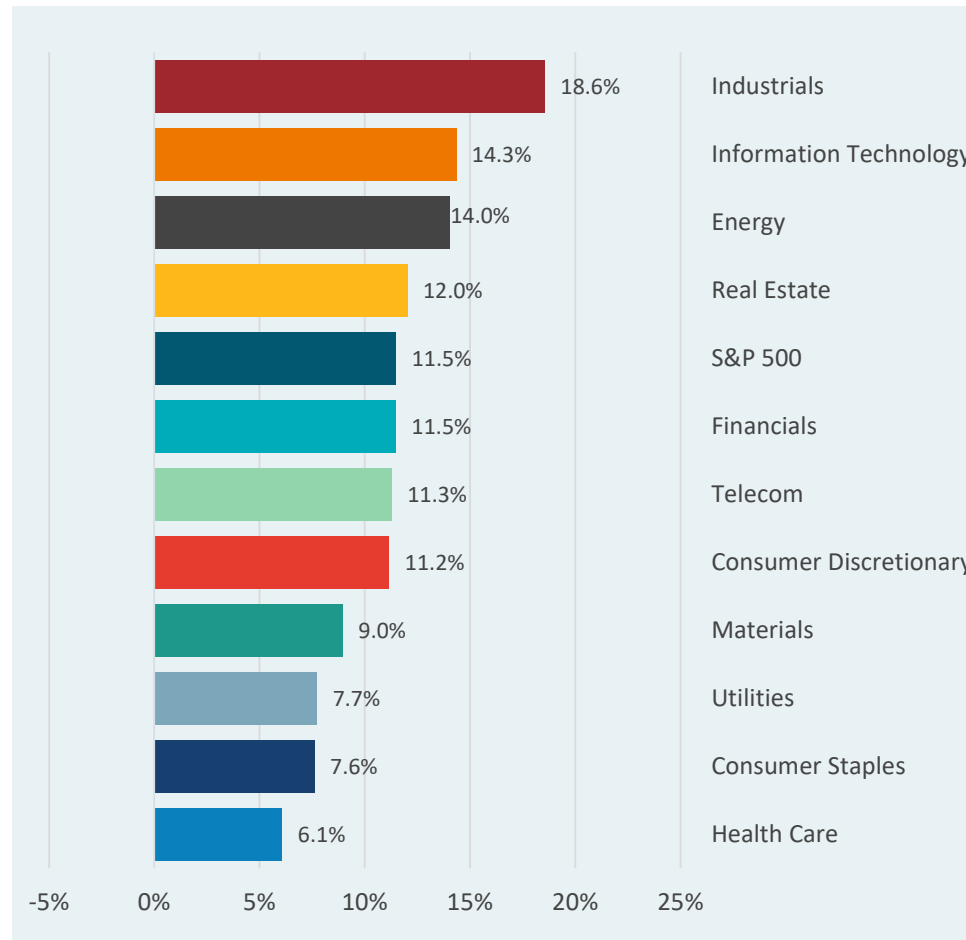
BEST
↑
↓
WORST

- Large Cap Equity
- Small Cap Growth
- Commodities
- Large Cap Value
- International Equity
- Real Estate
- Large Cap Growth
- Emerging Markets Equity
- Hedge Funds of Funds
- US Bonds
- 60% MSCI ACWI/40% BBgBarc Global Bond
- Cash

Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, BBgBarc US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, BBgBarc Global Bond. NCREIF Property Index performance data as of 12/31/18.

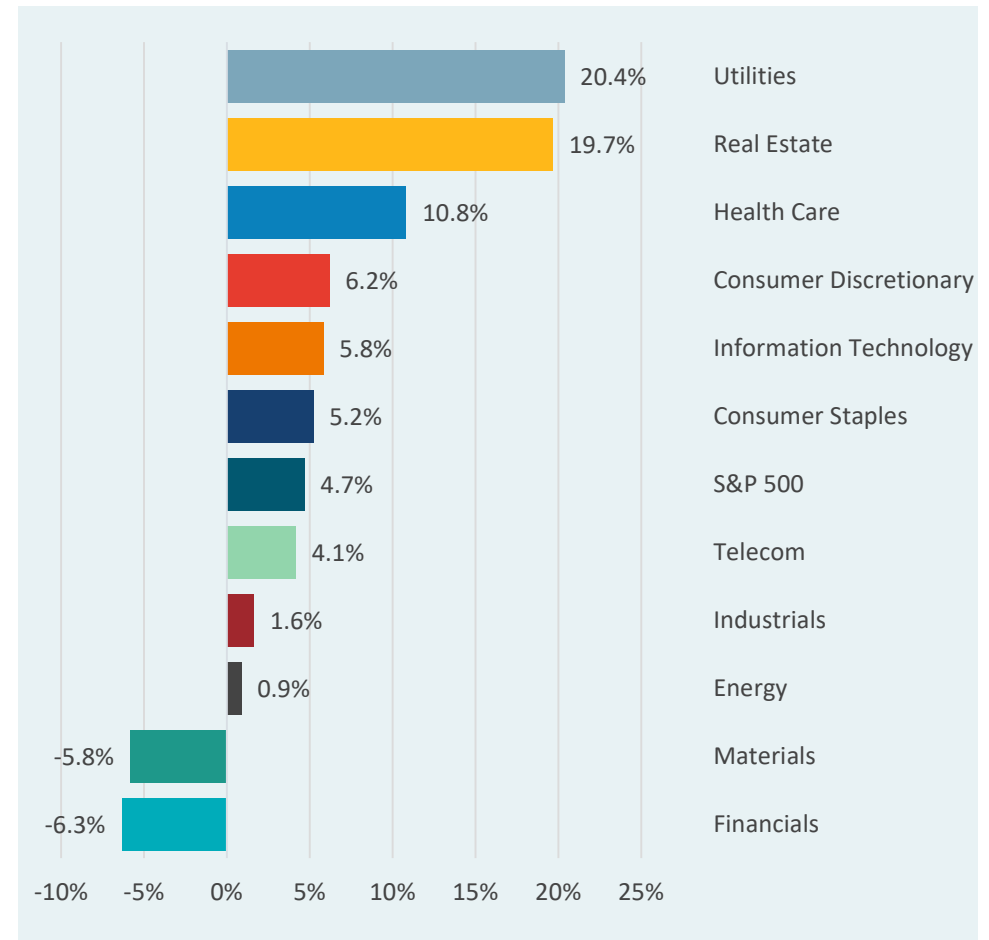
S&P 500 sector returns

QTD



Source: Morningstar, as of 2/28/19

ONE YEAR ENDING FEBRUARY



Source: Morningstar, as of 2/28/19

Detailed index returns

DOMESTIC EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Core Index							
S&P 500	3.2	11.5	11.5	4.7	15.3	10.7	16.7
S&P 500 Equal Weighted	3.7	13.9	13.9	5.3	14.6	9.5	18.8
DJ Industrial Average	4.0	11.6	11.6	5.9	19.0	12.4	16.8
Russell Top 200	3.0	10.7	10.7	4.8	15.8	11.2	16.5
Russell 1000	3.4	12.0	12.0	5.0	15.4	10.4	16.8
Russell 2000	5.2	17.0	17.0	5.6	16.7	7.4	16.6
Russell 3000	3.5	12.4	12.4	5.0	15.5	10.2	16.8
Russell Mid Cap	4.3	15.5	15.5	5.6	14.5	8.6	17.8
Style Index							
Russell 1000 Growth	3.6	12.9	12.9	6.6	18.0	12.6	18.2
Russell 1000 Value	3.2	11.2	11.2	3.2	12.8	8.1	15.4
Russell 2000 Growth	6.5	18.8	18.8	6.7	18.3	8.2	17.7
Russell 2000 Value	3.9	15.2	15.2	4.4	15.0	6.5	15.4

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	2.7	10.8	10.8	(0.8)	12.9	6.3	12.7
MSCI ACWI ex US	2.0	9.7	9.7	(6.5)	10.7	2.5	9.6
MSCI EAFE	2.5	9.3	9.3	(6.0)	9.3	2.1	9.6
MSCI EM	0.2	9.0	9.0	(9.9)	15.0	4.1	10.3
MSCI EAFE Small Cap	2.2	10.5	10.5	(10.5)	10.2	4.3	13.5
Style Index							
MSCI EAFE Growth	3.4	10.1	10.1	(4.2)	9.2	3.4	10.2
MSCI EAFE Value	1.7	8.5	8.5	(7.9)	9.4	0.6	8.9
Regional Index							
MSCI UK	3.4	10.7	10.7	(1.5)	7.6	(0.2)	9.6
MSCI Japan	(0.0)	6.1	6.1	(10.3)	9.5	5.2	8.1
MSCI Euro	3.2	9.8	9.8	(8.9)	9.1	0.6	8.4
MSCI EM Asia	1.7	9.1	9.1	(9.8)	15.2	6.1	12.2
MSCI EM Latin American	(3.7)	10.7	10.7	(5.2)	19.2	1.9	6.6

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
BBgBarc US TIPS	(0.0)	1.3	1.3	1.9	1.7	1.5	3.8
BBgBarc US Treasury Bills	0.2	0.4	0.4	2.1	1.1	0.7	0.4
BBgBarc US Agg Bond	(0.1)	1.0	1.0	3.2	1.7	2.3	3.7
Duration							
BBgBarc US Treasury 1-3 Yr	0.1	0.4	0.4	2.3	0.8	0.8	1.0
BBgBarc US Treasury Long	(1.2)	(0.6)	(0.6)	4.0	(0.3)	4.5	5.1
BBgBarc US Treasury	(0.3)	0.2	0.2	3.2	0.5	1.7	2.5
Issuer							
BBgBarc US MBS	(0.1)	0.7	0.7	3.6	1.4	2.3	3.1
BBgBarc US Corp. High Yield	1.7	6.3	6.3	4.3	9.8	4.5	11.5
BBgBarc US Agency Interm	0.1	0.5	0.5	2.8	1.0	1.3	1.9
BBgBarc US Credit	0.2	2.4	2.4	2.7	3.5	3.1	6.0

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	1.0	6.5	6.5	(5.7)	3.6	(8.8)	(2.2)
Wilshire US REIT	0.9	12.4	12.4	20.4	7.8	8.5	18.7
CS Leveraged Loans	1.6	3.9	3.9	3.8	6.8	3.9	8.1
Alerian MLP	0.2	13.1	13.1	4.4	7.5	(4.5)	10.7
Regional Index							
JPM EMBI Global Div	1.0	5.5	5.5	3.1	6.4	5.4	8.8
JPM GBI-EM Global Div	(1.1)	4.3	4.3	(5.4)	6.8	0.1	5.1
Hedge Funds							
HFRI Composite	1.4	4.9	4.9	(0.4)	5.6	2.8	5.6
HFRI FOF Composite	0.8	3.3	3.3	(1.7)	3.7	1.8	3.4
Currency (Spot)							
Euro	(0.8)	(0.4)	(0.4)	(6.6)	1.6	(3.8)	(1.1)
Pound	1.1	4.4	4.4	(3.5)	(1.5)	(4.5)	(0.7)
Yen	(2.2)	(1.4)	(1.4)	(4.1)	0.5	(1.7)	(1.3)

Source: Morningstar, HFR, as of 2/28/19

Notices & disclosures

Past performance is no guarantee of future results. This document is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and is not intended for retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. This document may include or imply estimates, outlooks, projections and other “forward-looking statements.” No assurance can be given that future results described or implied by any forward looking information will be achieved. Investing entails risks, including possible loss of principal. Verus Advisory Inc. (“Verus”) file a single form ADV under the United States Investment Advisors Act of 1940, as amended. Additional information about Verus Advisory, Inc. available on the SEC’s website at www.adviserinfo.sec.gov.

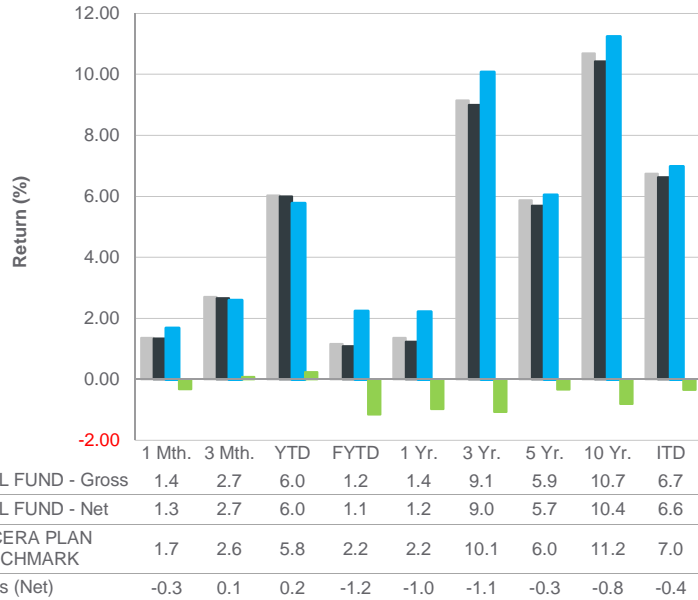
Verus – also known as Verus Advisory™.

San Mateo County Composite Return Summary

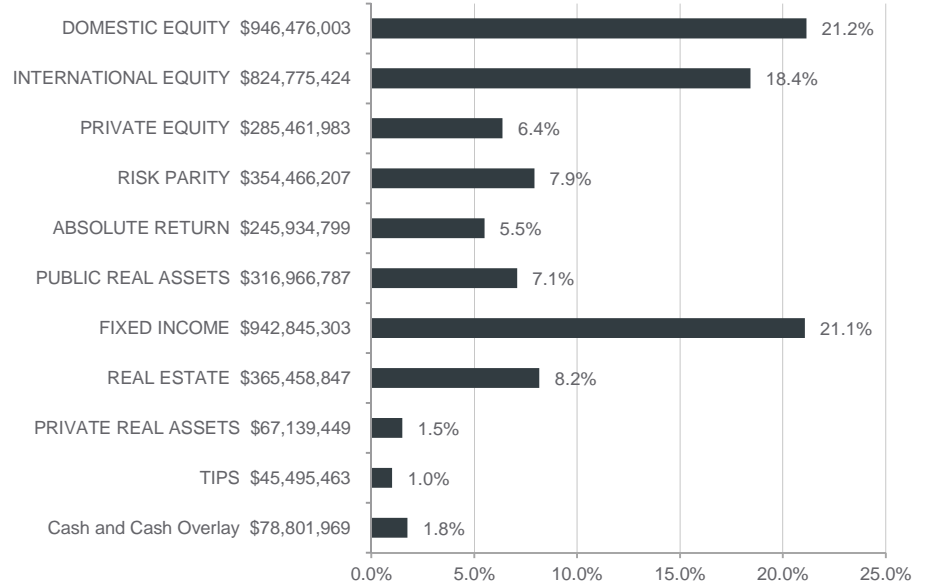
2/28/2019



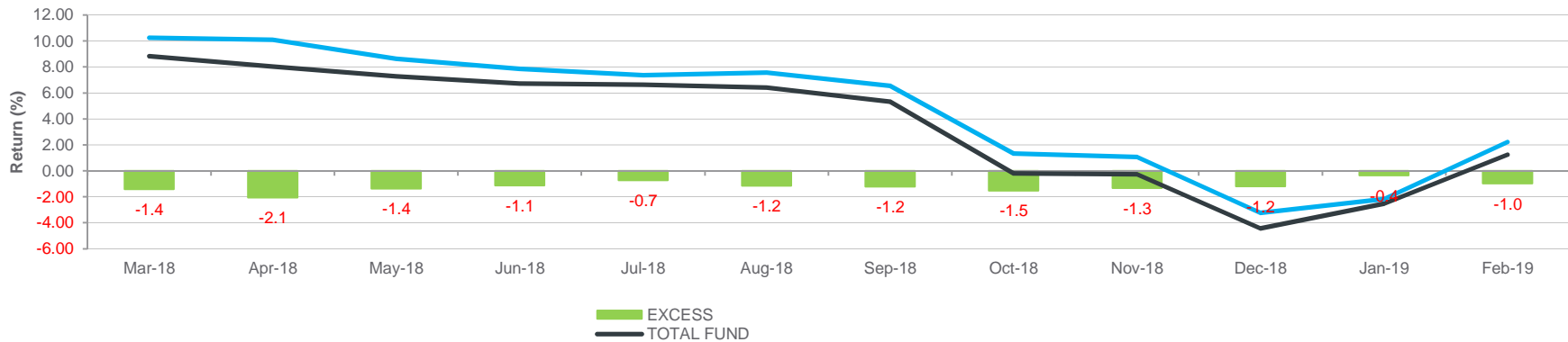
Total Fund Performance



Asset Allocation



Rolling Month End Annual Returns

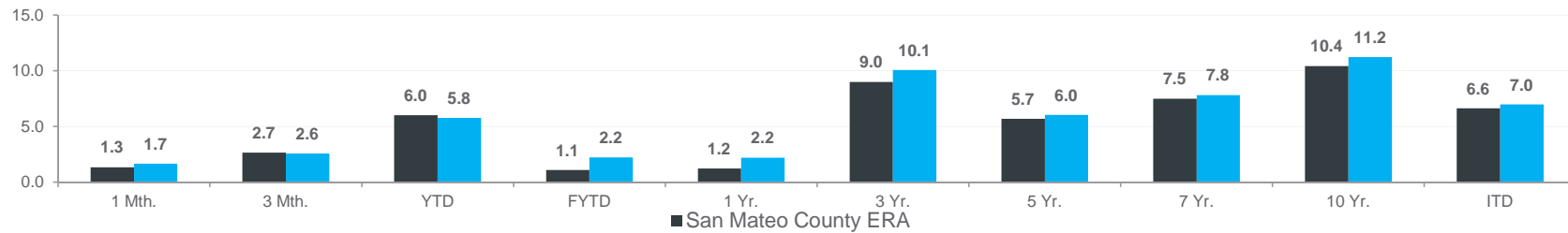


San Mateo County Composite Return Summary

February 28, 2019



Return Comparison



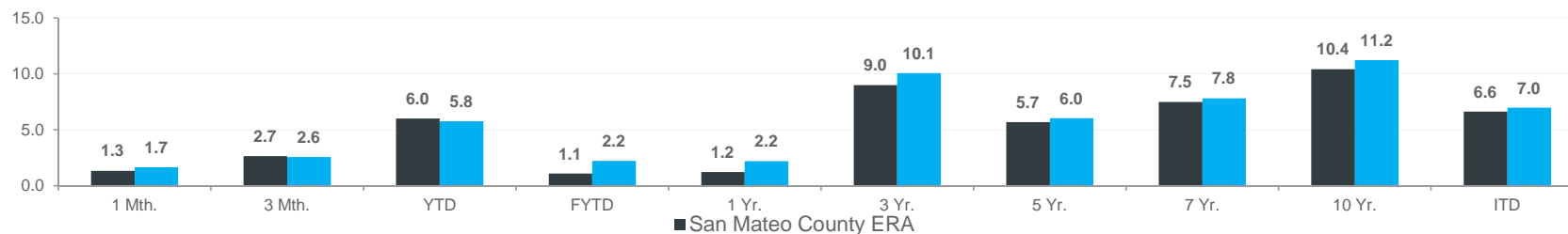
Composite Returns (Net of Manager Fees)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
San Mateo County ERA	4,473,822,236	1.3	2.7	6.0	1.1	1.2	9.0	5.7	7.5	10.4	6.6
Samcera Total Plan Benchmark		1.7	2.6	5.8	2.2	2.2	10.1	6.0	7.8	11.2	7.0
Excess		-0.3	0.1	0.2	-1.2	-1.0	-1.1	-0.3	-0.3	-0.8	-0.4
San Mateo Ex-Clifton Overlay	4,440,969,206	1.3	2.4	5.7	0.9	0.9	8.9	5.6	7.4	10.3	6.5
Samcera Total Plan Benchmark		1.7	2.6	5.8	2.2	2.2	10.1	6.0	7.8	11.2	7.0
Excess		-0.4	-0.1	-0.0	-1.4	-1.3	-1.2	-0.4	-0.4	-0.9	-0.4
Total Equity	1,771,251,428	2.8	3.0	10.4	-0.0	-0.7	12.9	6.8	9.5	13.5	7.6
Samcera Total Equity Benchmark		2.8	3.2	11.2	0.4	-0.5	14.2	8.2	10.6	14.9	8.3
Excess		0.0	-0.2	-0.7	-0.5	-0.2	-1.3	-1.3	-1.0	-1.4	-0.6
Fixed Income	942,845,303	0.2	2.4	1.6	2.8	2.9	5.5	3.6	4.0	6.6	5.5
Samcera Fixed Income Benchmark		0.5	3.4	2.6	3.6	3.7	3.4	2.8	2.4	4.1	4.9
Excess		-0.2	-1.0	-1.0	-0.8	-0.8	2.1	0.8	1.5	2.5	0.5
Risk Parity	354,466,207	0.5	5.7	6.3	1.0	2.0	7.5	5.0	5.1	--	5.7
Samcera Risk Parity Benchmark		1.6	2.9	6.9	1.3	0.3	9.4	6.8	8.4	--	8.1
Excess		-1.1	2.8	-0.6	-0.3	1.7	-1.9	-1.8	-3.3	--	-2.4

San Mateo County Composite Return Summary

February 28, 2019



Return Comparison



Composite Returns (Net of Manager Fees)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Alternatives	531,396,783	0.2	-0.3	0.2	2.1	0.6	5.4	5.0	4.7	-7.5	-2.2
Samcera Alternatives Benchmark		1.5	-1.7	-2.2	5.8	5.9	11.8	6.8	8.5	11.9	7.7
Excess		-1.3	1.5	2.4	-3.7	-5.3	-6.4	-1.8	-3.8	-19.4	-9.9
Inflation Hedge	795,060,547	0.5	2.9	5.1	1.0	3.8	--	--	--	--	7.6
SamCERA Inflation Hedge Index		0.6	2.5	3.0	1.5	4.0	--	--	--	--	6.6
Excess		-0.1	0.4	2.1	-0.5	-0.2	--	--	--	--	1.0
Cash	45,948,939	0.1	0.2	0.2	0.6	1.0	0.8	0.6	0.6	0.7	1.9
Samcera Cash Benchmark		0.2	0.6	0.4	1.4	2.0	1.1	0.7	0.5	0.4	1.8
Excess		-0.1	-0.4	-0.2	-0.8	-1.1	-0.3	-0.1	0.1	0.3	0.1

San Mateo County Composite Return Summary

February 28, 2019



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
Total Equity	1,771,251,428	2.8	3.0	10.4	-0.0	-0.7	12.9	6.8	9.5	13.5	7.6
Samcera Total Equity Benchmark		2.8	3.2	11.2	0.4	-0.5	14.2	8.2	10.6	14.9	8.3
Excess		0.0	-0.2	-0.7	-0.5	-0.2	-1.3	-1.3	-1.0	-1.4	-0.6
Domestic Equity	946,476,003	3.2	1.4	11.4	2.0	4.3	15.2	9.5	12.1	16.2	8.6
Samcera Dom. Equity Benchmark		3.5	1.9	12.4	3.2	5.0	15.7	9.9	12.8	16.8	9.0
Excess		-0.4	-0.5	-1.0	-1.2	-0.8	-0.5	-0.4	-0.6	-0.6	-0.4
Large Cap Equity	858,935,568	3.0	1.4	11.0	2.8	4.3	15.5	10.5	12.8	16.2	9.3
Russell 1000		3.4	1.8	12.0	3.7	5.0	15.4	10.4	13.0	16.8	9.7
Excess		-0.4	-0.5	-1.1	-0.9	-0.7	0.1	0.1	-0.2	-0.6	-0.3
Blackrock Russell 1000	454,493,376	3.4	1.9	12.0	3.7	5.0	--	--	--	--	12.4
Russell 1000		3.4	1.8	12.0	3.7	5.0	--	--	--	--	12.3
Excess		0.0	0.0	-0.0	-0.0	0.0	--	--	--	--	0.1
DE Shaw Commingled Fund	135,004,361	0.0	-0.7	7.4	-1.2	1.3	15.4	--	--	--	10.1
Russell 1000		3.4	1.8	12.0	3.7	5.0	15.4	--	--	--	9.7
Excess		-3.4	-2.6	-4.6	-4.9	-3.7	-0.0	--	--	--	0.5
SAMCERA - Acadian US MGD V-SL	134,623,415	3.3	--	10.6	--	--	--	--	--	--	12.4
Russell 1000		3.4	--	12.0	--	--	--	--	--	--	12.9
Excess		-0.1	--	-1.5	--	--	--	--	--	--	-0.6
SAMCERA - Panagora Defuseq -SL	134,814,415	4.5	--	11.4	--	--	--	--	--	--	13.2
Russell 1000		3.4	--	12.0	--	--	--	--	--	--	12.9
Excess		1.1	--	-0.6	--	--	--	--	--	--	0.3
Small Cap Equity	87,540,435	4.7	2.5	16.2	-4.6	2.7	12.5	4.2	8.9	16.0	6.4
Russell 2000		5.2	3.1	17.0	-3.3	5.6	16.7	7.4	11.5	16.6	7.9
Excess		-0.5	-0.6	-0.8	-1.3	-2.8	-4.1	-3.1	-2.6	-0.6	-1.5
QMA US Small Cap	87,540,435	4.7	2.5	16.2	-4.6	2.7	--	--	--	--	10.5
Russell 2000		5.2	3.1	17.0	-3.3	5.6	--	--	--	--	11.5
Excess		-0.5	-0.6	-0.8	-1.3	-2.8	--	--	--	--	-1.0

San Mateo County Composite Return Summary

February 28, 2019



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
International Equity	824,775,424	2.4	4.7	9.3	-2.7	-6.6	9.8	2.8	5.1	8.5	5.3
SamCERA Custom Hedge Intl		2.2	4.5	9.7	-2.9	-7.0	10.6	2.6	4.6	10.0	4.9
Excess		0.3	0.1	-0.3	0.2	0.4	-0.9	0.2	0.4	-1.5	0.4
Developed Markets Equity	735,457,717	2.9	4.6	9.6	-3.1	-6.2	9.6	2.9	5.5	8.9	4.2
MS AC WldxUS IMI Nt		2.0	4.6	9.7	-2.9	-7.0	10.6	2.6	4.6	10.0	4.7
Excess		0.9	-0.0	-0.2	-0.2	0.9	-1.1	0.3	0.9	-1.1	-0.5
Baillie Gifford	238,244,273	4.1	5.6	11.3	-6.9	-8.4	9.8	3.6	--	--	6.9
MSCI ACWI ex US Growth		2.7	5.5	10.5	-3.1	-5.5	10.9	4.1	--	--	6.0
Excess		1.4	0.1	0.8	-3.8	-2.9	-1.1	-0.5	--	--	0.8
Blackrock EAFE Index Fund	234,536,961	2.6	4.0	9.3	-3.1	-5.7	9.7	2.4	--	--	2.6
MSCI EAFE ND		2.5	4.0	9.3	-3.1	-6.0	9.3	2.1	--	--	2.3
Excess		0.0	0.0	-0.0	0.0	0.3	0.4	0.3	--	--	0.3
Mondrian Investment Partners	247,585,178	1.7	4.6	8.6	0.4	-4.9	9.1	2.4	4.6	8.8	5.2
MSCI ACWI ex US Value		1.2	4.0	8.8	-0.9	-6.5	11.6	1.8	4.1	9.8	5.0
Excess		0.4	0.6	-0.2	1.3	1.6	-2.5	0.6	0.5	-1.0	0.2
Emerging Markets Equity	89,317,707	-0.8	5.4	7.6	1.1	-9.5	11.6	1.8	--	--	1.8
MSCI Emerging Markets ND		0.2	6.1	9.0	-0.2	-9.9	15.0	4.1	--	--	2.6
Excess		-1.1	-0.7	-1.4	1.4	0.4	-3.5	-2.3	--	--	-0.8
EV Parametric EM	89,317,707	-0.8	5.4	7.6	1.1	-9.5	11.6	--	--	--	5.1
MSCI Emerging Markets GD		0.2	6.2	9.0	0.0	-9.5	15.5	--	--	--	7.1
Excess		-1.1	-0.8	-1.4	1.1	0.0	-3.9	--	--	--	-2.0
Fixed Income	942,845,303	0.2	2.4	1.6	2.8	2.9	5.5	3.6	4.0	6.6	5.5
Samcera Fixed Income Benchmark		0.5	3.4	2.6	3.6	3.7	3.4	2.8	2.4	4.1	4.9
Excess		-0.2	-1.0	-1.0	-0.8	-0.8	2.1	0.8	1.5	2.5	0.5
Core Fixed Income	625,403,767	0.0	2.9	1.3	2.7	2.6	3.6	3.1	3.1	5.9	5.2
BB Barclays U.S. Aggregate		-0.1	2.9	1.0	2.7	3.2	1.7	2.3	2.1	3.7	4.8
Excess		0.1	0.0	0.2	0.1	-0.6	1.9	0.8	1.0	2.2	0.4

San Mateo County Composite Return Summary

February 28, 2019



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
FIAM Core Bond	267,036,186	-0.0	2.9	1.4	2.6	3.2	2.7	2.7	2.8	5.3	4.4
BB Barclays U.S. Aggregate		-0.1	2.9	1.0	2.7	3.2	1.7	2.3	2.1	3.7	4.0
Excess		0.0	0.1	0.4	-0.1	-0.0	1.0	0.4	0.7	1.6	0.4
Western Total Return	132,866,795	0.2	4.6	2.5	3.4	0.5	6.4	--	--	--	3.9
BB Barclays U.S. Aggregate		-0.1	2.9	1.0	2.7	3.2	1.7	--	--	--	2.0
Excess		0.2	1.8	1.5	0.7	-2.7	4.7	--	--	--	1.9
Blackrock Inter Gov	225,500,786	-0.0	1.9	0.4	2.6	3.2	--	--	--	--	1.5
BB Barclays U.S. Aggregate		-0.1	2.9	1.0	2.7	3.2	--	--	--	--	2.2
Excess		0.0	-1.0	-0.6	-0.1	0.0	--	--	--	--	-0.7
Opportunistic Credit	317,441,536	0.7	1.5	2.2	2.8	3.6	9.3	5.8	8.0	--	8.9
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	7.0	4.5	5.6	--	7.1
Excess		-0.9	-2.9	-3.6	-2.4	-1.2	2.3	1.3	2.4	--	1.8
AG Opportunistic Whole Loan	6,123,951	0.0	6.0	0.0	17.2	40.5	18.6	--	--	--	11.3
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	7.0	--	--	--	4.5
Excess		-1.5	1.7	-5.7	11.9	35.7	11.6	--	--	--	6.8
Angelo Gordon	5,299,216	2.8	2.8	2.8	16.2	26.9	19.3	14.9	--	--	14.4
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	7.0	4.5	--	--	5.0
Excess		1.3	-1.6	-2.9	10.9	22.1	12.3	10.5	--	--	9.4
Beach Point Select Fund	49,944,462	1.8	-0.9	-0.1	-0.0	1.8	9.3	--	--	--	7.5
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	7.0	--	--	--	4.8
Excess		0.3	-5.3	-5.8	-5.3	-3.0	2.2	--	--	--	2.7
Brigade Cap Mngmt	76,095,991	0.0	-0.9	1.9	-1.6	-0.3	11.0	3.6	5.4	--	6.2
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	7.0	4.5	5.6	--	6.5
Excess		-1.5	-5.3	-3.8	-6.8	-5.1	4.0	-0.9	-0.2	--	-0.3
SAMCERA - White Oak Yield Spec	29,364,503	0.0	1.3	-0.0	3.8	5.1	--	--	--	--	--
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	--	--	--	--	4.2
Excess		-1.5	-3.1	-5.7	-1.4	0.3	--	--	--	--	--

San Mateo County Composite Return Summary

February 28, 2019



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
SAMCERA-PIMCO Div. Income Fund	83,492,743	0.8	4.3	4.3	4.7	4.6	--	--	--	--	3.1
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	--	--	--	--	3.0
Excess		-0.8	-0.1	-1.5	-0.6	-0.2	--	--	--	--	0.2
TCP Direct Lending VIII	24,647,515	0.3	1.1	1.1	5.6	2.3	--	--	--	--	--
BB Barc BA Intermediate HY Ind		1.5	4.4	5.7	5.2	4.8	--	--	--	--	5.6
Excess		-1.2	-3.2	-4.6	0.3	-2.5	--	--	--	--	--
Franklin Templeton	42,473,155	0.8	2.9	3.5	6.0	2.5	6.4	2.6	3.5	--	4.1
BB Barclays Multiverse Index		-0.5	3.1	1.2	1.4	-0.5	2.4	0.9	1.1	--	1.9
Excess		1.3	-0.2	2.3	4.6	3.0	4.0	1.6	2.4	--	2.2
Risk Parity	354,466,207	0.5	5.7	6.3	1.0	2.0	7.5	5.0	5.1	--	5.7
Samcera Risk Parity Benchmark		1.6	2.9	6.9	1.3	0.3	9.4	6.8	8.4	--	8.1
Excess		-1.1	2.8	-0.6	-0.3	1.7	-1.9	-1.8	-3.3	--	-2.4
AQR Global Risk III	178,633,600	0.0	5.3	5.4	1.3	2.1	8.1	3.6	4.1	--	4.8
Samcera Risk Parity Benchmark		1.6	2.9	6.9	1.3	0.3	9.4	6.8	8.4	--	8.1
Excess		-1.6	2.4	-1.5	0.0	1.8	-1.4	-3.2	-4.3	--	-3.3
Panagora	175,832,607	1.0	6.1	7.3	0.7	2.0	7.1	--	--	--	5.3
Samcera Risk Parity Benchmark		1.6	2.9	6.9	1.3	0.3	9.4	--	--	--	6.4
Excess		-0.6	3.2	0.3	-0.6	1.7	-2.3	--	--	--	-1.1
Alternatives	531,396,783	0.2	-0.3	0.2	2.1	0.6	5.4	5.0	4.7	-7.5	-2.2
Samcera Alternatives Benchmark		1.5	-1.7	-2.2	5.8	5.9	11.8	6.8	8.5	11.9	7.7
Excess		-1.3	1.5	2.4	-3.7	-5.3	-6.4	-1.8	-3.8	-19.4	-9.9
Private Equity	285,461,983	1.2	-0.1	0.7	8.5	11.4	12.7	13.4	12.5	--	-17.5
Samcera PE Benchmark		3.8	2.7	12.9	5.2	8.2	19.0	13.4	16.2	--	16.4
Excess		-2.6	-2.8	-12.2	3.3	3.2	-6.2	0.0	-3.7	--	-33.9
Absolute Return	245,934,799	-0.9	-0.5	-0.4	-4.7	-10.1	-2.1	2.8	3.1	--	2.7
Samcera LIBOR + 4%		0.5	1.6	1.1	4.2	6.2	5.3	4.9	4.7	--	4.6
Excess		-1.4	-2.1	-1.4	-8.8	-16.2	-7.4	-2.1	-1.6	--	-1.9

San Mateo County Composite Return Summary

February 28, 2019



Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
AQR Delta XN	146,815,152	-1.9	-1.9	-2.3	-8.1	-14.5	-3.8	1.9	2.4	--	2.1
Samcera LIBOR + 4%		0.5	1.6	1.1	4.2	6.2	5.3	4.9	4.7	--	4.6
Excess		-2.4	-3.5	-3.4	-12.3	-20.7	-9.1	-3.0	-2.3	--	-2.5
SamCERA-Aberdeen Std GARS	99,119,647	0.5	1.7	2.7	0.9	-2.5	0.4	--	--	--	-0.6
Samcera LIBOR + 4%		0.5	1.6	1.1	4.2	6.2	5.3	--	--	--	5.2
Excess		-0.0	0.1	1.6	-3.3	-8.7	-4.9	--	--	--	-5.7
Inflation Hedge	795,060,547	0.5	2.9	5.1	1.0	3.8	--	--	--	--	7.6
SamCERA Inflation Hedge Index		0.6	2.5	3.0	1.5	4.0	--	--	--	--	6.6
Excess		-0.1	0.4	2.1	-0.5	-0.2	--	--	--	--	1.0
TIPS	45,495,463	0.0	1.5	1.4	0.2	1.7	--	--	--	--	1.5
BBG Barclays US TIPS		-0.0	1.9	1.3	0.1	1.9	--	--	--	--	1.1
Excess		0.1	-0.4	0.1	0.1	-0.2	--	--	--	--	0.4
Brown Brothers Harriman	4,779	--	--	--	--	--	--	--	--	--	--
BBG Barclays US TIPS		--	--	--	--	--	--	--	--	--	--
Excess		--	--	--	--	--	--	--	--	--	--
Real Estate	365,458,847	0.0	2.1	2.1	4.7	8.4	--	--	--	--	8.7
Samcera NCREIF ODCE EW (gross)		0.0	1.6	0.0	3.7	8.3	--	--	--	--	7.8
Excess		0.0	0.5	2.1	0.9	0.2	--	--	--	--	0.9
Invesco Core Real Estate	267,997,258	0.0	2.1	2.1	4.6	9.0	8.6	10.6	10.7	6.4	7.9
Samcera NCREIF ODCE EW (gross)		0.0	1.6	0.0	3.7	8.3	8.4	10.5	11.0	6.8	7.7
Excess		0.0	0.5	2.1	0.9	0.7	0.2	0.0	-0.3	-0.5	0.2
Invesco US Val IV	23,012,456	0.0	4.1	4.1	8.5	11.0	9.3	--	--	--	12.1
Samcera NCREIF ODCE EW (gross)		0.0	1.6	0.0	3.7	8.3	8.4	--	--	--	8.9
Excess		0.0	2.5	4.1	4.7	2.7	0.8	--	--	--	3.2
PGIM Real Estate US Debt Fund	70,195,248	0.0	1.7	1.7	3.7	5.5	--	--	--	--	4.0
Samcera NCREIF ODCE EW (gross)		0.0	1.6	0.0	3.7	8.3	--	--	--	--	7.4
Excess		0.0	0.0	1.7	-0.1	-2.7	--	--	--	--	-3.4

San Mateo County Composite Return Summary

February 28, 2019

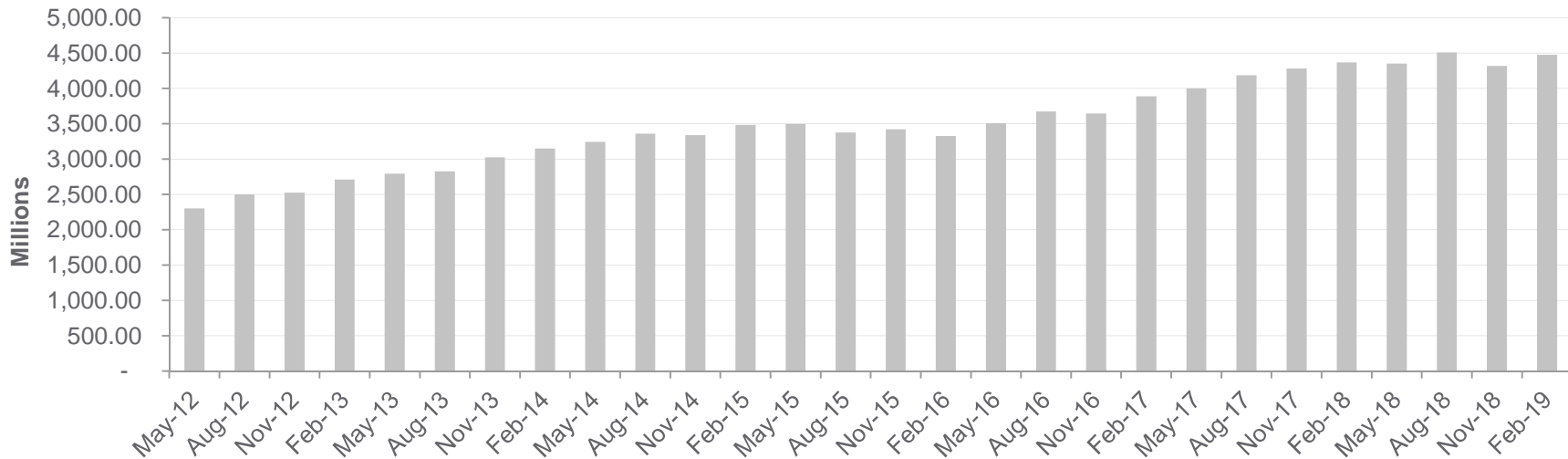


Composite Returns (NET)	Market Value (\$)	1 Mth.	3 Mth.	YTD	FYTD	1 Yr.	3 Yr.	5 Yr.	7 Yr.	10 Yr.	ITD
SAMCERA - Invesco US VAL V	4,253,886	--	--	--	--	--	--	--	--	--	0.0
Samcera NCREIF ODCE EW (gross)		--	--	--	--	--	--	--	--	--	--
Excess		--	--	--	--	--	--	--	--	--	--
Public Real Assets	316,966,787	1.2	4.4	10.4	-3.6	-1.7	--	--	--	--	--
SamCera Liquid Real Asset Inde		1.8	5.1	9.6	-1.3	0.8	--	--	--	--	8.3
Excess		-0.6	-0.7	0.8	-2.2	-2.5	--	--	--	--	--
CUSHING MLP ALPHA TR	72,519,549	-0.8	2.2	13.3	-9.3	--	--	--	--	--	-9.3
50% BC US TIPS/50% SamCERA CRA		0.9	3.6	5.4	-0.5	--	--	--	--	--	-0.5
Excess		-1.7	-1.4	7.9	-8.8	--	--	--	--	--	-8.8
SSGA CST REAL ASSET NL	244,447,239	1.8	5.1	9.5	-1.7	0.2	--	--	--	--	--
SamCera Liquid Real Asset Inde		1.8	5.1	9.6	-1.3	0.8	--	--	--	--	6.4
Excess		-0.0	-0.1	-0.0	-0.4	-0.6	--	--	--	--	--
Private Real Assets	67,139,449	-0.1	1.5	0.7	5.0	8.5	--	--	--	--	15.3
SamCERA Private Real Asset Idx		0.0	-2.0	-2.7	1.6	--	--	--	--	--	--
Excess		-0.1	3.5	3.5	3.4	--	--	--	--	--	--
Cash	45,948,939	0.1	0.2	0.2	0.6	1.0	0.8	0.6	0.6	0.7	1.9
Samcera Cash Benchmark		0.2	0.6	0.4	1.4	2.0	1.1	0.7	0.5	0.4	1.8
Excess		-0.1	-0.4	-0.2	-0.8	-1.1	-0.3	-0.1	0.1	0.3	0.1
SamCera General Account	19,025,112	0.2	0.6	0.4	1.6	2.2	1.3	0.9	0.7	0.6	2.0
SamCera Transition Account	79,840	--	--	--	--	--	--	--	--	--	--
County Treasury Pool	26,843,988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	2.5
San Mateo County ERA	4,473,822,236	1.3	2.7	6.0	1.1	1.2	9.0	5.7	7.5	10.4	6.6
Samcera Total Plan Benchmark		1.7	2.6	5.8	2.2	2.2	10.1	6.0	7.8	11.2	7.0
Excess		-0.3	0.1	0.2	-1.2	-1.0	-1.1	-0.3	-0.3	-0.8	-0.4

Record of Asset Growth

	Three Months	One Year
TOTAL FUND		
Beginning Market Value	4,315,543,850	4,364,846,691
Contributions	327,616,232	519,757,309
Withdrawals	-290,650,786	-479,014,521
Income Received	11,944,317	44,686,899
Gain/Loss	107,978,511	17,718,807
Ending Market Value	4,473,822,236	4,473,822,236

Net Asset Values Over Time (\$'000)

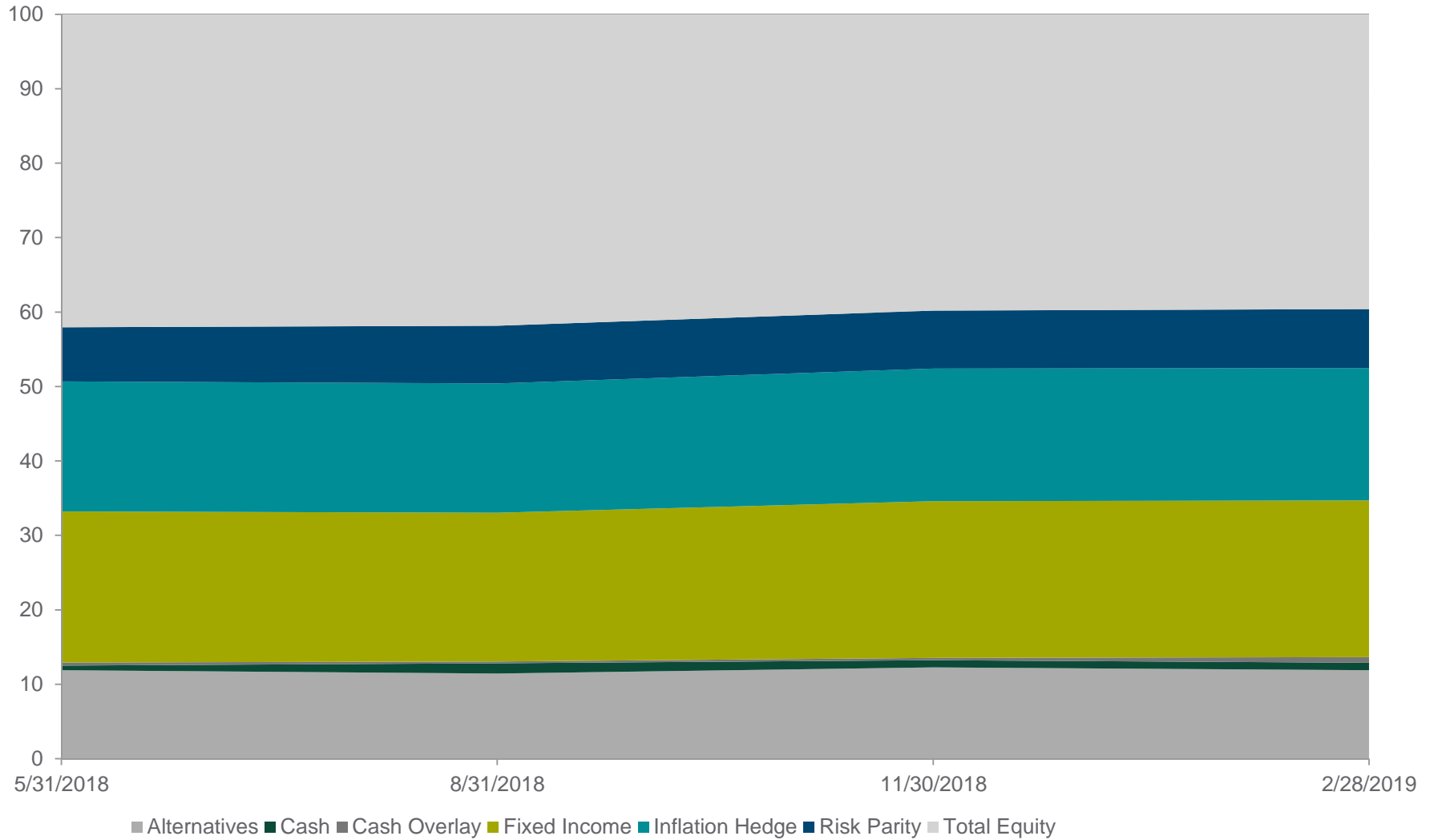


Actual vs Target Weights

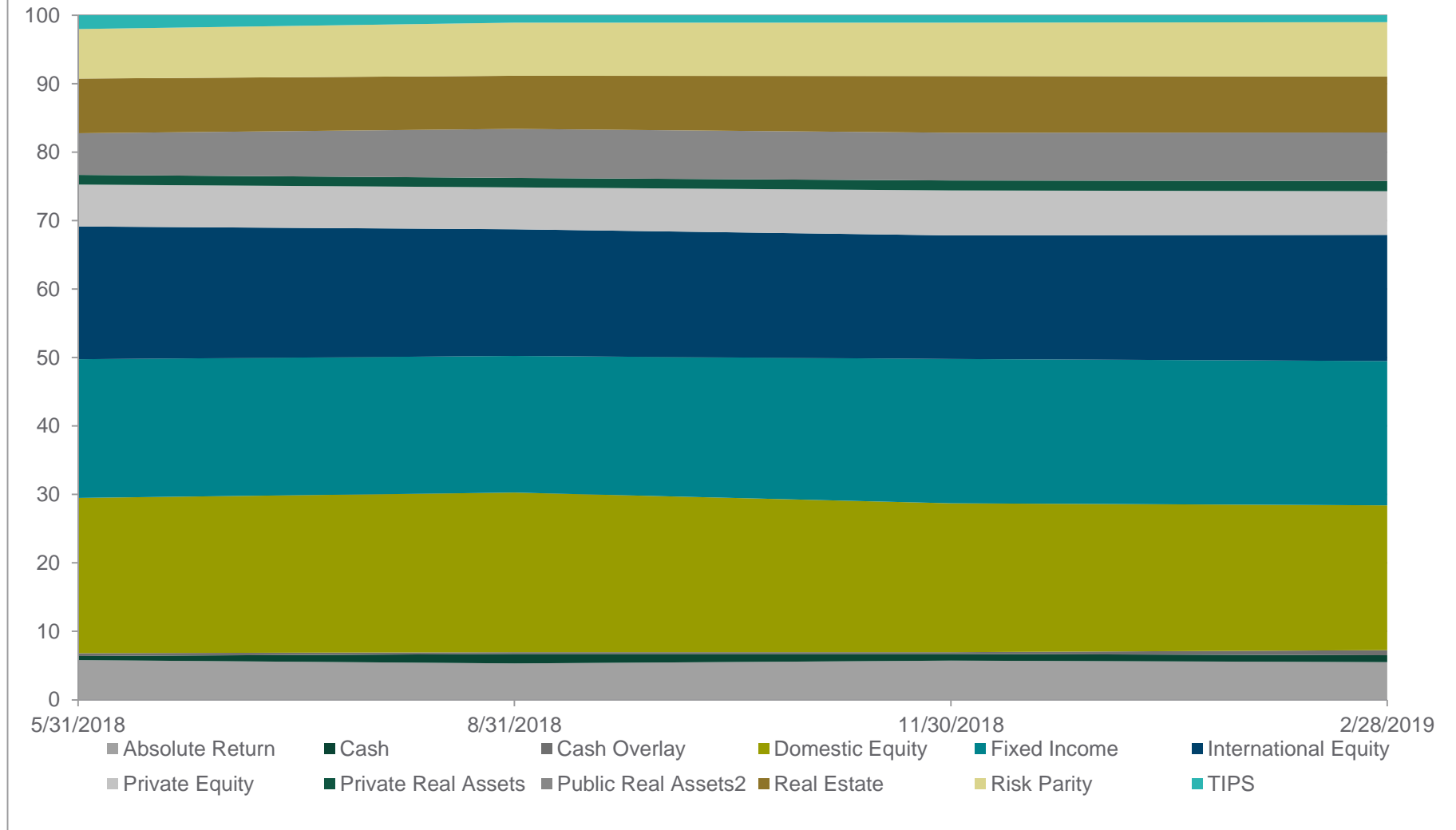


	Min	Actual	Target	Deviation	Max
Domestic Equity	20.0	21.2	22.0	-0.8	24.0
International Equity	17.0	18.4	19.0	-0.6	21.0
Fixed Income	19.0	21.1	21.0	0.1	23.0
Private Equity	4.0	6.4	6.0	0.4	8.0
Risk Parity	6.0	7.9	8.0	-0.1	10.0
Absolute Return	4.0	5.5	6.0	-0.5	8.0
TIPS	0.0	1.0	2.0	-1.0	4.0
Public Real Assets	4.0	7.1	6.0	1.1	8.0
Real Estate	6.0	8.2	8.0	0.2	10.0
Private Real Assets	0.0	1.5	2.0	-0.5	4.0

Asset Allocation over Time



Sub-Asset Class Allocation Over Time



Disclaimer(s)

The Global Industry Classification Standard ("GICS") was developed by and is the exclusive property and a service mark of Morgan Stanley Capital International Inc. ("MSCI") and Standard & Poor's, a division of The McGraw-Hill Companies, Inc. ("S&P") and is licensed for use by The Northern Trust Corporation and its wholly owned subsidiaries. Neither MSCI, S&P, nor any other party involved in making or compiling the GICS or any GICS classifications makes any express or implied warranties or representations with respect to such standard or classification (or the results to be obtained by the use thereof), and all such parties hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability and fitness for a particular purpose with respect to any of such standard or classification. Without limiting any of the foregoing, in no event shall MSCI, S&P, any of their affiliates or any third party involved in making or compiling the GICS or any GICS classifications have any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

The Dow Jones Wilshire Indexes are calculated, distributed and marketed by Dow Jones & Company, Inc. pursuant to an agreement between Dow Jones and Wilshire and have been licensed for use. All content of the Dow Jones Wilshire Indexes © 2005 Dow Jones & Company, Inc. & Wilshire Associates Incorporated.

Standard and Poor's including its subsidiary corporations ("S&P") is a division of the McGraw-Hill Companies, Inc. Reproduction of S&P Index Alerts in any form is prohibited except with the prior written permission of S&P. Because of the possibility of human or mechanical error by S&P sources, S&P or others, S&P does not guarantee the accuracy, adequacy, completeness or availability of any information and is not responsible for any errors or omissions or for the results obtained from the use of such information. S&P gives not express or implied warranties, including, but not limited to, any warranties or merchantability or fitness for a particular purpose or use. In no event shall S&P be liable for any indirect, special or consequential damages in connection with subscriber's or others' use of S&P Index Alerts.

All MSCI equity characteristic results except for Dividend Yield, Price to Book Value, Price to Cash Earnings and Price Earnings Ratio were calculated by The Northern Trust Company. FTSE © is a trade mark of London Stock Exchange Plc and The Financial Times Limited and is used by FTSE under license. All rights in the FTSE Indices vest in FTSE and/or its licensors. Neither FTSE nor its licensors accept any liability for any errors or omissions in the FTSE Indices or underlying data.

The Merrill Lynch Indices are used with permission. Copyright 2007, Merrill Lynch, Pierce, Fenner & Smith Incorporated. All rights reserved. The Merrill Lynch Indices may not be copied, used, or distributed without Merrill Lynch's prior written approval.

The Citi Index data is provided to you on an "AS IS" basis and you agree that use of the index data is at your sole risk. Citi Index makes no representations or warranties, express or implied, to you or any other person or entity, including without limitation any warranty of merchantability, originality, suitability or fitness for a particular purpose of the index data or any other matter and no warranty is given that the index data will conform to any description thereof or be free of omissions, errors, interruptions or defects. 4. In no event shall Citi Index be liable to you or any other person or entity for any direct, incidental, indirect, special or consequential damages (including, without limitation,

lost profits or revenues, loss of data, loss of use or claims of third parties), arising out of or in any manner in connection with your use of (or inability to use) the index data, whether or not you have been advised of, or otherwise might have anticipated the possibility of, such damages. Without limitation on the foregoing, you acknowledge that the index data may be incomplete or condensed, is for information purposes only and is not intended as, and shall not be construed to be, an offer or solicitation with respect to the purchase or sale of any security. All opinions and estimates provided constitute judgments as of their respective dates and are subject to change without notice. Such data, information, opinions and estimates are furnished as part of a general service, without regard to your particular circumstances, and Citi Index shall not be liable for any damages in connection therewith. Citi Index is not undertaking to manage money or act as a fiduciary with respect to your accounts or any of your managed or fiduciary accounts and you acknowledge and agree that the index data does not and shall not serve as the primary basis for any investment decisions made with respect to such accounts.

iShares® and BlackRock® are registered trademarks of BlackRock, Inc. and its affiliates ("BlackRock") and are used under license. BlackRock has licensed certain trademarks and trade names of BlackRock to The Northern Trust Company. The Northern Trust Company's products and services are not sponsored, endorsed, sold, or promoted by BlackRock, and BlackRock makes no representations or warranties related to such products or services either to The Northern Trust Company or any other person or entity, including but not limited to the advisability of investing in the products of The Northern Trust Company. BlackRock has no obligation or liability in connection with the operation, marketing, trading or sale of the products or services from The Northern Trust Company.

Please note that this report has been prepared using best available data. This report may also contain information provided by third parties, derived by third parties or derived from third party data and/or data that may have been categorized or otherwise reported based upon client direction - Northern Trust assumes no responsibility for the accuracy, timeliness or completeness of any such information. If you have questions regarding third party data or direction as it relates to this report, please contact your Northern Trust relationship team.

INVESTMENT ADVICE NOTICE: The data and analysis contained in this report is for informational purposes only. In providing the information contained herein, The Northern Trust Company is not undertaking to provide "investment advice" or to give advice in a fiduciary capacity for purposes of the Employee Retirement Income Security Act of 1974, as amended. Nothing in this report is intended as, or should be understood as, a recommendation to hire, retain, or terminate an investment manager or engage in any purchase or sale transaction with such a manager or any fund that it manages. The Northern Trust Company and/or its affiliates may have business relationships with one or more investment managers or funds for included in this report, and may receive compensation for providing custody, administration, banking, brokerage, foreign exchange or other services to such investment managers or funds. The Northern Trust Company and its affiliates shall have no responsibility for the consequences of investment decisions made in reliance on information contained in this report.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.2

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

SUBJECT: Presentation by Cliff Asness of AQR

Recommendation

Participate in the presentation by Cliff Asness and provide direction to staff as needed.

Background

AQR manages two strategies for SamCERA. SamCERA has \$179 million invested in the AQR Global Risk Premium Fund (Risk Parity), and \$147 million invested in the AQR DELTA XN Fund (Absolute Return).

Discussion

Cliff Asness, a Founder and Chief Investment Officer of AQR, will discuss the roles that hedge fund risk premia can play in a total portfolio, and also discuss the 2018 performance of these strategies. Cliff's presentation will be distributed in the day of folder. Cliff's bio is included below.

Clifford S. Asness, Ph.D., *Managing and Founding Principal*


Cliff is a Founder, Managing Principal and Chief Investment Officer at AQR Capital Management. He is an active researcher and has authored articles on a variety of financial topics for many publications, including The Journal of Portfolio Management, Financial Analysts Journal and The Journal of Finance. He has received five Bernstein Fabozzi/Jacobs Levy Awards from The Journal of Portfolio Management, in 2002, 2004, 2005, 2014 and 2015. Financial Analysts Journal has twice awarded him the Graham and Dodd Award for the year's best paper, as well as a Graham and Dodd Excellence Award, the award for the best perspectives piece, and the Graham and Dodd Readers' Choice Award. In 2006, CFA Institute presented Cliff with the James R. Vertin Award, which is periodically given to individuals who have produced a body of research notable for its relevance and enduring value to investment professionals. Prior to co-founding AQR Capital Management, he was a Managing Director and Director of Quantitative Research for the Asset Management Division of Goldman, Sachs & Co. He is on the editorial board of The Journal of Portfolio Management, the governing board of the Courant Institute of Mathematical Finance at NYU, the board of directors of the Q-Group, the board of the International Rescue Committee and the board of trustees of The National WWII Museum. Cliff received a B.S. in economics from the Wharton School and a B.S. in engineering from the Moore School of Electrical Engineering at the University of Pennsylvania, graduating summa cum laude in both. He received an M.B.A. with high honors and a Ph.D. in finance from the University of Chicago, where he was Eugene Fama's student and teaching assistant for two years (so he still feels guilty when trying to beat the market).

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.3

TO: Board of Retirement

FROM: Doris Ng, Investment Analyst 

SUBJECT: Report on Cash Overlay (Parametric) Annual Review

Recommendation

Accept the report on the annual review of SamCERA's overlay manager.

Background

Parametric's institutional overlay strategies (formerly The Clifton Group) was hired in May 2013 to provide overlay management services to SamCERA. Parametric initially provided securitization of total fund cash, manager cash equitization, and overlay transition management services. Portfolio rebalancing was added in January 2014 and more recently, currency hedging was added in September 2018.

Parametric Policy Implementation Overlay Services (PIOS) provides increased operational efficiency for fund cash flow management, exposure management during manager transitions, elimination of performance drag due to residual manager cash, and rebalancing during times of meaningful deviation from policy targets. All of Parametric's overlay services are performed out of the Minneapolis (MN) Investment Center.

Discussion

On March 7th, SamCERA staff held the annual review meeting for the Parametric cash overlay strategy. Dan Wamre, Senior Portfolio Manager, attended from Parametric.

The meeting lasted approximately 1.5 hours, and consisted of a firm/organizational update, investment process review, and performance review and attribution.

Some organizational and personnel changes were discussed during the meeting, including the upcoming retirement of Jack Hansen, CIO of the MN Investment Center, in November 2019 and the departure of Tim Atwill, Head of Investment Strategy for equity-based strategies, in June 2019. Overall program results were in line with long-term expectations. From inception through January 31, 2019, the program produced a synthetic index overlay return of \$28.1 million, or 14 basis points of fund assets.

Meeting notes summarizing the findings from the annual review are attached to this memo.

Attachment

Parametric Cash Overlay Annual Review Meeting Notes 2019

Date of meeting: 3/7/19

Location: SamCERA Office

Manager Representative(s)

Dan Wamre, CFA (Senior PM)

Verus Representative

Joseph Abdou (Consultant)

Client Representative(s)

Mike Coultrip (CIO), Lilibeth Dames (Analyst),
Doris Ng (Analyst)

Product Description

Parametric's cash overlay program is an efficient way for SamCERA to maintain its target asset allocation in a systematic fashion through cash securitization at the fund and manager level, transition/reallocation support and asset class rebalancing back to target within defined bands. The cash overlay program is invested synthetically using liquid futures with cash balances reviewed daily. A combination of large and small cap futures implementation is the proxy for private equity. SamCERA's investment guidelines initially allowed only for cash overlay. Rebalancing was added to the SamCERA program in January 2014.

Parametric estimates that their overlay services should add 10-20 basis points to portfolio returns over time using their systematic approach. Since inception through 1/31/19, SamCERA's overlay program has added 14 basis points to portfolio returns since inception, in line with expectations.

Organization

Parametric Portfolio Associates is a majority-owned subsidiary of Eaton Vance Corp. Eaton Vance owns 93% of the firm with the remaining equity ownership at Parametric distributed among senior management and investment professionals. Parametric is comprised of three investment centers – Seattle, Minneapolis and Westport, CT. The firm's institutional overlay strategies reside within the Minneapolis investment center which was formerly The Clifton Group prior to Parametric's acquisition of the firm in 2012. Eaton Vance, Parametric's parent company, acquired the business assets of Calvert Investments effective January 1, 2017.

Parametric's firm-wide assets under management are currently \$217 billion in total as of 12/31/18. The firm manages over \$77 billion in overlay strategies representing 212 client relationships managed out of Minneapolis. Over the past year, 14 accounts and \$2.1 billion were gained, while 6 accounts and \$360 million were lost.

Investment Team

The Parametric Overlay team has 31 team members in total. Minneapolis CIO Jack Hansen has been with the firm for more than 30 years. Jack announced his retirement in November 2018. He will stay on as CIO until October 31, 2019 to ensure a smooth transition.

In January 2019, Tim Atwill announced he plans to step away from the investment management industry, Tim is currently the head of investment strategy for equity-based strategies and was going to join Tom Lee as Co-CIO. Instead, Tom Lee will be the sole CIO in November 2019. Dan Wamre, Senior Portfolio Manager, has worked at

Parametric, and formerly The Clifton Group, since he was an intern in 1995. Parametric uses a team approach whereby no one individual manages a client portfolio.

Investment Strategy

Parametric's cash overlay services are known internally as Policy Implementation Overlay Services (PIOS). The objectives of PIOS are to: 1) increase day-to-day availability of cash and provide operational efficiency for cash flow management, 2) eliminate performance drag due to unintended cash, 3) enable staff to obtain a daily snapshot of total fund exposures, and 4) maintain asset class exposure during manager changes.

Parametric uses liquid futures in the implementation of PIOS. US equity exposures are maintained using large cap and small cap futures. Non-US equity exposures are replicated using developed and emerging markets futures. Fixed income Treasury futures are used for bond replication so interest rate sensitivities are addressed. Credit exposure is not addressed so there is some tracking error within the fixed income asset class compared to SamCERA exposures.

Currently, 92% of trades are through Morgan Stanley. When asked if this was a concern due to counterparty risk, Dan noted the trades go through clearing houses which have hundreds of participants, so Morgan Stanley isn't the sole counterparty. Parametric reduced its trade allocation to Goldman Sachs through the year due to increased fees that Goldman Sachs started charging.

New this year is the addition of currency hedging which hedges half the notional value of developed international equities. The addition of currency hedging started in September 2018 at 10% of international equity and adds 10% to the hedge quarterly until the Plan is 50% hedged.

Performance & Positioning

Parametric has implemented its overlay strategy within SamCERA's guidelines, reducing cash and maintaining the portfolio target asset allocation within tight tracking error bands. SamCERA experienced six synthetic rebalancing events in 2018 in conjunction with above average volatility in the market. There were also two large inflows in January (\$20M) and July (\$60M) which is consistent with other years. The overlay has lost 2 bps for the portfolio over the past year, which was offset by the 24 bps gain in January 2019.

The Fund is still legging into the currency hedge, but since inception (9/17/18) the fund has gained \$298,000 from this strategy.

Conclusion


Verus continues to have confidence in Parametric's overlay capabilities and Parametric's implementation of SamCERA's program. Alpha and tracking to the fund's strategic asset allocation are in line with expectations.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.4

TO: Board of Retirement

FROM: Doris Ng, Investment Analyst 

SUBJECT: Report on Global Custodian (Northern Trust) Annual Review

Recommendation

Accept the report on the annual review of SamCERA's custodian bank.

Background

Northern Trust became SamCERA's custodian effective July 1, 2014. Northern Trust provides SamCERA with global custody and securities lending services.

Discussion

On March 7th, SamCERA staff held the annual review meeting in SamCERA's office for Northern Trust. Colleen Brennan (Client Executive), Matt Pfaff (Client Service Manager), Shane Crea (Performance Consultant), Don Anderson (Securities Lending Consultant) and Joe Kepinski (Accounting Manager) attended from Northern Trust.

The meeting lasted approximately 1.5 hours, and consisted of a firm/organizational update, global custody overview, securities lending review, and a service performance review.

Northern Trust continues to provide consistent and reliable levels of service to staff in accordance with expectations. In February's board meeting, the Board approved the extension of SamCERA's current contract with Northern Trust for another 5-year term. There were no major concerns identified during the review.

Attachments

Northern Trust Custodial Annual Review Questionnaire 2019
Northern Trust Custodial Annual Review Presentation 2019



NORTHERN
TRUST



An Annual Review Questionnaire for:

SAMCERA

February 28, 2019

CONFIDENTIALITY STATEMENT

Confidentiality Notice: This communication is confidential, may be privileged, and is meant only for the intended recipient. If you are not the intended recipient, please notify the sender as soon as possible. All materials contained in this presentation, including the description of Northern Trust, its systems, processes and pricing methodology, are proprietary information of Northern Trust. In consideration of acceptance of these materials, the recipient agrees that it will keep all such materials strictly confidential and that it will not, without the prior written consent of Northern Trust, distribute such materials or any part thereof to any person outside the recipient's organisation or to any individual within the recipient's organisation who is not directly involved in reviewing this presentation, unless required to do so by applicable law. If the recipient is a consultant acting on behalf of a third party client, the recipient may share such materials with its client if it includes a copy of these restrictions with such materials. In such event, the client agrees to comply with these restrictions in consideration of its accepting such materials.

© 2018 Northern Trust Corporation. Head Office: 50 South La Salle Street, Chicago, Illinois 60603 U.S.A. Incorporated with limited liability in the U.S. Products and services provided by subsidiaries of Northern Trust Corporation may vary in different markets and are offered in accordance with local regulation.

This material is directed to professional clients only and is not intended for retail clients. For Asia-Pacific markets, it is directed to expert, institutional, professional and wholesale investors only and should not be relied upon by retail clients or investors.

For legal and regulatory information about our offices and legal entities, visit <http://www.northerntrust.com/disclosures>

The following information is provided to comply with local disclosure requirements: The Northern Trust Company, London Branch; Northern Trust Global Services PLC; Northern Trust Global Investments Limited; Northern Trust Securities LLP. Northern Trust Global Services PLC, Abu Dhabi Branch, registration Number 000000519 licenced by ADGM under FSRA # 160018. The Northern Trust Company of Saudi Arabia - a Saudi closed joint stock company - Capital SAR 52 million. Licensed by the Capital Market Authority - License No. 12163-26 - C.R: 1010366439. Northern Trust Global Services PLC Luxembourg Branch, 6 rue Lou Hemmer, L-1748 Senningerberg, Grand-Duché de Luxembourg, *Succursale d'une société de droit étranger* RCS B129936. Northern Trust Luxembourg Management Company S.A., 6 rue Lou Hemmer, L-1748 Senningerberg, Grand-Duché de Luxembourg, *Société anonyme* RCS B99167. Northern Trust (Guernsey) Limited (2651)/Northern Trust Fiduciary Services (Guernsey) Limited (29806)/Northern Trust International Fund Administration Services (Guernsey) Limited (15532) Registered Office: Trafalgar Court Les Banques, St Peter Port, Guernsey GY1 3DA.

CONTACT DETAILS

Colleen Brennan

Vice President

Client Executive

Tel 312.444.3720

Email CMB11@ntrs.com

The Northern Trust Company

50 South LaSalle Street

Chicago, IL 60603

www.northerntrust.com

TABLE OF CONTENTS

CONFIDENTIALITY STATEMENT	2
CONTACT DETAILS	3
EXHIBITS.....	5
ORGANIZATIONAL UPDATE	6
CUSTODIAL/ACCOUNTING REVIEW	12
SECURITIES LENDING REVIEW	21
PERFORMANCE & ANALYTICAL REVIEW.....	22
OUTLOOK/CONCLUSION	26

EXHIBITS

Exhibit	SOC 1
Exhibit	Northern Trust's Ethics Policy
Exhibit	BCDR Brochure

ORGANIZATIONAL UPDATE

1. Provide an update on The Northern Trust's organization, with particular emphasis on (a) changes to your management structure over the past eighteen months and (b) additions/deletions in clients and (c) change in assets that you custody. All significant changes should be accompanied by an explanation.

CHANGES TO MANAGEMENT STRUCTURE

As our clients' needs continue to grow in both the domestic and international marketplace, we will continue to proactively realign our services to incorporate one global arena. We have detailed below any significant changes to our senior management staff in the past three years, but confirm these did not disrupt client servicing in any manner.

Year	Date	Individual	Details
2018	13 th November	Rick Waddell	Rick Waddell will retire as Chairman of the Board of Directors, effective 23 rd January 2019. Michael O'Grady will succeed Rick as Chairman, retaining his roles as President and Chief Executive Officer.
	2 nd October	Bill Morrison / Steve Potter	Both Vice Chairmen of Northern Trust announced the decision to retire at the end of 2018.
	31 st August	Jana Schreuder	Chief Operating Officer retired from Northern Trust.
	17 th August	Jeff Cohodes	President, C&IS-Americas, as well as Chief Advisor for Global Counterparty Strategy, retired from Northern Trust.
	24 th May	Gill Pembleton / Joyce St. Clair	Chief Human Resources Officer has decided to retire from Northern Trust. Joyce St. Clair succeeded Gill as Chief Human Resources Officer on 1st July.
	14 th May	David Kim	Appointed as Head of Sales, Asia Pacific, effective immediately.
	28 th February	Angelo Calvitto	Appointed as Head of Australia and New Zealand effective 7 th June 2018. He previously served as Head of Sales, Asia Pacific.
2017	17 th October	Michael O'Grady / Rick Waddell	Michael O'Grady appointed as Chief Executive Officer effective 1 st January 2018. He continues to serve as the President of Northern Trust Corporation. Rick Waddell continues to serve as chairman of the board.
	19 th July	David Wicks	Former Head of Enterprise Enablement, EMEA, appointed as Head of Continental Europe.
	17 th July	Steve Potter	Appointed to a new role as Vice Chairman.
	17 th July	Shundrawn Thomas	Appointed President of Asset Management.

CLIENTS GAINED/LOST

The following table represents the number of clients gained and lost and their market value over the past 2 years.

CLIENTS GAINED			CLIENTS LOST		
Year	Number of Clients	Market Value (\$ billions)	Year	Number of Clients	Market Value (\$ billions)
2018*	46	\$56.31	2018*	25	\$151.49**
2017*	67	\$188.23	2017*	14	\$47.20

*As of year-end 2016 gain/loss statistics are tracked regionally. The provided 2017-2018 numbers are U.S. only clients.

**Please note – 88% of the total lost market value is derived from the loss of one corporate cash client.

CHANGE IN ASSETS

As of December 31, 2018 Northern Trust had 2,408 institutional trust and custody clients with approximately \$7.0 trillion in assets. The following table breaks out our client base by market segment.

As of December 31, 2017, Northern Trust had 2,242 institutional trust and custody clients with approximately \$7.4 trillion in assets.

2. What is Northern's philosophy and current policy regarding new business?

We review our staffing needs, both on a corporate-wide and division-specific basis, throughout the year to determine the appropriate staffing levels to meet our annual growth expectations. Based on the results of these reviews, we increase or move staff as appropriate to continue to provide our clients the highest level of service.

3. Provide a list of services available through your firm, including the number of staff supporting those services.

MASTER TRUST/MASTER CUSTODY – STAFF FIGURES

As of December 31, 2018, Northern Trust had 19,110 total active employees worldwide. Of this figure, 13,372 individuals are dedicated to supporting our worldwide institutional asset servicing business.

We have broken this figure down by functional category below.

Department	Total
Accounting	561
Alternative Assets	852
Asset Coding & Pricing	118
Asset Servicing	1,513
Banking	361
Client Servicing	471
Executive	75
Finance	529
Foreign Exchange and Cash	451
Human Resources & Training	357
Investment Manager Servicing (GFS)	5,174
Investment Risk & Analytical Services (IRAS)	389
Legal	112
Marketing/Business Development	140
NTSI/Brokerage	100
Product Management & Support	202
Risk Management	663
Securities Lending	221
Technology & Other Operations Support	1,083
Total	13,372

4. Has your firm or any of its employees been involved in regulatory or litigation actions related to your business in the past eighteen months? If yes, please provide details.

No, in the past 18 months, Northern Trust has not been subject to any litigation that has had a material effect on its ability to perform services for its clients.

Northern Trust is also not currently involved in any government or regulatory investigation or proceeding that would have a material impact on its ability to provide custody services to its clients.

- 5. Provide an assessment of the most recently conducted internal and external audits of your firm as they relate to the areas of custody, accounting, performance and/or security lending. Please note any material findings or recommendations if applicable.**

INTERNAL AUDIT FRAMEWORK

Northern Trust maintains an internal audit staff (known as Audit Services) who are financial, operational, risk, compliance, and information technology (IT) specialists located globally.

Audit Services reports directly to the Audit Committee chairman, a member of the Board of Directors. All worldwide auditors ultimately report to the Executive Vice President/General Auditor, who reports directly to the Audit Committee and administratively reports to the Chairman & CEO.

PROCESS AND METHODOLOGY

Audit Services is organized to parallel the corporation's business unit structure, producing benefits such as increased contact with, and access to, business unit managers.

Audit Services uses a risk-based methodology to arrive at a rolling 12 month plan based on assessment of inherent risk and an evaluation of controls in order to arrive at residual risk. In addition, this risk-based plan is overlaid with coverage of the key operating risks and controls as part of the SOC 1 Report.

Audits and SOC 1 testing are executed on a global basis to ensure adequacy of coverage and to promote consistency in policies and control procedures. The annual Audit Plan is assessed based on the Audit Services continuous monitoring and risk assessment effort which includes:

- Regular meetings with regulators, external auditors, and risk management/compliance
- Participation as a non-voting member in risk committees, councils, and task forces, as well as in product risk and service provider reviews
- Quarterly call programs and discussions with Executive and Senior Management
- Audit Watch Lists developed and Audit Plan adjusted quarterly based on ongoing assessments of risks and issues

A rated report is issued for all audits performed, and the results are shared with senior management and relevant internal governance committee(s), as well as with the Audit Committee. Audit Services monitors the closure of issues reported and performs follow-up work using a risk-based approach.

EXTERNAL AUDIT

Northern Trust's consolidated financial statements are audited annually by KPMG. As part of its annual review, KPMG provides an opinion of our accounting methodology as being in conformity with U.S. Generally Accepted Accounting Principles (GAAP).

In addition, Northern Trust prepares an in-depth report (SOC 1 Report) on the internal controls applicable to processing client transactions. We engage KPMG to perform an examination of our SOC 1 Report in accordance with The American Institute of Certified Public Accountants' (AICPA) Statement on Standards for Attestation Engagements (SSAE) No. 18 "Attestation Standards: Clarification and Recodification, Assurance Reports on Controls at a Service Organization" and give us an opinion as to the operating effectiveness of the controls identified.

Northern Trust's SOC 1 Report, inclusive of the opinion provided by KPMG, is intended to relieve a client's auditor of the necessity of a similar study of its procedures during the audit of a particular plan. The Custody and Fund Services SOC 1 Report is produced on a semi-annual basis and accompanies our clients' annual reporting package.

Please refer to the attached Exhibit for our most recent SOC 1 Report.

MATERIAL FINDINGS

There have been no material issues noted by internal and external audits since the last audit.

6. Describe the levels of insurance coverage maintained by your firm. E-mail a current certification of insurance to Investments@samcera.org.

Northern Trust maintains the following corporate insurance coverage to protect the Bank against extraordinary events:

- **Bankers Blanket Bond** - USD \$50 Million limit. Insured with Chubb, AIG, HCC, and CNA. The Bankers Blanket Bond covers criminal acts of officers and employees, loss of property (cash-securities) through burglary, robbery, false pretences, mysterious disappearance, on premises, in-transit, forgery, alteration of securities, forgery with loan participation, or trading. This policy conforms to Section 412 of the Employee Retirement Income Security Act of 1974 (ERISA). This policy is required for FDIC insured institutions. This policy expires June 1, 2019. Lead Policy #81865905.
- **Electronic Computer Crime Policy** - USD \$250 Million limit. Insured with Chubb, AIG, HCC, CNA, Berkshire Hathaway, QBE, Lloyds of London, Berkley, Everest. Protects Northern from dishonest acts of loss resulting directly from the Insured having transferred, paid or delivered any money or property as the direct result of fraudulent input or modification of electronic data into the Insured's computer systems or computer programs; fraudulent voice initiated money transfers or electronic communications to or from the Insured; forged telefax, acts of hacker, virus, causing damage or destruction to data or media, including robbery, burglary, larceny, theft, extortion. This policy expires June 1, 2019. Lead Policy #81944186.
- **Excess Bond and Electronic Computer Crime Policy** - USD \$100 Million limit. Insured with Great American, Liberty Mutual, Zurich, HCC, Axis, CNA, Lloyds of London. Provides additional excess limits upon the exhaustion of limits under the Bankers Blanket Bond and the Electronic Computer Crime Policy. This policy expires June 1, 2019. Lead Policy # FS217-14-57-15-00.
- **All Risk Physical Loss of Securities** - USD \$50 Million limit. Insured with Lloyds of London. This insurance provides protection for loss of customer's securities while in our custody or held at any other assigned custodial location. This policy serves in conjunction with the exhaustion of the Bankers Blanket Bond to provide excess limits for securities held at other than the bank premises and while in transit. This annual policy expires June 1, 2019. Lead Policy # FS1690403.

The Depository Trust & Clearing Corporation (DTCC) provides additional levels of protection for on-premises and transit coverage as well as numerous other policies designed to protect institutions that use DTCC services: Fidelity Bond/Electronic Computer Crime/Professional Liability coverage USD \$100 Million insured through Lloyds of London; All Risk Premise & Transit coverage USD \$700 Million (excess to Bond/ECCP/PL limit) insured through Lloyds of London; Mail Insurance coverage USD \$20 Million limit insured through Travelers. These policies expire October 31, 2019.

- **Bankers Professional Liability Errors & Omissions** - USD \$100 Million limit. Insured with CNA, Zurich, Chubb, Liberty Mutual, HCC, AXIS, Arch, Nationwide, QBE. This policy protects Northern against a legal liability incurred from an act, error or omission committed in our performance of professional services. This policy includes cover for Lender Liability and Fiduciary Liability. This annual policy expires June 30, 2019. Lead Policy #267890778.
- **Directors & Officers Liability** - USD \$125 Million limit. Side A Liability - USD \$125 Million limit. Insured with CNA, Chubb, HCC, AIG, XL Catlin, Arch, Markel, Axis, Nationwide, Zurich, Travelers, QBE. Protects directors and officers against judgments, settlements and expenses arising from litigation brought against them while acting in their capacity as a director or officer. Policy also reimburses the Corporation for indemnification expenses and securities litigation. This annual policy expires June 30, 2019. Lead Policy #267890702.
- **Comprehensive Domestic General Liability** - USD \$2 Million Aggregate limit. Insured with Federal Insurance Company/Chubb. This policy has several lines of coverage protecting Northern from third party liability claims made against Northern. Per Occurrence Limit \$1 Million; Aggregate Limit \$2 Million; Personal & Advertising Injury \$1 Million; Damage to premises of others \$1 Million, Medical \$10,000; products and completed operations included in cover. This annual policy expires December 31, 2019. Policy #35762845.
- **Comprehensive Foreign General Liability** - USD \$2 Million Aggregate limit. Insured with Federal Insurance Company/Chubb. This policy has several lines of coverage protecting Northern from third party liability claims made against Northern. Per Occurrence Limit \$1 Million; Aggregate Limit \$2 Million; Personal & Advertising Injury \$1 Million; Damage to premises of others \$1 Million, Medical \$10,000; products and completed operations included in cover. This annual policy expires December 31, 2019. Policy #36028384.
- **Auto Liability** - USD \$1 Million limit. Insured with Federal Insurance Company/Chubb. This policy provides protection for bodily injury and property damage liability claims made against Northern for any owned, leased,

borrowed or hired vehicle (any auto coverage) by Northern Trust Corporation, its affiliated and subsidiary companies. This annual policy expires December 31, 2019. Policy #73508655.

- **Workers Compensation/Employers Liability** - Statutory for Workers Compensation - USD \$1,000,000 E.L. Each Accident/USD \$1,000,000 E.L. Each Disease/each employee/USD \$1,000,000 E.L. Disease Policy limit. Insured with CNA. This policy serves two purposes: provides medical and indemnity for employees who are injured on-the-job including coverage for occupational illness; and, provides liability coverage to the employer for alleged negligence for on-the-job injuries. This annual policy expires December 31, 2019. Policy # 656955377.
- **Employers Liability for United Kingdom** - GBP 25,000,000 limit. Insured by Zurich Insurance plc. This policy provides liability coverage to the employer for alleged negligence for on-the-job injuries. Several countries are included in this policy. This annual policy expires December 31, 2019. Policy #054/2C01/JJ352979/2.
- **Umbrella Liability** - USD \$75 Million Aggregate limit. Insured with Federal Insurance Co/Chubb; Continental Casualty Company/CNA. This policy serves in an excess limits capacity upon the exhaustion of liability policies so noted in the Schedule of Underlying on file with the insurance carriers. This annual policy expires December 31, 2019. Lead Policy #79219585.

Recognizing significant and well-thought out controls, the limits of insurance in place protecting our Corporation have been determined to be adequate by the Business Risk Committee of the Board of Directors of Northern Trust Corporation, as reviewed on an annual basis. All policies are for Named Insured: Northern Trust Corporation ET AL, which includes all subsidiary and affiliated companies. Insurance coverage is placed with well-respected insurance carriers, having an AM Best, Moody's and/or Standard & Poor rating of A- or better, financial sufficiency of "X" or better. Carrier's financial stability is reviewed annually by the Credit Risk Committee.

Insurance limits do not extend to third party clients, but rather act to reimburse Northern for its' insured loss. Client obligations and fiduciary responsibilities are not limited by insurance coverage terms, conditions, deductibles and limits, as insurance is never a guarantee that a claim may be covered by a policy of insurance. The Corporation remains responsible for legal liabilities imposed against it and to that end the capital of the Corporation is available.

A current certification of insurance has been submitted to Investments@samcera.org, and is also attached as an Exhibit.

7. Do you have a written policy on ethics? If so, please e-mail the policy to Investments@samcera.org.

A current copy of Northern Trust's Ethics Policy has been submitted to Investments@samcera.org, and is also attached as an Exhibit.

8. Update all significant personnel changes to the "SamCERA Team".

As of January 2019, Jeff Porta was promoted to manage the Public Fund Taft-Hartley team as well as the Non-for-Profit team. As a result, Gary Guibert, who now reports to Jeff, moved his newest role within the Public Funds team. He manages the entire Client Executive team which includes Colleen Brennan. In his current role, Gary is responsible to ensuring that each Client Executive has the tools and resources necessary to deliver on client expectations. He is also a point of elevation for every Public Fund and Taft-Hartley client.

Colleen Brennan continues to serve as the Client Executive that assures that Northern Trust is delivering on every service needed by SamCERA. With Matt Pfaff serving as the Client Service Manager that coordinates all day-to-day interactions with SamCERA and amongst our internal partners, Colleen and Matt combine their effort to secure delivery of consistent optimal service. Both are located in Chicago and sit near each-other to enhance efficiency and ease of communication.

9. Provide an overview of your firm's business continuity plan.

Northern Trust's business continuity philosophy and ongoing review efforts emphasize disaster prevention, mitigation and recovery. Our work environment is regularly reviewed to identify, avoid and/or minimize potential sources of risk and the likelihood of significant service interruptions.

Because we view data security and business continuity as mission-critical, we have devoted significant planning, resources and staff to the development and implementation of our plans. The primary components of these plans are summarized below:

- 24/7 / 365 monitoring of critical support systems, using staff and electronic tools.
- Two peer Corporate Data Centers in separate geographic locations – each complete with total system redundancy, data back-up, and sufficient processing and bandwidth capacity to run the critical workloads of both centers.
 - ◆ In the event of a disaster at one of our Corporate Data Centers, the other data center can recover all critical processing within 12 hours or less. Individual applications, whether disrupted by an entire data center outage or other incident, may be recovered in 5 hours or less.
 - ◆ Data centers are connected to multiple Internet entry points to ensure connectivity, and supported by a network with a highly redundant, self-healing where possible, diverse and easily re-routable design.
 - ◆ Critical production data is continuously mirrored between both centers via a private, dedicated point-to-point fiber optic network. An electronic data vaulting program is in place between both centers to further protect client data and ensure continuity. Robotic tape backups are also created daily, and stored in both data centers.
- State-of-the-art security and fire protection systems for all data processing facilities.
- Alternate work locations for staff, including our own recovery space, contracted recovery space, and work-from-home programs.
- Regularly scheduled site hazard analyses to identify potential vulnerabilities and mitigate known risks.

Over several decades, Northern Trust has grown from a sizable regional bank and trust company to a global provider of premier financial services. As our business has grown on a global scale, so too has our business continuity and disaster recovery planning, and we have devoted significant planning, resources and staff to the development and implementation of our plans.

DEFINITIONS

Business Continuity is defined as the capability that allows a business to continue production processing without material disruption to clients or client information during a business interruption.

Disaster Recovery refers to those technology-related processes that facilitate recovery of the production computing environment in the event of a disaster. Typically, this involves transferring production to back-up or alternate computing devices and sites. A technology disaster can range from a single computing device to a complete data center and may or may not involve restoration at an alternate processing site.

Northern Trust's business continuity philosophy and ongoing review efforts emphasize disaster prevention, mitigation and recovery. Northern Trust's work environment is regularly reviewed to identify potential sources of risk and the means to avoid and or minimize the likelihood of significant interruptions in our service capabilities. Staff and automatic electronic sensing equipment monitor critical support systems 24 hours a day, 7 days a week, 365 days a year.

In the event of a disaster at one of our corporate data centers, the other data center is equipped to recover critical processing within 12 hours or less. Additionally, various techniques are in place to provide for no or minimal loss of data to maximize our recovery capabilities.

All of our BC/DR plans are reviewed, tested and updated on a continual basis. Please see attached Exhibit for a more detailed description of our BC/DR program.

CUSTODIAL/ACCOUNTING REVIEW

10. Provide a full review of the custodial process, including (a) who is responsible for various stages of the process, (b) your assessment of the value added by your policies and procedures, (c) what are the advantages/disadvantages of your international custodial relationships, (d) your assessment of the risks associated with SamCERA's use of your services and (e) which parts of your procedures are not functioning as well as you would expect.

REVIEW OF CUSTODIAL PROCESS

The following outlines the key areas of custodial process:

At its most basic level, Northern Trust's services are built on our ability to hold client assets in a safe, efficient, and secure environment without impeding the trading of those assets. Highlights of our custody and safekeeping services for SamCERA include:

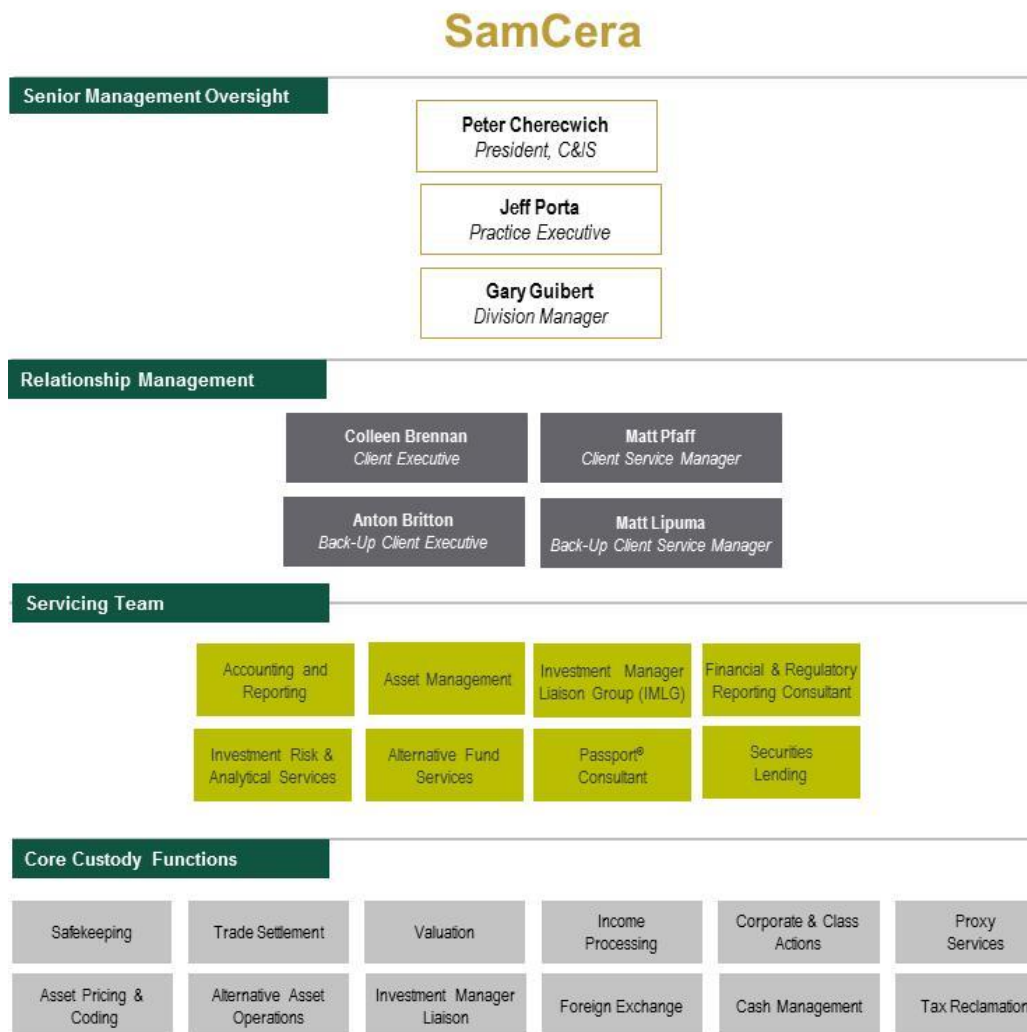
- **Scale and Coverage:** Northern Trust maintains assets in physical and book entry form in 102 global markets, holding more than \$6.5 trillion in assets worldwide.
- **Automation and Efficiency:** We support direct connectivity with brokers and depositories to facilitate the automated transfer of your assets.
- **A strong network:** Our network of subcustodians is rigorously monitored, and agent banks are selected based on a combination of creditworthiness, service levels, and ability to support best practices. All of our subcustodians are SWIFT-capable, allowing for automation in trade communication and reconciliation.

All of our subcustodians are held to high standards of quality. Our network management team continuously reviews subcustodian performance, and our credit committee re-evaluates each subcustodian's creditworthiness on an ongoing basis. Finally, we have structured reviews for every subcustodian to ensure that your assets are held in the most secure environment possible.

A broader review of our custody includes:

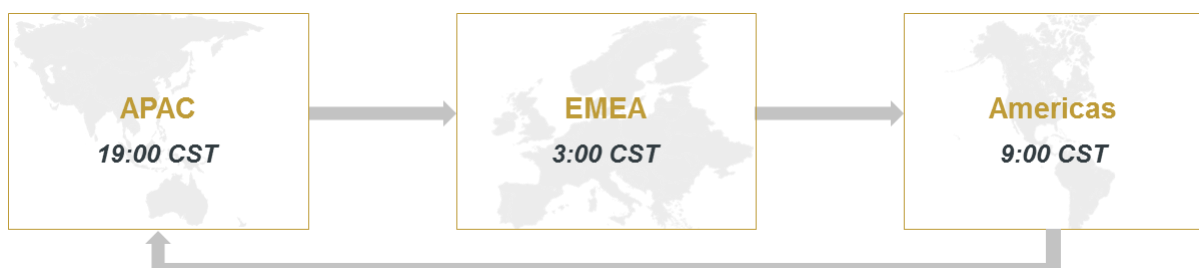
Northern Trust's **Straight-through Processing (STP)** solution offers an end-to-end trade settlement capability for depository-eligible assets, incorporating automation, accuracy, and transparency. Our clients benefit from higher settlement rates and are able to view up-to-date information on the status of their assets.

Trade Capture	<ul style="list-style-type: none"> • >99% auto capture rate on all trades • Automated capture via SWIFT or other e-formats • Automated validation of trade information • Exceptions routed to a repair queue and chased by IMLG experts
Asset Setup	<ul style="list-style-type: none"> • Automated comparison against our security master file • Instant setup of new assets with information required to facilitate processing -system can process hundreds of securities in seconds • Nightly feeds from data vendors with auto updates, ensuring accuracy
Communication	<ul style="list-style-type: none"> • Electronic connectivity via SWIFT, flatfile, and other methods • Auto - confirmation with brokers and investment managers • Pre - matching using CTM, OASYS, and MISYS • Exceptions automatically routed to a repair queue and chased daily
Settlement	<ul style="list-style-type: none"> • All exceptions are cleared by settlement date • Automatic settlement of positions/cash on settlement date • Exceptions automatically routed to a repair queue for resolution • Daily chasing and reporting of exceptions
Reconciliation	<ul style="list-style-type: none"> • Automated reconciliation with depositories and investment managers using SmartSteam' TLM • Daily reconciliation with depositories • Reconciliation with investment managers can be daily, weekly, monthly, or quarterly
Income Collection	<ul style="list-style-type: none"> • Income information automatically received from a stable of data sources prior to payable date and verified • Income Maps" created for each security as data is received • Income automatically posts to client accounts (contractual vs. actual income varies by market and asset type)
Reporting	<ul style="list-style-type: none"> • Daily and intra - day reporting on trade status • Extensive statistical reporting is available • Available on demand or via periodic reporting packages • Exportable to excel, word, .csv, or .pdf files

RESPONSIBILITY FOR VARIOUS STAGES OF THE PROCESS

VALUE ADDED BY NORTHERN'S PROCESSING AND ADVANTAGES OF GLOBAL OPERATION
GLOBAL, ROUND-THE-CLOCK SUPPORT

As a leading global custodian, Northern Trust continually strives to provide the systems and support structure required to support global, round-the-clock trading. With regional client centers in North America, Europe and Asia, we employ a “follow the sun” model that serves our clients’ trading requirements in all time zones.

Northern Trust’s global operating model is designed to be efficient, flexible, and comprehensive. Because all of our clients are serviced using the same global operating platform in all markets, we are able “pass the book” from office to office and offer 24 hour-a-day, 7 -day–a-week processing of our clients’ global portfolios. Furthermore, this one-system approach allows for the seamless transfer of portfolio information among clients, their external investment managers, our appointed subcustodians, and Northern Trust personnel, thus increasing efficiency and reducing opportunities for error.



ASSESSMENT OF RISKS

Assessment of the risks associated with SamCERA's use custody can be grouped by the functions we believe support the primary role of a custodian bank, which is to hold in safekeeping the assets of SamCERA. The key functions of Northern Trust are to:

- Hold assets in custody. This occurs onshore, offshore with an affiliate, or offshore with a subcustodian. When needed, the main custodian is responsible for selecting the sub-custodian.
- Provide daily and/or monthly asset pricing. Pricing information is provided to custodians by third party vendors that are reviewed for accuracy and methodology.
- Monitor and settle depository transactions. Custodians are also critical in monitoring and settling trades. They are connected electronically to the depositories, providing operational efficiencies and economies of scale when initiating and settling trades.
- Monitor and post income payments. Custodians track and record interest on bonds and equity security dividends. The custody system monitors the scheduled payment date and ensures the correct payment is posted to the right account.
- Provide audited reporting. The custodian provides final market value, transactions, cash positions, and cash activity on a daily or monthly basis.

Also under contracted services to SamCERA is Northern's role in providing proxy voting, tax reclaim services, corporate actions, cash management, performance reporting, risk reporting, securities lending, and foreign exchange. Each carries its own set of risks. Examples include:

CONTRACT RISK DEFINITION

Contract risk is the risk that something material is missing from the custody contract or that key Operational topics have not been clearly or completely described. Lack of clarity in key areas presents significant risk.

EVALUATION CRITERIA

Investors should conduct a comprehensive evaluation of the custody contract on a periodic basis. There are a number of key operational factors to evaluate within the custodial agreement to ensure they have been clearly defined, including the roles and responsibilities of the custodian and client; the description of services provided by the custodian to ensure that the contract and related service descriptions suitably protects the client from losses due to negligence, fraud and willful misconduct.

PROCEDURES NOT FUNCTIONING WELL

We believe all functions questioned herein are functioning well. Also supported by our SOC 1 Report and independent audits, we believe that all of our procedures are functioning well.

11. Describe the relative strength and longevity of your staff. Are any of your operations outsourced? If the answer is yes, provide details regarding the firm(s) with which your firm has contracted.

STRENGTH AND LONGEVITY OF STAFF

Client Executives average 19 years of service to Northern Trust, and are part of our 471 client servicing staff members worldwide.

OUTSOURCING OPERATIONS

As is standard in the industry, Northern Trust contracts with various subcustodians to allow our clients to invest in foreign markets. Additionally, Northern Trust receives daily price feeds from various vendors. Finally, Northern Trust partners with Broadridge Financial Solutions for proxy processing. Northern Trust does not consider such partners (pricing and proxy vendors) to be its subcontractors or agents.

All other services are provided in-house by Northern Trust.

12. What are your mission critical systems? Has your firm experienced any problems with these systems in the past eighteen months? When were these systems implemented and when were they last upgraded? Do you anticipate any changes to these systems in the next eighteen months?

MISSION CRITICAL SYSTEMS

Northern Trust's in-house computer facilities include the following systems:

UNIX/LINUX

There are several operating system alternatives for Unix/Linux applications - Red Hat Linux ES 6 and 7 IBM AIX 6 and 7, or Oracle Solaris 10 and 11.

For the Red Hat Linux (x86) 64-bit operating system, we have standardized on HP ProLiant hardware for standalone, physical servers. We have also virtualized over 90% of our Red Hat Linux environment, employing a mix of consolidated infrastructure solutions including vBlock, and Nutanix hardware.

We also employ Oracle Exalogic and Exadata engineered (consolidated infrastructure) systems running Oracle Enterprise Linux.

Our IBM AIX operating systems run on Logical Partitions within several models of IBM hardware, including the E880, the Power 795, Power 750, and Power 740 systems.

For the Oracle Solaris operating system, we support Oracle servers based on the SPARC processor. Much of our Solaris environment has recently been virtualized on Oracle T4 and T5 systems.

All production systems are built with either a warm standby host available in a second data center or a live/live or master/slave configuration, with the hosts split between data centers. Data is kept in synch by various forms of hardware or software based DASD mirroring.

For applications that can withstand only very short unplanned outages, high availability is provided by creating a "cluster", utilizing Veritas Cluster Server (VCS) in the Solaris environment. High availability in the Linux environment is implemented via horizontal scaling on clustered servers sharing Global File Systems (GFS2) AIX high availability is achieved using Live Partition Mobility.

Our strategic Unix/Linux database platforms are Oracle 11g on Red Hat Linux ES, Solaris and AIX and Oracle 12c within Containerized Databases on Exadata systems.

MICROSOFT

Northern Trust currently supports 64-bit Windows 2008, 2012 and 2016 for application servers, IIS versions 7.0, 8.0, 8.5 and 10 for web servers and MS-SQL 2008, 2012, and 2014 for database servers.

Physical applications deployed in the Microsoft environment are built on HP Blade and ProLiant DL machines with 2 or 4 processors, depending on the application and size of its user base. When feasible multiple applications are consolidated into our VMWare Virtualization environment using VMWare ESXi 5.5 or 6.x. The systems are built on HP Blades, VCE Vblock and Nutanix hardware.

All critical production systems are built with either a warm standby host available in a second data center or a live/live or master/slave configuration, with the hosts split between data centers

For applications less critical that can withstand unplanned outages are recovered from daily back-ups to a designated test system or spare server from Northern Trust's Commvault Galaxy Backup Environment.

Z/OS (FORMERLY OS/390) AND Z/LINUX

Northern Trust's production mainframe environment consists of two z10 Series processors running z/OS version 1.9 in a Parallel SYSplex environment. Additionally, each mainframe footprint is configured with two Integrated facility for Linux (IFL) running RedHat Linux, which is providing a distributed gateway into the mainframe DB2 environment.

Northern Trust's mainframe database environment consists of DB/2 Universal Database for z/OS version 8 and IMS version 9.

For business continuity purposes, another Z-series mainframe and an asynchronously maintained copy of the production DASD environment is housed at our second datacenter. Both mainframe complexes are maintained in-house by Northern Trust at current, industry-standard levels of software and hardware. Additional capacity is added as business demands warrant.

OS/400

Northern Trust's iSeries (AS/400) environment currently runs i5/OS Version 7 Release 1. DB2 UDB is the relational database and it is integrated into the operating system.

We can advise that there is no reliance on third parties for development and customization to our systems. Northern Trust's mainframes are updated in-house at least once a year. Further, our technology platforms are constantly monitored for performance and capacity.

SYSTEM IMPLEMENTATION AND UPGRADES

Northern Trust maintains robust and mature platforms, and continues to invest significant capital in each to ensure we have the capabilities and scalability that our clients require. Northern Trust allocates a percentage of capital each year to upgrade or replace applications that it deems at risk or nearing end of life.

System/Function	Year Installed	Life Expectancy	In-house or Vended	Real-Time vs. Batch
Asset Servicing System	1990	Indefinite	In-house	Real-Time
Fund Accounting (Global Invest One)	1983	Indefinite	Vended (FIS)	Real-Time
Transfer Agency (Multifonds)	2004	Indefinite	Vended (Multifonds ¹)	Real-Time
Performance Analytics Calculation Engine (Analytical/Performance)	2001	Indefinite	In-house	Batch
Northern Trust Passport® (Client/investment manager reporting and information delivery system)	1994	Indefinite	In-house	Real-Time
UK Transfer Agency (Icon Retail)	2005	Indefinite	Vended (Line Data Systems)	Real-Time

ANTICIPATED CHANGES TO THE SYSTEMS

We do not anticipate any major system changes or conversions in the next eighteen months. Slightly more than 50% of our annual technology budget is invested in systems development and enhancement and slightly less than 50% is spent on operational maintenance. Approximately half of our technology budget is dedicated to our core system developments and upgrades, and the other half supports our front-end online system for clients, Passport®.

Unlike many of our competitors (whose technology dollars cover many businesses), our clients can be assured that our investment is targeted at enhancing the asset servicing and asset management services we provide.

13. Discuss the Global Custodian marketplace and Northern Trust's relative success or failure in the current market.

Northern Trust's core differentiators include our well-earned reputation for exceptional client service, technological infrastructure, and our sterling financial strength and stability. As it relates specifically to our capabilities as a global custodian, these are some of the features that separate us from our competitors:

¹ Temenos formerly IGEFI Multifonds

A strong network. Our subcustodians' ability to provide us with quality information on all types of market events ensures the overall quality of our services. We dedicate considerable resources to selecting the highest quality providers and holding them to high standards. Over years of building relationships with subcustodians, we are able to leverage their local market expertise and identify service solutions that go beyond the industry-accepted service levels. Finally, we make this "on-the-ground" market intelligence available to clients, a key added value in our service model.

Best-in-class reconciliation process. We perform daily, position-level reconciliations of both stock and cash through what we believe is the most automated reconciliation practice in the market. The ability to ensure the accuracy of our books and records gives clients peace of mind, and positively impacts the accuracy of our event processing for items such as income, corporate action events, taxation issues, and proxy voting.

Customized support for client requirements. Our Subcustodian Network Management Team supports our clients with all specialized requirements in emerging or exotic countries. We go to great lengths to assist our clients with market entry, paperwork, and registration requirements.

14. What "standards" of measure do other clients employ when evaluating Northern Trust's Global Custodial capabilities? What standards does your firm utilize when performing a self-evaluation?

Trust/global custody is our flagship franchise. We cannot expect to grow if we are unsuccessful in serving our clients. We are advised that clients use these GENERAL standards when evaluating Northern Trust's custody capabilities:

- Superior Service: Sustain best-in-class service to clients, as evidenced by exceptional (90%) approval ratings in our annual client satisfaction survey.
- Organic Growth: Expand our capabilities and global reach, while focusing on core business lines and client satisfaction.
- Technological Leadership: Retain industry leadership with enhancements that enable our clients to efficiently serve their constituents.
- Risk Management: Maintain good stewardship of our organization from the perspective of operational, credit, interest rate and reputational risk.
- Performing a self-evaluation is aligned with our internal and external audit reviews combined with customer satisfaction ratings.

15. Discuss the environment, outlook or any trends in both domestic and international class actions.

In the US, Northern Trust monitors the impact that settled class action lawsuits may have on SAMCERA's portfolios. In order to locate the existence of class actions, we subscribe to several class action notification services, including Securities Class Action Services (SCAS) from ISS, a leading provider of risk management and corporate governance services to the global financial community. More detailed sources for notification of settlement are:

- Security Class Action Services LLC (SCAS) alerts from RiskMetrics (www.riskmetrics.com/scas)
- Legal, Consultancy, and Accounting Newsletter from Mondaq.com
- Stanford Law School Securities Class Action Clearinghouse (www.securities.stanford.edu)

The notices include:

- Name of class action and description of settlement
- Court-appointed claims administrator
- Website with all court documents and claim forms
- Class period and eligible assets (security identifiers)
- Filing and objection deadlines

The custodian also notifies investment managers of class action settlements via its web-based system. As soon as funds from the claimed settlement are received, the custodian automatically posts them to SamCERA's accounts.

In terms of managing SamCERA's participation in such settled actions, we have a team of market specialists that oversee the filing of class action settlement claims. The team is responsible for the process, from beginning to end, providing consistency across the filing and tracking of class action claims for audit purposes.

It performs three primary functions for securities litigation that have settled through the U.S. courts (where claim administration is being handled by U.S. claim administrators):

- Tracking of settled lawsuits upon request, we supply data to providers who track pending lawsuits and client notification
- Filing of claims
- Posting of subsequent disbursements to client portfolios

The United States continues to be the primary venue for class action activity worldwide (approximately 97% of class actions take place in the U.S.). For class actions settled through the U.S. courts where a U.S. claims administrator is appointed, our custodian notifies SamCERA via web-based reporting, files the claims in accordance with SamCERA's entitlement, and posts the collected proceeds to SamCERA's accounts.

FOREIGN CLASS ACTION

(Global Class action activity is still low, although growing in non-U.S. jurisdictions.) For class actions outside the U.S. courts, we pass along notifications SamCERA. The Class Action module on Passport allows for Class Action reporting that also specifies the class actions where we are not allowed to autonomously proceed with the action. Conversely, since 2011, we file claims in Canada and the Netherlands, whenever the claim filing occurs after a court settlement and the custodian is allowed.

In summary, for global Class Action, SamCERA must choose to opt-in to a global class action detailed as follows:

- Custodian provides information – on a best effort basis – of active actions in the global markets that currently allow for class litigations.
- SamCERA must choose to opt-in.
- Currently, there are only a few foreign markets that allow for class action lawsuits, including Canada, and European countries like Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Portugal, Russia, Switzerland and UK. All are opt-in except Netherlands with is questionably opt-in and opt-out.
- In opt-in cases, SamCERA must work directly with law firms to secure settlement proceeds.
- Northern posts the proceeds to SamCERA's account, once received.

We are also working with external vendors to offer clients with an added solution to Global Class Action. An official release of the information will soon be provided. We also welcome an opportunity to detail our views of Global Class Action and would be pleased to schedule a more formal review with the investment team as well as the Board of SamCERA. Please let us know if you'd be interested in such a review.

16. Detail Northern Trust's perspective of SamCERA's performance expectations for Northern's accounting group, as spelled out in the contract and how Northern Trust is doing relative to those expectations.

We are still operating under a monthly accounting deadline of six business days as well as a deadline of eight business days for performance analytics.

For each of SamCERA's alternative investment funds, a Northern Trust technician with industry experience is assigned to handle all aspects of data collection, reconciliation, and problem resolution. With the support of Matt Pfaff, we actively chase the managers and track receipt of statements.

Continued use of Preliminary Hedge Fund Reporting Services (PHFRS) continues to enable us to be better position preliminary returns and more effectively meet the agreed upon deadlines. From Northern Trust's perspective, we are meeting our deliverables to SamCERA.

SECURITIES LENDING REVIEW

17. Security lending – Any issues in how we utilize your services? What are the current trends in revenue sharing? How does our revenue split compare with your other security lending clients?

There are no issues with how SamCERA utilizes Northern Trust's securities lending program as the program is customized based upon SamCERA's risk tolerances. SamCERA's earnings could potentially be increased through acceptance of additional borrowers and modification of borrower restrictions. Revenue sharing in Securities Lending continues to be driven by the fee split sharing model. Fee splits have remained fairly stable with a slight increase to the client side over the more recent time frames. SamCERA's current fee split is very favorable to SamCERA relative to other public funds of similar lendable asset size and similar earnings potential.

PERFORMANCE & ANALYTICAL REVIEW

18. Provide a full review of the performance process, including (a) who is responsible for various stages of the process, (b) your assessment of adequacy of communication between performance and accounting, (c) which parts of your procedures are not functioning as well as you would expect.

Our internally developed performance system is a single, flexible, worldwide, multi-currency engine, which supports all asset classes and all clients regardless of geographical location. Our performance module offers tremendous flexibility and customization to properly analyze any investment strategy regardless of mandate or the investment program structure.

Performance data (positions, valuations, and transactions) is sourced directly from our accounting database. An extract from the accounting database to our performance module is triggered after each day's transaction activity and updated valuations have been processed.

Rates of return and other measures are calculated in accordance with CFA Institute, GIPS, and BAI standards.

Prior to producing any periodic performance reporting for the client, we reconcile return calculations using a series of automated on-line tools and exception-based reports to flag items falling outside of defined tolerance levels.

All of the following analytical information is available:

CALCULATION FREQUENCY

- Accounts, aggregations, and indexes: daily, monthly, and cumulative
- Plan and Program level Universe composites and populations: quarterly and cumulative
- Manager Universes: quarterly and cumulative

FLEXIBLE CATEGORIZATION

- Total fund gross and net of fees
- Asset class returns
- Regional returns
- Variety of sector returns (GICS, FTSE, Russell, Style and Size, Fixed Income Sectors, and maturity bands, etc.)
- Custom categorization

SECURITY LEVEL RETURNS

- Security level returns sorted by market value or greatest asset impact
- Long-term, dollar-weighted rates for alternative assets

ATTRIBUTION

- Total plan fund
- Arithmetic and geometric equity models (for single currency)
- Arithmetic and geometric equity models (for multiple currencies)
- Stock level
- Arithmetic and geometric fixed income models (for single currency)
- Arithmetic and geometric fixed income models (for multiple currencies)
- Risk decomposition

CHARACTERISTICS

- Worldwide equity and fixed income security characteristics
- Portfolio vs. benchmark comparisons

COMPOSITES AND POPULATIONS

- Trust composites & populations: Corporate ERISA, Public Funds, and Not-for-Profits, Canadian Defined Benefit
- Multiple trust composites and populations based on fund size
- Multiple program universes for comparison to your aggregations
- Multiple asset class and style manager universes in multiple currencies
- 3rd party universes from: eVestment, TUCS, Thomson Reuters , etc.

INDEXES

- Thousands of indexes from all index vendors
- Custom benchmarking support

MISCELLANEOUS

- Statistical calculations such as standard deviations, tracking error, Sharpe Ratios, etc.
- Correlation analysis for managers and asset classes
- Specialized support and analytics for private investment, including private equity, real estate, and hedge funds
- Ex-post Value at Risk
- “Peek-through” on commingled fund accounts

PRIVATE MONITOR™

Private Monitor™ is a comprehensive custom report for private equity and real estate investments that includes internal rates of return and funding and distribution ratios grouped by vintage year and type, portfolio asset allocation by partnership type, and opportunity costs analysis. Benchmarking reports depicting the private equity portfolio's value added over the public market, your program versus the returns of other private equity and real estate programs, and universe comparisons by vintage year are included.

ADEQUACY OF COMMUNICATION

Specific to performance reporting, our performance consultants and analysts employ a rigorous process for validating the accounting data imported into the performance engine, as well as the performance calculations themselves. We have an automated tool that hosts accounting and performance data side-by-side so that analysts can perform a series of logical and reasonableness checks (over and above the controls surrounding the accounting audit) to promote accurate reporting. For example, analysts review NAV calculations vs. previous returns and flag values outside of certain, pre-determined thresholds. An analysis of reported shares confirms that the reported holdings are accurate, and NAV to NAV analyses help identify potential pricing issues.

When a potential issue is identified, the performance analyst will contact his or her counterpart in the accounting group to raise and resolve the query. Where necessary, analysts will escalate to team leaders or section managers if they are unable to resolve the issue quickly.

Prior to preparing any periodic performance reporting for the client, we reconcile return calculations using a series of automated online tools and exception-based reports to flag items falling outside of client-defined tolerance levels. All potential discrepancies are researched and resolved before results are considered final.

19. Describe the relative strength and longevity of your staff. Are any of your operations outsourced? If the answer is yes, provide details regarding the firm(s) with which your firm has contracted.

Our clients are supported by our **Investment Risk & Analytical Services (IRAS)** group. The unit is staffed with more than 389 investment professionals, with service teams and support personnel located in all three major regions offering 24-hour processing and coverage.

Clients are assigned a dedicated Senior Consultant and Analyst. The Consultant is responsible for tailoring a performance analysis program that is aligned with a client's specific needs. They also provide ongoing professional support and training to ensure that clients are able to fully utilize the power and utility of our performance product range and introduce new capabilities and enhancements. The Analyst works in support of the Consultant and with our Operations Group to ensure data quality.

Our Senior Consultants have more than 15 years of experience and possess either a graduate degree and/or a CFA designation. These professionals typically have prior experience working at investment management firms, outside consulting firms, plan sponsor organizations, and other areas within Northern Trust.

Recognizing need for specialists in a complex investment environment, we also have three specialist teams dedicated to alternative investments, manager compliance, and ex-ante risk analysis, allowing us to bring additional resources to the relationship, when appropriate.

Our IRAS professionals are supported by:

- A dedicated Product Development Team
- Comprehensive Economic Research, Investment Research, and Accounting Teams
- Powerful systems architecture that provides the flexibility to meet clients' evolving needs, and
- A dedicated staff of over 50 Information Technology professionals.

20. Discuss the Performance & Analytical marketplace and Northern Trust's relative success or failure in the current market.

We added 50 new clients in the last year and now have 740 clients worldwide as of December 31st, 2018. Totals assets under measurement are nearly \$4.7 Trillion.

21. Detail Northern Trust's perspective of SamCERA's performance expectations for Northern's performance group, as spelled out in the contract and how Northern Trust is doing relative to those expectations.

Deliverables related to performance analytics in the contract lists the following:

ISSUE PRELIMINARY FUND VALUATION INFORMATION FOR MONTHLY REPORTS.

For those funds that have been identified, Northern generates fund values for monthly account statements using a specified process to estimate the NAV's.

PROVIDE MONTHLY PERFORMANCE DATA ON A GROSS AND NET OF FEES BASIS.

For month end performance, preliminary results shall be available on the 1st day after month end and everyday thereafter until final numbers are available. Final "signed-off" monthly performance results shall be available approximately 2-4 business days after accounting has been finalized.

For monthly audited accounts, monthly rates of return are dollar-weighted, based on fully accrued, trade-dated transactions and asset positions. Northern Trust's Investment Risk & Analytical Services (IRAS) uses an industry standard BAI iterative (Newton Raphson method) Internal Rate of Return (IRR) calculation method. The IRR calculation uses an iterative technique, which solves for the rate that would discount all flows to zero.

Transactions are incorporated on the day in which they are executed, at the prevailing conversion rate.

In situations where cash flows exceed 10% of the beginning market value, the value of the portfolio (as of the day before the cash flow) is recalculated and the sub-period returns are created for the month and then linked to remove the possible distortion (due to the large cash flow).

Returns for periods longer than one month are time-weighted rates, calculated by linking the monthly dollar-weighted rates together. Non-annualized rates are used for time periods shorter than one year and annualized rates are used for periods longer than one year. For private equity, real estate, and other investments structured as partnerships, IRR returns are available for periods longer than one month.

PROVIDE CUSTOMIZED BOARD PERFORMANCE REPORT ON A MONTHLY BASIS.

We verified all the data elements currently on the report. SamCERA acknowledged that there may be some variation in format due to different report writing applications.

PROVIDE ACCESS TO BENCHMARK RETURNS AND BUILD CUSTOMIZED BENCHMARKS.

We believe we are meeting each expectation as we work very closely with SamCERA, when needed to secure each deliverable.

OUTLOOK/CONCLUSION

22. What is Northern Trust’s outlook for the Global Custodial marketplace?

STRATEGY FOUNDATIONS

Our ambition is underpinned by four core pillars



Client Engagement Strategy

- Client governance
- Service delivery
- Relationship management
- Local and Global expertise
- Thought leadership



Product Development Strategy

- Capability expansion
- Data/digital integration
- Enhanced experience
- Insightful solutions
- Smarter analytics



Information Technology Strategy

- Industry
- Infrastructure
- Integrity data security
- Innovation Blockchain
- Information delivery speed



Business Optimization Strategy

- Capital efficiency
- Employee engagement
- Location strategy
- Operational excellence
- Process optimization

Twice a year, with continued focus on technology, Northern Trust sends representatives to Silicon Valley to meet with technology leaders and to preview current innovations to determine potential business alignment. Investment professionals from our private equity group along with executives from our Technology Enterprise group interview Silicon Valley innovators and see first-hand product demos. The private equity research team reviews with an eye for investment (spending in excess of \$750 Million), and the technology executives with an eye for applicability to Northern Trust. This strategy has proven to be effective with Northern Trust deploying and using venture capital start-up technologies. Connections in Silicon Valley provide Northern Trust access to deploy capital start-up technologies leading to faster time to market and resource efficiency.

ARTIFICIAL INTELLIGENCE

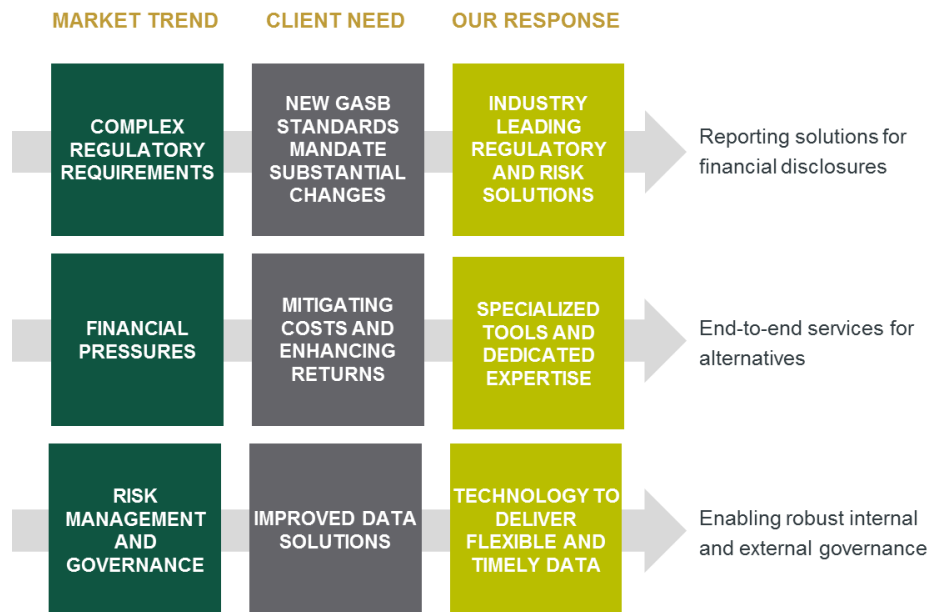
Northern Trust is unique in our product leadership and innovation. We are a diversified, world-class asset servicer offering differentiated client experiences and comprehensive product capabilities. Researchers and designers in Client & Partner Experience collaborate to create tools, platforms and processes that enhance client loyalty and partner engagement. Through their work as part of the Northern Lab, these researchers and designers identify, incubate and design differentiated experiences for clients, prospects and partners by uncovering a deep understanding of their needs. Northern Trust is also at the forefront of Artificial Intelligence technology and we have already deployed a process automation solution, Blue Prism, enabling robots to take on repetitive tasks allowing staff to focus on value creation. We will continue to invest in these crucial areas that will help evolve our business over the coming years.

BLOCKCHAIN

We have already launched an industry leading private equity Blockchain solution to improve efficiency, security, and transparency. Northern Trust sees the evolution of Blockchain as a potential opportunity for us to better serve our clients by settling certain transactions faster, increase operational efficiency, reduce capital and liquidity requirement and provide greater transparency and security. Northern Trust has committed senior resources to investigate and understand the opportunities from this new technology. This includes tracking and researching industry Blockchain developments to support the firm’s strategic direction. To enable this, Northern Trust is actively engaged with industry and trade associations across North America, EMEA and APAC and is leading exploratory discussions with individual peer firms, market infrastructures, exchanges, clearing firms and new collaborative ventures to track global industry / disruptive developments. We will continue to research, evaluate and influence how Blockchain and other new technologies can be embraced.

23. What issues are other clients concerned with in regards to products, markets, education and governance?

Please see the chart below for trend of client concerns:



24. Describe your outlook on strategic partnerships.

Our outlook continues to include the ability to be a full solutions-driven provider to our Public Fund clients. That includes a host of products and services that can address the continuum of needs as our partnership with every client evolves. A sample of that continuum is captured below.

THE COMPLETE SOLUTIONS PARTNERSHIP

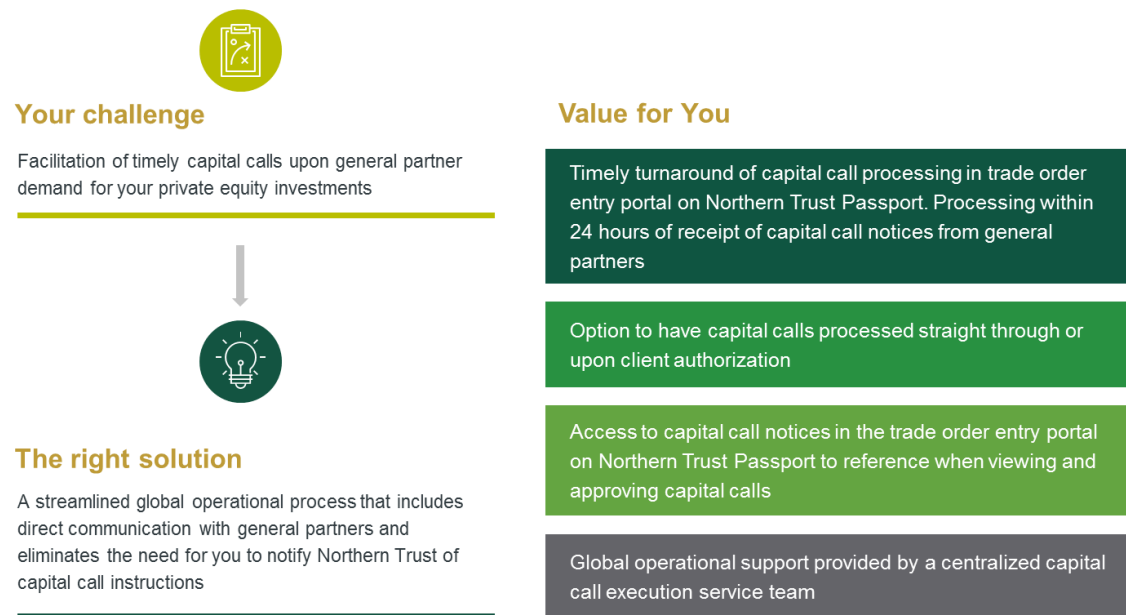
Asset Management	<ul style="list-style-type: none"> Active management Alternative investments Cash management 	<ul style="list-style-type: none"> Defined contribution Equities /fixed income ESG/SRI 	<ul style="list-style-type: none"> Factor-based investing Index management Outsourced CIO
Asset Servicing	<ul style="list-style-type: none"> Alternative asset servicing Collateral management Derivatives processing 	<ul style="list-style-type: none"> Fund execution Entitlement processing Proxy voting 	<ul style="list-style-type: none"> Safekeeping Settlement Tax reclamation
Capital Markets	<ul style="list-style-type: none"> Brokerage Commission management Foreign exchange 	<ul style="list-style-type: none"> FX eCommerce/algos Passive currency overlay Pooled fund transitions 	<ul style="list-style-type: none"> Securities lending Third party lending Transition management
Data	<ul style="list-style-type: none"> Compliance monitoring Data aggregation Financial accounting 	<ul style="list-style-type: none"> Investment accounting Performance analytics Risk analytics 	<ul style="list-style-type: none"> Transparency analysis Unitization/plan allocation Valuation reporting
Fund	<ul style="list-style-type: none"> Cross-border pooling Corporate secretarial Component outsourcing 	<ul style="list-style-type: none"> Financial reporting Fund administration Operations outsourcing 	<ul style="list-style-type: none"> Tax transparent pooling Transfer agency Trustee/depository
Liquidity	<ul style="list-style-type: none"> Banking Cash funds/management Credit facilities 	<ul style="list-style-type: none"> Corporate cash services Deposit placing Evergreen deposits 	<ul style="list-style-type: none"> Peer to peer Repo, reverse repo Treasury management
Regulatory	<ul style="list-style-type: none"> EMIR/Dodd Frank FASB GASB, GAAP IFRS, APRA, ASCII 	<ul style="list-style-type: none"> Regulatory reporting Regulatory returns Investment oversight 	<ul style="list-style-type: none"> SORP, nFTK Solvency II Transparency analytics
Retirement	<ul style="list-style-type: none"> Account control agreement Benefit payments Contingent assets 	<ul style="list-style-type: none"> Defined contribution De-risking support Fund rebalancing 	<ul style="list-style-type: none"> Institutional governance Reservoir trusts Trapped surplus vehicles

25. Describe your assessment of the relationship between The Northern Trust and SamCERA. How can we better take advantage of your firm's capabilities?

Our assessment is that Northern Trust shares a valued relationship with SamCERA. We are committed to efficient and value-added service. One of the services recently discussed with SamCERA is use of Capital Call Execution. We welcome continued review. A synopsis is offered below.

CAPITAL CALL EXECUTION SERVICES

Gain operational efficiencies by delegating the processing of capital calls



How can we better take advantage of your firm's capabilities? We would like to also offer ways for us to be much more consultative to SamCERA and its Board. We often bring our own industry expert to client offices to discuss industry trends. A sample of those trends is detailed below:

1. **Alternatives - Fee Transparency**
2. **Cybersecurity** – identifying potential security attacks and the importance of appropriate and effective security practices to our clients.
3. **Products and Services** - Please refer to question 24. We welcome the opportunity to introduce our industry experts to expand on a host of services that may prove advantageous to SamCERA.



**NORTHERN
TRUST**

www.northerntrust.com

NORTHERN TRUST

Northern Trust Annual Service Review (SamCERA)

March 7, 2019

Prepared for **San Mateo County Employees' Retirement Association (SamCERA)**

Colleen Brennan
Vice President
Client Executive

Matt Pfaff
Officer
Client Service Manager



NORTHERN TRUST

CORPORATE & INSTITUTIONAL SERVICES

Northern Trust Overview

CLIENT-CENTRIC, FOCUSED BUSINESS MODEL

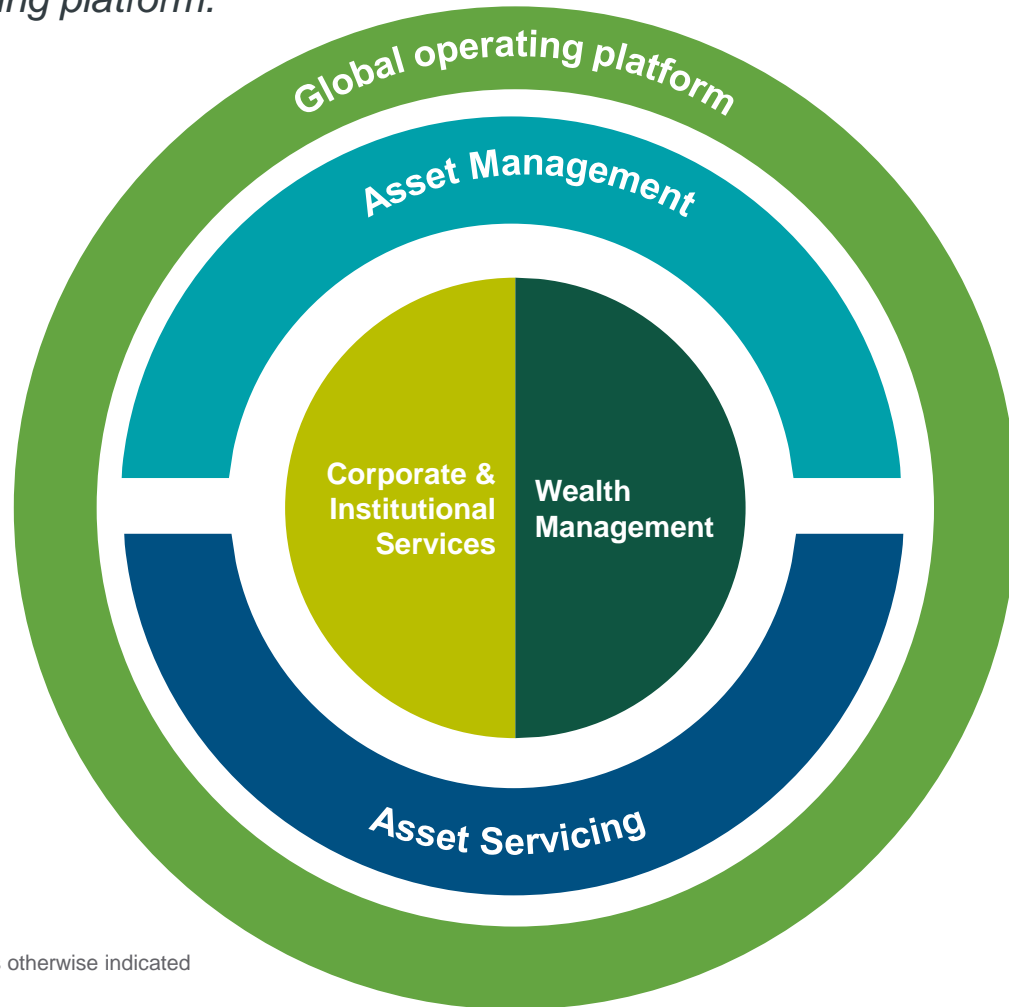
Asset servicing, asset management and banking for personal and institutional clients, supported by our integrated operating platform.

Corporate & Institutional Services

- Pensions
- Insurance companies
- Sovereign entities
- Fund managers
- Foundations and endowments

Wealth Management

- Individuals
- Families
- Family offices
- Foundation
- Endowments
- Privately held businesses



\$7.6 trillion
assets under custody

\$1.1 trillion
assets under management

\$6.6 trillion*
assets under administration

Figures as of 12/31/2018 unless otherwise indicated
(*Figures as of 06/30/2018)
Amounts shown are in U.S. Dollars
Source: Northern Trust

Client Servicing Overview

CLIENT SERVICING TEAM APPROACH

SamCera

Senior Management Oversight

Peter Cherecwich
President, C&IS

Jeff Porta
Practice Executive

Gary Guibert
Division Manager

Relationship Management

Colleen Brennan
Client Executive

Matt Pfaff
Client Service Manager

Anton Britton
Back-Up Client Executive

Matt Lipuma
Back-Up Client Service Manager

Servicing Team

Accounting and
Reporting

Asset Management

Investment Manager
Liaison Group (IMLG)

Financial & Regulatory
Reporting Consultant

Investment Risk &
Analytical Services

Alternative Fund
Services

Passport®
Consultant

Securities
Lending

Core Custody Functions

Safekeeping

Trade Settlement

Valuation

Income
Processing

Corporate & Class
Actions

Proxy
Services

Asset Pricing &
Coding

Alternative Asset
Operations

Investment Manager
Liaison

Foreign Exchange

Cash Management

Tax Reclamation

ORGANIZATIONAL AND PERSONNEL CHANGES

Michael O'Grady, former President, Corporate & Institutional Services (C&IS), was appointed CEO.

Pete Cherecwich, former President, C&IS-Americas and President of Global Fund Services (GFS), was appointed President, Corporate & Institutional Services (C&IS)

Dan Houlihan, currently Head of GFS Americas, was appointed Head of Asset Servicing, Americas, which now includes C&IS-Americas

Gary Guibert now manages the entire Client Executive team which includes Colleen Brennan

KEY CLIENT SERVICE PROCESSES

Focused on solid communication and review processes to make sure that we understand your business and your needs



Service level description

- **Creation:** During conversion, the client and the relationship manager meet to create the service level description
- **Standard:** Provides formal documentation of the client's and Northern Trust's agreed service standards/deliverables
- **Communication:** Details contact names, telephone/fax and emergency numbers



Relationship reviews

- **Review:** Discuss our performance against the standards detailed in the service level description
- **Response:** Address issues/opportunities as needed and agree upon time frames for execution
- **Result:** Continue the two-way conversation of our service balancing your business needs



Executive oversight

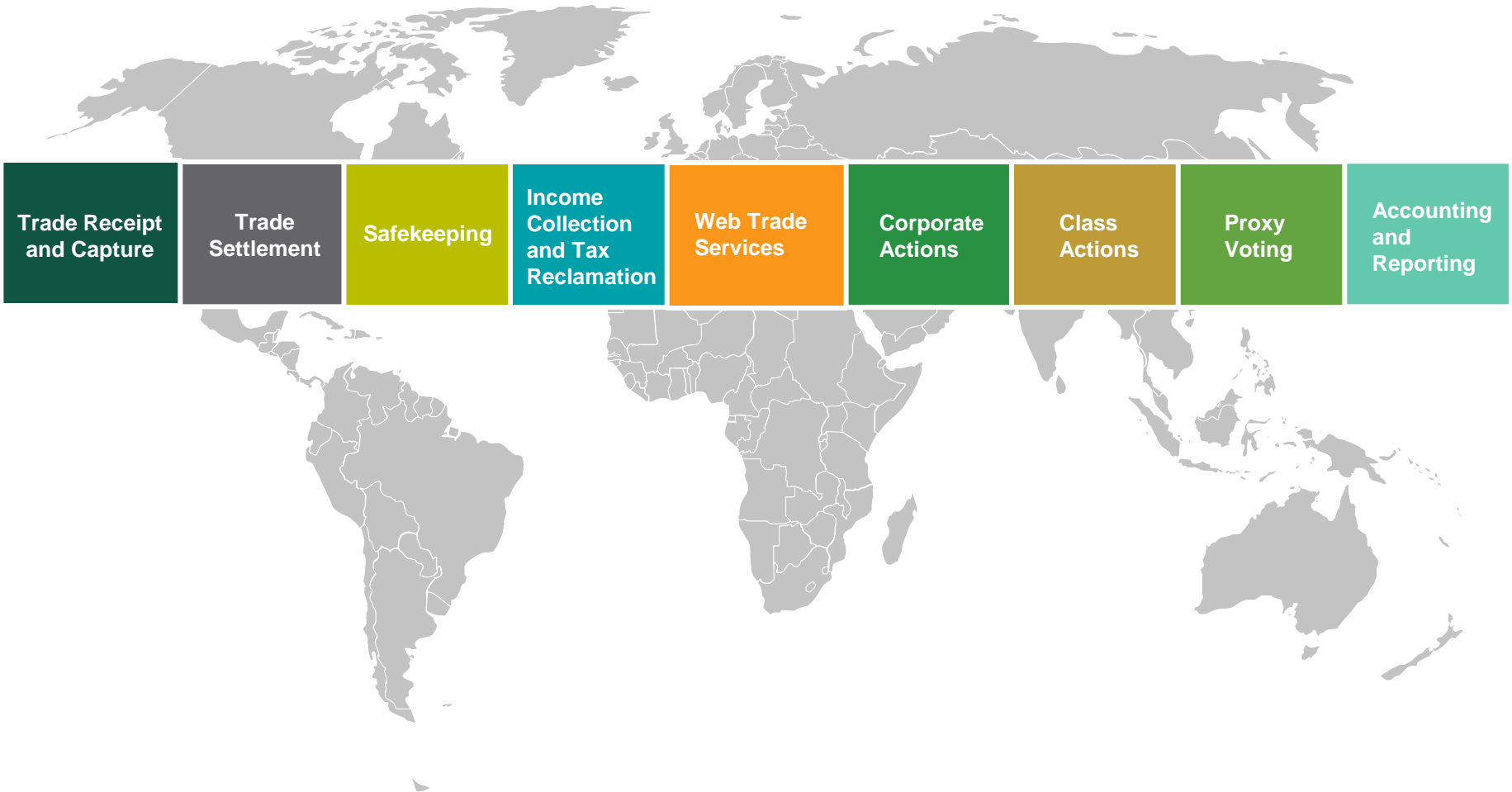
- **Schedule:** Every client relationship is reviewed at least annually by our senior management
- **Awareness:** Senior management are actively engaged in monitoring service delivery versus expectations
- **Support:** Ensure that relationship between the servicing team and client is working to the optimum level

CORPORATE & INSTITUTIONAL SERVICES

Global Custody Services

A COMPREHENSIVE SERVICE SUITE

Northern Trust delivers process efficiencies, automation, scale, and flexibility through our comprehensive asset servicing product offering



EXPERTISE ACROSS THE FULL CUSTODY SPECTRUM

Emphasis on automation, straight-through processing (STP), accuracy and timeliness, risk reduction, enhancing efficiency, cost minimization, and ensuring transparency

Trade Receipt and Capture

- Annually process over 25 million global trades
- A dedicated global team servicing alternative assets and non-STP investments

Trade Settlement

- Transmit precise, timely trade information and execute settlements
- Offer contractual settlement in 46 global markets

Safe Keeping

- \$8.1 trillion in total assets under custody
- Safekeeping services for institutional investors in 103 global securities markets

Income Collection and Tax Reclamation

- Collect income on portfolio holdings promptly
- Recover taxes in markets that have tax treaties and exemptions

Web Trade Services

- Connected to over 2,700 end-points in the global brokerage community with automated communications to over 40 major custodians globally
- Hitting > 770,000 trades/month

Corporate Actions

- Monitor events thoroughly and settle entitlements

Class Actions

- Gather information, provide timely notifications, file claims and post disbursements

Proxy Voting

- On-line proxy voting in 55 markets

Accounting and Reporting

- Service investment participants through a single global, integrated, multi-currency platform

*As at 3/31/2018 (updated quarterly) unless otherwise stated Source: Northern Trust

CORPORATE & INSTITUTIONAL SERVICES

Client Valuation Reporting (CVR)

Joe Kepinski

2nd Vice President

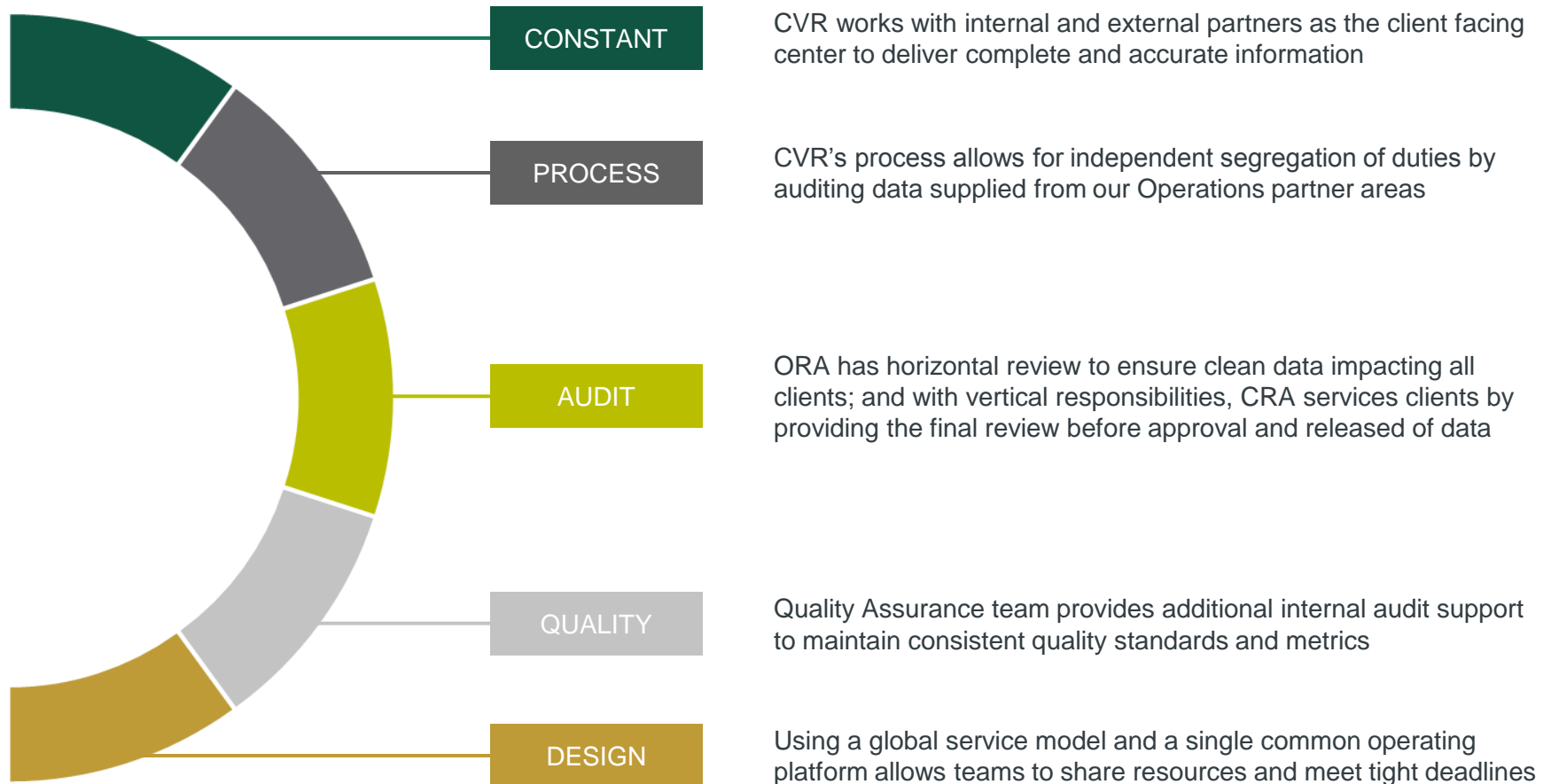
Manager - Client Valuation
Reporting



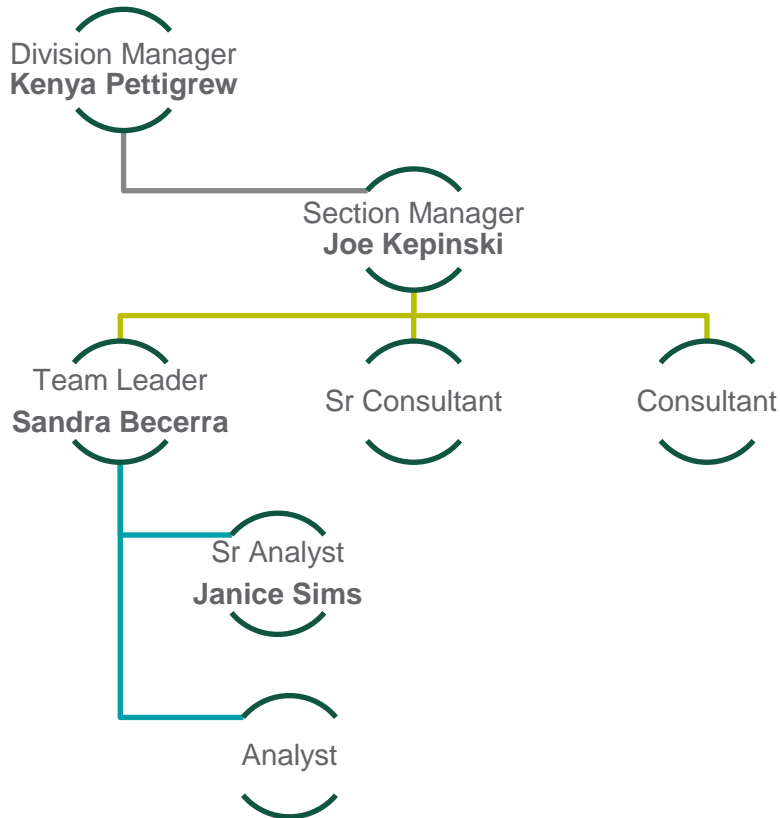
NORTHERN TRUST

CLIENT VALUATION REPORTING

CVR supports the accounting and reporting needs for Northern Trust business units. Our goal is to provide consistent, accurate, and timely information with a consultative approach.



CLIENT VALUATION REPORTING – ORGANIZATIONAL CHART



Division Manager: Ensures the overall goals of timeliness and accuracy in reporting are met. Handles strategic planning for division.

Section Manager: Works with 2-4 Team Leaders. Tasks include process improvement, ensuring proper resources for all client accounts, assists in escalation of accounting issues identified by the teams, identifies trends and ensures problems are resolved.

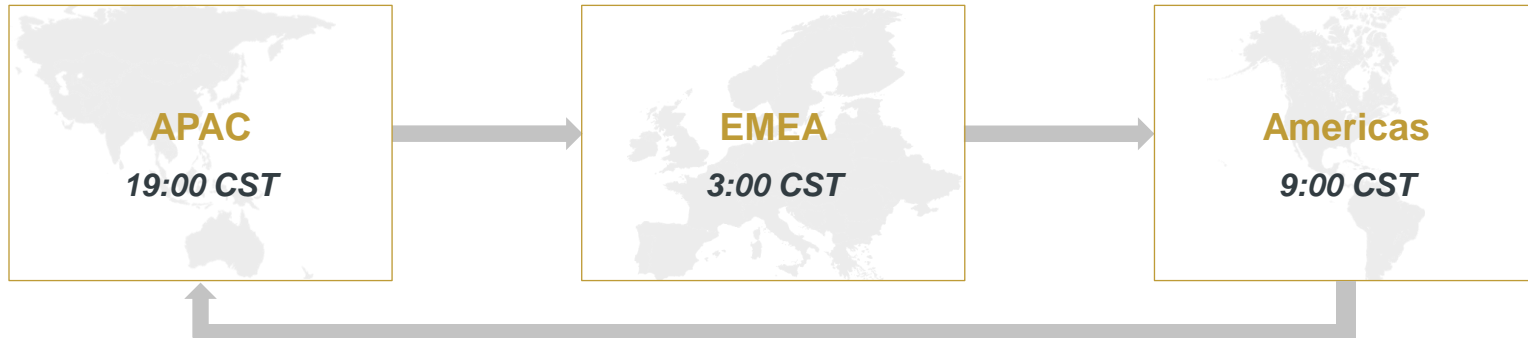
Team Leader: Works with 4-7 analysts. Tasks include providing on-the-job training, coaching and mentoring for analysts, quality checking analysts' work and assisting with client inquiries and problem solving.

Consultant: Completes analyst rotation to develop advanced understanding of the systems, applications, and reporting models. Advanced training classes occur throughout the career. Primary focus is supporting client inquiry research and resolution; along with being a technical resource for the analysts.

Analysts: Complete one year training program. Advanced training classes occur throughout an analyst's career. Promoted to Sr. Analyst once they have mastered multiple tasks within the CVR accounting audit process.

OPERATING MODEL STREAMLINES TECHNOLOGY DESIGN

Global consistency, shared data and integration of new technologies help clients access data easily and securely from a core platform.



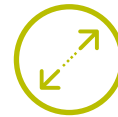
Global

- “Pass the book” operating model for data and asset processing
- Data managed centrally and accessed globally
- Consistent, accurate data across geographies and services



Secure

- Data protected with extensive cyber security
- Big data and cloud tools help detect threats
- Extensive business continuity and disaster recovery programs



Scalable

- Technology leveraged more easily across regions / client types
- Distributed processing and cloud technologies offer scale
- Balancing volume and capacity with adaptability



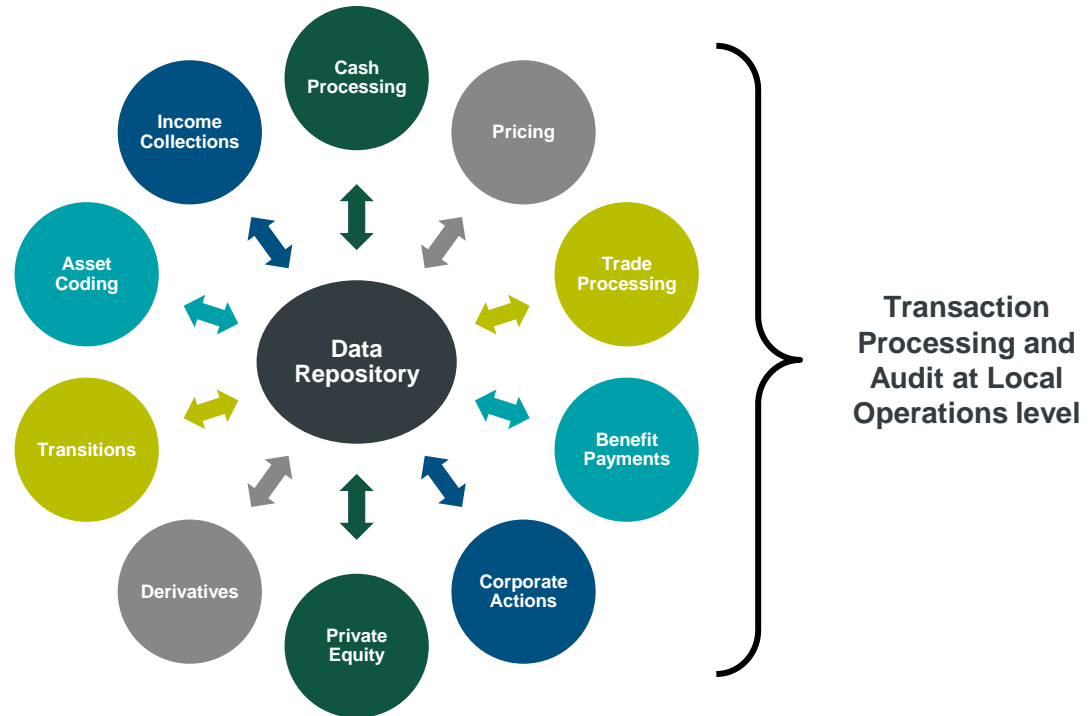
Integrated

- Northern Trust Passport™ as a single point of access
- Connectivity / integration with client side systems (e.g., data feeds)
- User-friendly and flexible tools for data management and analysis

CLIENT ACCOUNTING & REPORTING INFORMATION FLOW

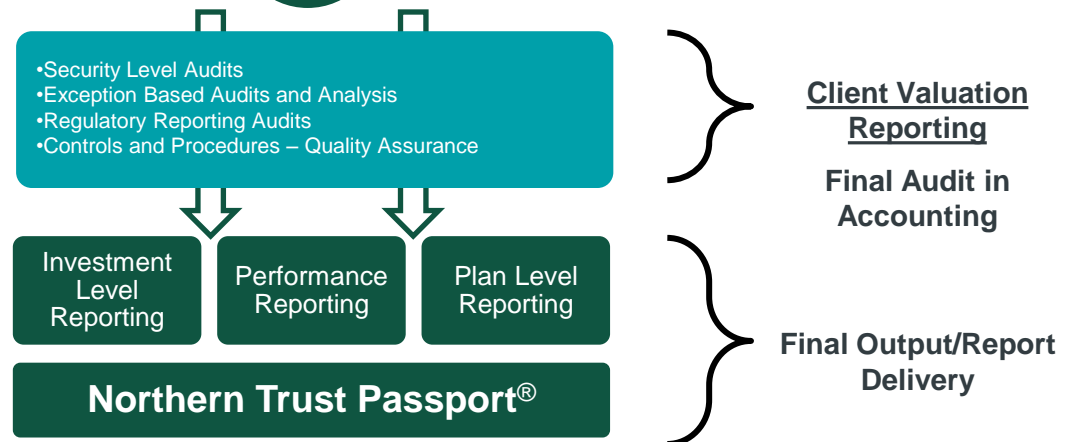
Sophisticated Architecture

- Common trade capture for custody and trade services
- Shared utilities benefit all processes and businesses
- An absence of reconciliation by function, platform or geography
- A single data repository

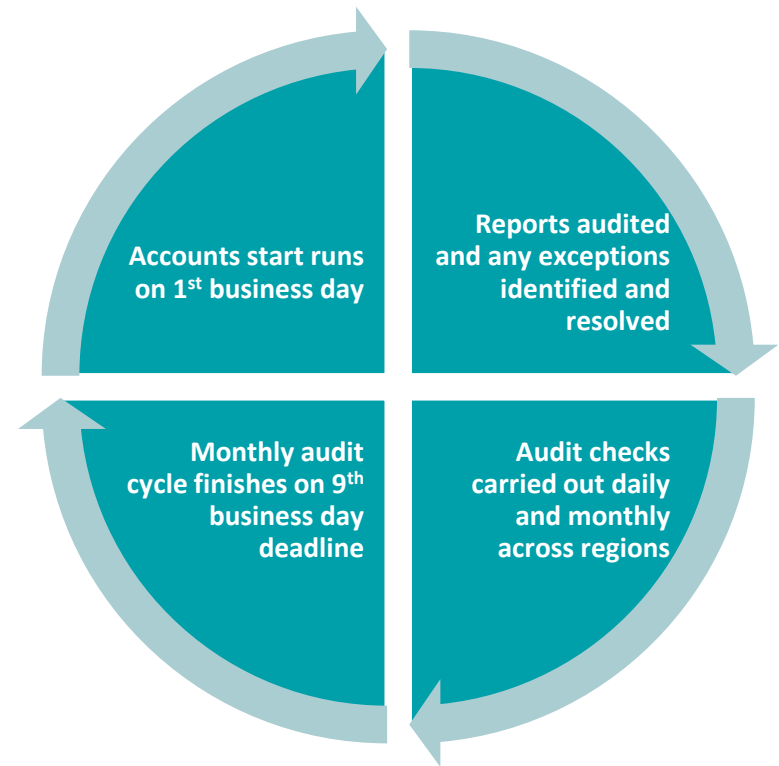
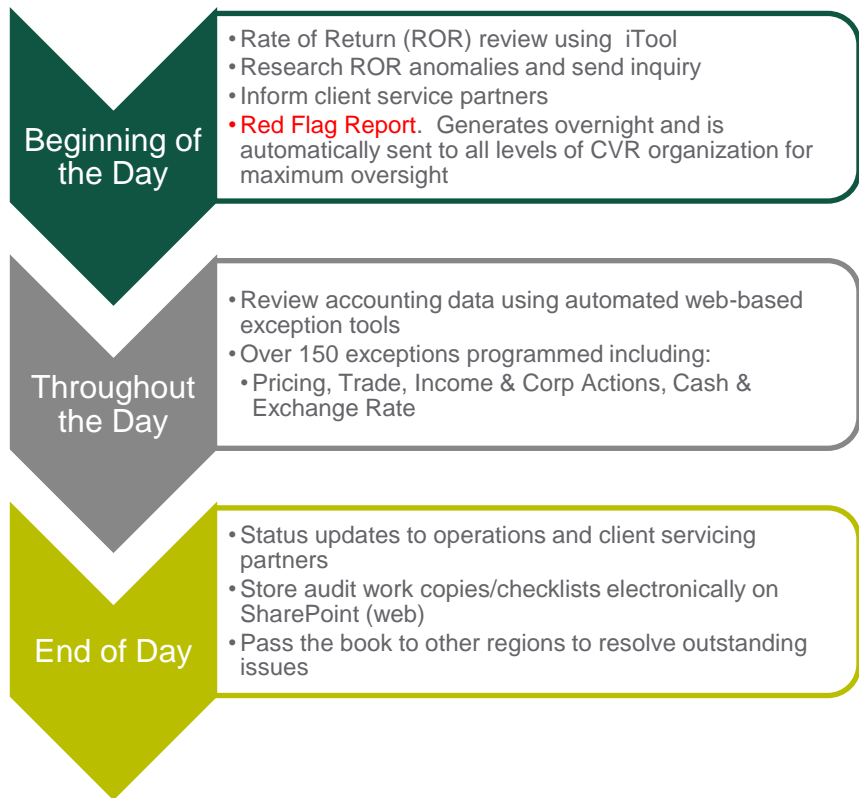


Delivering Exceptional Results

- Faster, more accurate results
- Greater access to our experts
- Ability to focus on more critical/value-added activities
- Greater flexibility on deadlines



DATA REVIEW PROCESS FLOW



GLOBAL RED FLAG REPORT

Portfolio movements over 100% are reflected on a Red Flag report. The Red Flag report is distributed globally to Client Services and Operations management.



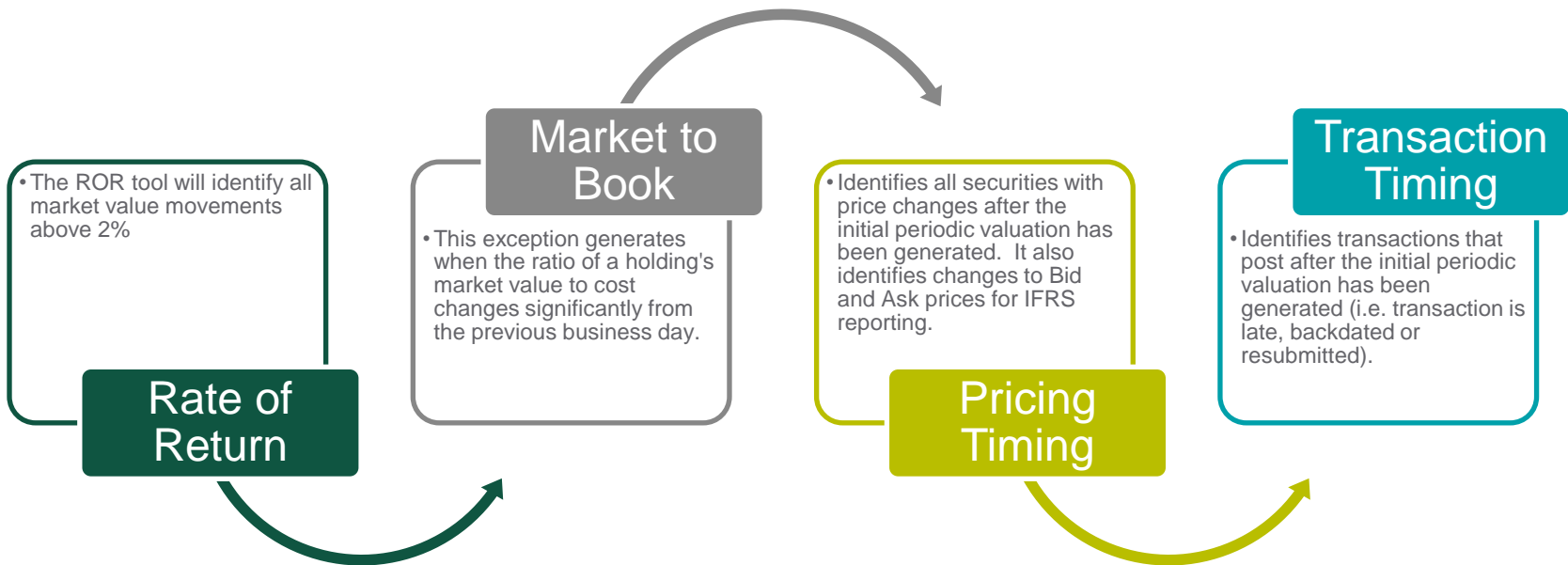
Red Flag Report: RORs exceptions $\geq 100\%$ for accounts with MV ≥ 5 M

DATE	ACCOUNT	ACCOUNT BASE CURRENCY	DEPARTMENT	MANAGER	CRA	ROR ABSOLUTE VALUE	MV ABSOLUTE VALUE	STATUS	COMMENTS
------	---------	-----------------------------	------------	---------	-----	--------------------------	----------------------	--------	----------

Each CRA is responsible for a daily Rate of Return check on all of their assigned portfolios. The ROR tool will identify all market value movements above 2% which are investigated and updated to advise whether the movement is Valid or Error. Major movements over 100% are reflected on a Red Flag report

DAILY CLIENT RESOURCE ANALYST CHECKS

CRA performs checks daily on assigned relationships to ensure a smooth month-end process.

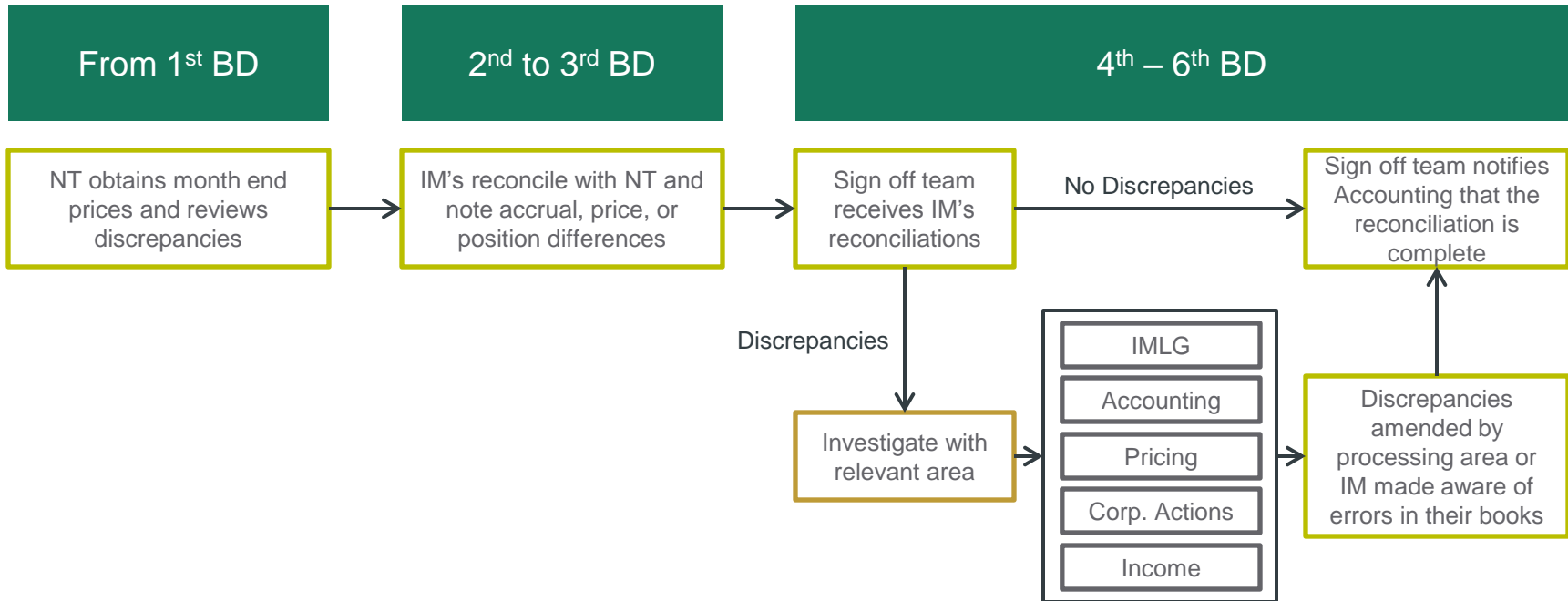


DAILY OPERATIONS RESOURCE ANALYST CHECKS

ORA performs horizontal checks for daily exceptions in the current auditing period.

Funding & Disbursement	Holdings	Pricing	Cash
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Miscellaneous Cash	<input type="checkbox"/> Residual Cost	<input type="checkbox"/> Missing Price Daily	<input type="checkbox"/> Invalid Vendor
<input type="checkbox"/> Asset & Unit Switches	<input type="checkbox"/> Fractional Shares	<input type="checkbox"/> Missing Price Non Daily	<input type="checkbox"/> Missing Vendor
<input type="checkbox"/> Inter/Intra Portfolios	<input type="checkbox"/> Expired Securities	<input type="checkbox"/> Price Tolerance Daily	
<input type="checkbox"/> Sponsor Contributions	<input type="checkbox"/> Negative Cost	<input type="checkbox"/> Price Tolerance Non Daily	
	<input type="checkbox"/> Negative Holding	<input type="checkbox"/> Zero Price	
	<input type="checkbox"/> Zero Cost		
Transactions	Income	Data	Other Checks
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Not Mapped	<input type="checkbox"/> Duplicate Accrual	<input type="checkbox"/> Security Setup Field	<input type="checkbox"/> Lotted
<input type="checkbox"/> Account Not Opened	<input type="checkbox"/> Negative Accrual	<input type="checkbox"/> Security Setup Change	<input type="checkbox"/> Derivatives
<input type="checkbox"/> Zero Cost Trade	<input type="checkbox"/> Late Pay Date		
<input type="checkbox"/> Duplicate Trades	<input type="checkbox"/> Bond Not Accruing		

MONTHLY RECONCILIATION PROCESS



Reconciliation with fund managers is completed on a monthly basis adhering to the following criteria:

- 2% tolerance level for all pricing discrepancies. Any prices outside the set tolerance would be analyzed and explained
- Zero tolerance on position discrepancies
- Zero tolerance on cash discrepancies
- Reconciliation is completed two business days prior to Northern Trust releasing finalized Investment Accounting data

STANDARD SUITE OF REPORTING TEMPLATES

*The standard reports are located in the Master Report Library under:
Portfolio Statement Models > Accounting Statements*

Reconciliation

- Change in Book and Market Value
- Change in Cash

Holdings

- Asset Detail – Base Currency
- Asset Summary

Transactions

- Investment Transaction Detail
- Investment Transaction Summary
- Pending Transactions Detail
- Income and Expense Detail – Base Currency
- Income and Expense Summary
- Funding and Disbursement Detail
- Funding and Disbursement Summary
- Capital Change Detail
- Cash Activity Detail
- Foreign Exchange Gain/Loss Detail*
- Foreign Exchange Gain/Loss Summary*
- Realized Gain/Loss Summary
- Foreign Exchange Rates to Base Currency*

*Will populate if you invest in foreign currencies

OTHER PRODUCTS AND AUDITS

Depending on the product, audits are completed monthly, quarterly, or a 9 and 11 month bases.

Annual Accounting Reporting	Additional audits are completed at 9 or 11 month intervals from the assigned year end with a final annual audit completed yearly
Plan Allocation/Unitization Reporting	Comprehensive accounting at both the asset pool and participant scheme level detailing income, fee, and gain/loss treatments, rate of return calculations, asset allocation reporting and ownership reporting
GASB Reporting	A suite of reports available to assist with GASB 28, 40, 53, 67, and 72 accounting reporting requirements. Reports show detailed and summary Sec Lending, Risk analysis, Derivatives, MROR, and Fair Value disclosures
5500 Reporting	A suite of reports and schedules to assist with 5500 Reporting for ERISA clients. These are typically audited and delivered by February 28 th of each year
Private Equity/Limited Partnerships	A suite of reporting tools to assist clients with analytics and tracking abilities: LP Adjusted Valuation, AFS Valuation Statement Summary, Exposure and Vintage Year Reporting
General Ledger/Trail Balance Reporting	A suite of accounting based reports to assist with ledger: Trial Balance, Detailed Income/Expense, Holdings Detail and Summary based on legal structure and risk

ADDITIONAL RESOURCES

Proprietary Exception Audit Tool

- Top to bottom redesigned exception platform for increased flexibility, efficiency, and scalability
- Aligns exception generation with market close for cleaner daily data
- Ties together security level exceptions with client/account level controls providing a complete picture for Analyst during daily/monthly audit cycles
- Allows for enhanced metrics generation to help identify exception trends to use in eliminating issues at the source

Control Panel

- A web based proprietary workflow tool that centralized audit documentation and workflow monitoring tools
- Serves as a central repository for all completed audits for easy extraction and research purposes
- Provides status reporting accessible by internal teams for progress monitoring during the month audit cycle

Enterprise Relationship Management Tool

- All audit issues and inquiries are tracked via the eRM on-line tool
- Enterprise Relationship Management tool allows accounting managers as well as front end partners to evaluate inquiry trends and use the information to enhance procedures to eliminate data issues

Technical Accounting Team

- Client Valuation Reporting and other Corporate & Institutional Services partner areas work with the Technical Accounting Team to ensure reporting regulations are understood and reports are reflecting data correctly

Best Practice Committee

- Assists in identifying divisional and/or client specific procedures that go beyond our core reporting functions that elevate risk, are inefficient, or are undocumented
- Provide management and clients with recommendations and assignments as needed to ensure a balanced approach in servicing our clients, mitigating operational risks, and minimizing financial exposure

CORPORATE & INSTITUTIONAL SERVICES

Securities Lending

Don Anderson
Senior Vice President
Securities Lending Consultant



NORTHERN TRUST

COMMITTED TO THE SECURITIES LENDING BUSINESS

We are investing in the long-term value of securities lending

Philosophy

- Enhance returns
- Extract intrinsic value from loans
- Customizable program
- Does not interfere with investment strategy

Securities lending agent

- Asset servicing and asset management alignment
- Credit and risk framework
- Financial strength supported by capital and our balance sheet

Core Business for Northern Trust

- Continue to invest in the securities lending business
 - *People*
 - *Process*
 - *Technology*
- 38 years of experience

Securities Lending Clients

449

from 31 countries

Outstanding Loans

US \$144

billion

Lendable Base

US \$1.1

trillion

MANAGING RISK

Risk management is instrumental to our program

Borrower

Borrower defaults and collateral is not sufficient to cover

Mitigating factors:

- Credit review of borrowers
- Over-collateralization
- Daily marking
- Indemnification
- Risk analysis tools

Trade Settlement

Fund sells securities and borrower doesn't return in time for trade to settle

Mitigating Factors:

- Timely communication
- Automated reallocations
- Trade settlement protection

Cash Collateral Reinvestment

Cash collateral investment becomes impaired or decreases in value

Mitigating Factors:

- Client approved guidelines
- Dedicated team of fixed income research analysis
- Daily automated compliance

Interest Rate

Loan rebate rate exceeds earnings on cash collateral investments

Mitigating Factors:

- Weekly gap analysis
- Shared risk and stress testing of portfolio

CUSTOM SOLUTIONS

We work with you to understand your objectives and design customized programs

Collateral options

Tailored to your risk level

- Cash: pooled or separately managed
 - *Principal preservation, liquidity management, competitive yield*
 - *Managed by Northern Trust Asset Management*
- Non-cash: held in a separate account
 - *Examples include: US treasuries and agencies, highly rated OECD debt, equities*

Limits

To ensure a focus on intrinsic value lending

- Restricting the total amount that can be lent across the entire fund
- Asset class, country limits, seasonal restrictions, minimum return parameters
- Borrower-specific caps or restricting certain borrowers from your program entirely
- Limits based on the maximum daily traded amount

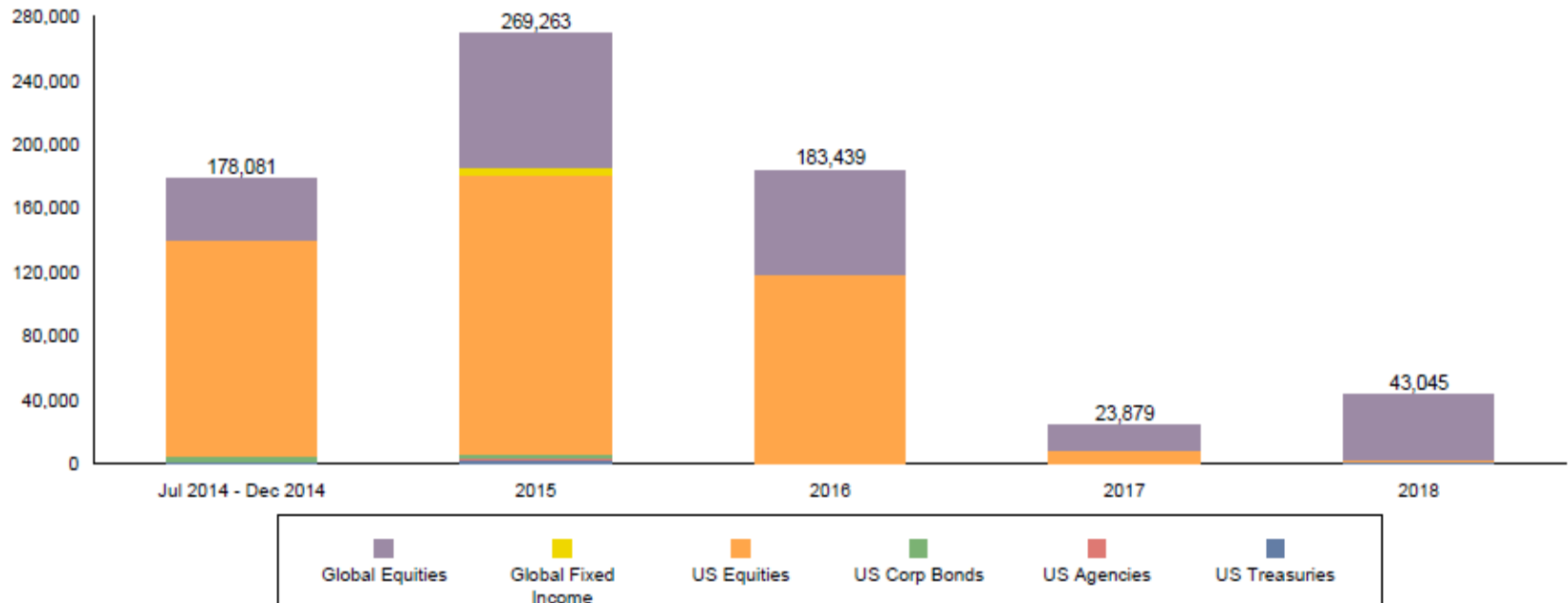
HISTORICAL EARNINGS SUMMARY

Northern Trust Securities Lending

Historical Graph (Net Earnings)

(USD) **

◆ SAN MATEO



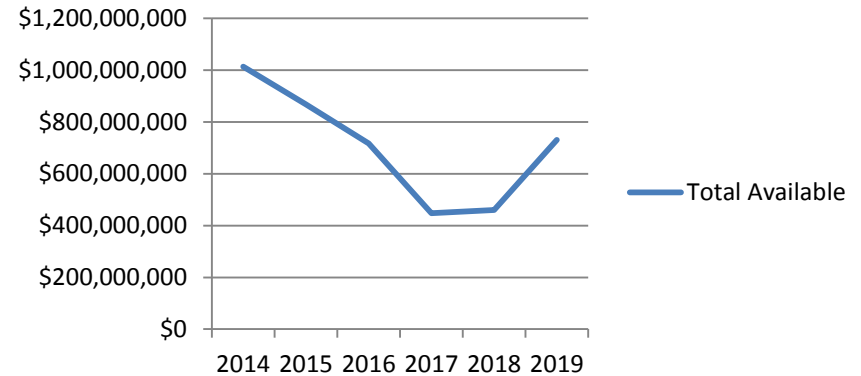
HISTORICAL EARNINGS SUMMARY

Portfolio changes over time have had a significant impact on Availability, On Loan and Earnings.

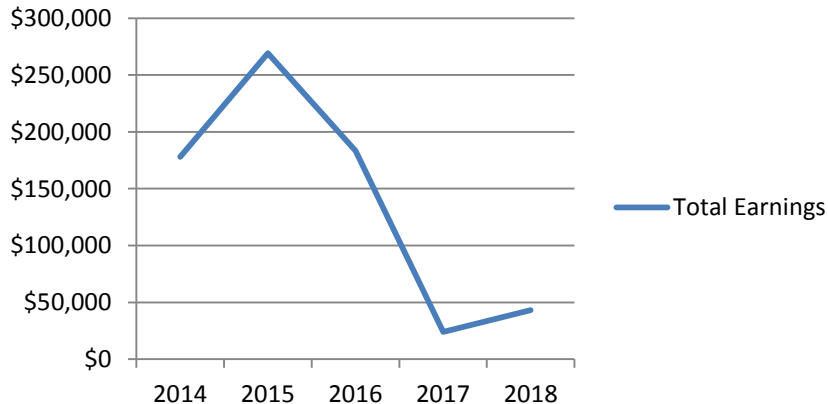
Cash Collateral portfolio changes have also impacted On Loan and Earnings.

Year	Total Available	Total On Loan	Total Earnings
2014	\$1,013,586,171	\$65,814,413	\$178,081
2015	\$866,968,734	\$99,815,558	\$269,263
2016	\$716,264,231	\$59,771,484	\$183,439
2017	\$447,860,021	\$4,163,640	\$23,879
2018	\$459,692,644	\$7,623,458	\$43,045
2019	\$730,743,379	N/A	N/A

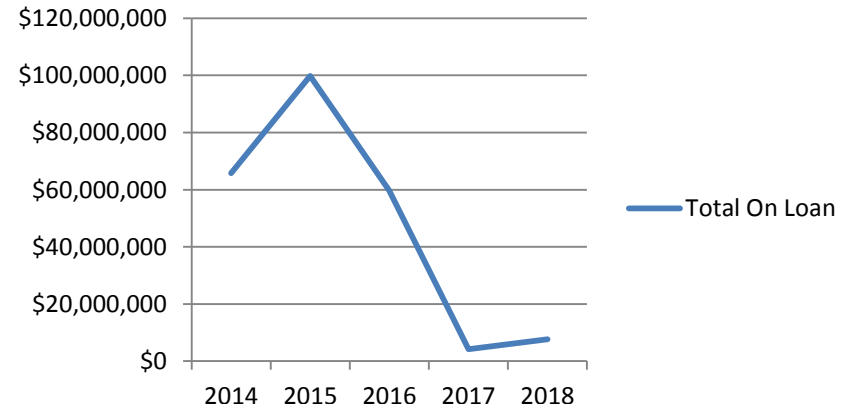
Total Available



Total Earnings



Total On Loan



NORTHERN TRUST

Investment Risk and Analytical Services

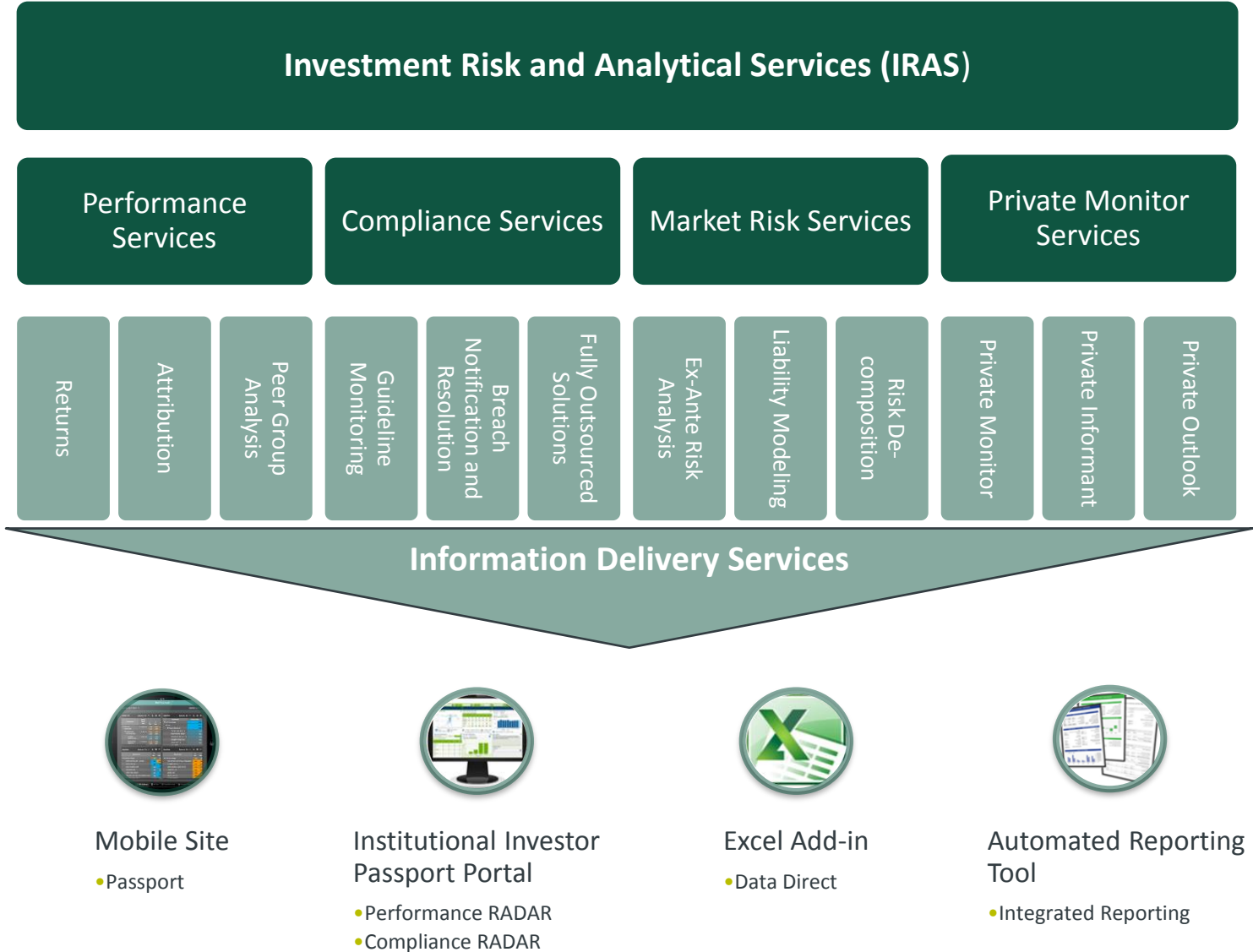
Shane Crea
Vice President

Investment Risk & Analytical Services






NORTHERN TRUST

INVESTMENT RISK & ANALYTICAL SERVICES DELIVERY SOLUTIONS



BETTER DATA. BETTER TOOLS. BETTER DECISION MAKING.

Flexible delivery tools enabling investment governance and oversight.

<p>On Demand</p> 	<p>Flexible dashboards offer an integrated view of performance, risk and compliance. Available via online portal, Northern Trust Passport and mobile app for iPad</p>
<p>Published Reporting</p> 	<p>Comprehensive suite of reports and charts available in a customizable format designed with the client reporting objectives in mind. Board level quality presentation with the depth and breadth of analysis scheduled and delivered based on client demands.</p>
<p>Download and Extract Data</p> 	<p>Our industry leading Data Direct™ tool streamlines access to information via Microsoft Excel. Efficiently compile data on-demand, from multiple sources, into your own reporting structure.</p>

Northern Trust's Passport reporting platform gives you access to the information you need, when you need it – in the way that suits you.

BETTER DATA. BETTER TOOLS. BETTER DECISION MAKING.

Our mission is to offer you a global team of experienced professionals supporting analytics-driven investment monitoring and decision making.

DEDICATED CONSULTANT SUPPORT

PERFORMANCE MEASUREMENT

Get a clear picture of your performance using our proprietary measurement and attribution engine fed directly from our accounting platform.

RISK SERVICES

Fulfil your market risk requirements from an investment and regulatory perspective with our sophisticated analytical tools and best-of-breed risk engines.

COMPLIANCE MONITORING

Ensure adherence to your investment policies and achieve greater transparency using our compliance monitoring platform, Compliance Analyst®.

ALTERNATIVE ASSETS

Access Experts who truly understand private equity and other alternative investments and enable better decision making with our cutting-edge tool, Private Monitor™.

DECISION SUPPORT ANALYTICS

Analytical and consultative support throughout the investment management process



Policy Decisions

- Asset allocation modeling
- Surplus-at-risk analysis
- Manager optimization
- Diversification analysis

Market Risk Analysis

- Value at risk
- Risk budgeting
- Predictive tracking error
- Stress Testing

PE Liquidity Modeling

- One and five year capital call forecasting

Compliance Monitoring

- Comprehensive tests available
- Daily monitoring
- Exception based e-mail notification
- Outsourced service available

Event Monitoring

- Exception based market volatility monitoring
- Characteristic and style drift
- Comprehensive graphical reports

PE Valuations Monitoring

- Estimated write-downs tool for PE Partnerships

MEASURE

Risk and Return

- Daily performance
- Historical analysis
- Volatility metrics
- Risk adjusted return metrics

Performance Comparisons

- Extensive benchmark availability and customization
- Robust peer groups
- 3rd party peer groups

Alternative Asset Solutions

- Comprehensive private equity solutions
- Industry-leading PE software solutions
- PE peer universe comparative data
- Hedge fund risk metrics

UNDERSTAND

Attribution Analysis

- Total fund attribution
- Equity, fixed, balanced and global mandates
- Stock level detail
- Risk attribution

Style Analysis

- Fundamental portfolio characteristic analysis
- Returns based style analysis
- Factor based analysis
- Environmental analytics

Consultant Support

- Explain key drivers of risk and performance
- Available to present bespoke analytics to investment staff or committee

INTEGRATED REPORTING

- Customizable template library
- Detailed templates available at Total Fund, Program, Manager and Holdings level
- Comprehensive report includes characteristics, peer comparison, statistics, asset allocation, and balance sheet information
- Secure On-line delivery via Passport



NORTHERN TRUST

Investment Hierarchy

Demo Fund US | September 30, 2018

% Rate of Return

Account/Credit	Ending Market Value USD	Ending Weight	Policy Weight	One Month	Three Months	One Year	Three Years	Five Years	Ten Years	Inception to Date	Inception Date
Demo Fund US	4,521,816,980	100.00		0.22	3.84	6.00	6.42	10.26	7.74	6.23	06/30/2008
Demo Fund Policy Benchmark				0.54	4.68	14.21	8.31	12.34	7.39	7.32	06/30/2000
Excess Return				-0.32	-0.73	-9.21	-1.90	-2.08	0.35	-2.09	06/30/2000
Public Markets Equity	1,531,389,187	33.87	35.00	0.53	6.69	7.85	4.88	12.65	7.14	4.60	06/30/2000
Public Markets Ex Blended BM				0.65	6.17	14.18	6.75	12.82	5.82	5.09	06/30/2000
				0.12	0.53	-8.34	-0.07	-0.17	1.30	-0.48	06/30/2000
Demo Fund US				0.74	6.28	8.18	8.56	16.64	9.82	8.72	06/30/2000
				0.48	5.95	15.11	9.19	16.29	7.45	6.06	06/30/2000
				0.22	0.33	-6.83	-0.62		1.57	-0.34	06/30/2000
				0.70	5.62	9.78	9.36	16.15	7.47	8.65	10/31/2003
				0.08	4.03	14.93	10.79	16.41	7.40	8.20	10/31/2003
				0.62	1.59	-5.15	-0.82	-0.28	0.06	0.45	10/31/2003
				0.27	4.99	15.56	11.83	17.19	7.72	8.10	08/31/2005
				0.08	4.03	14.83	10.79	16.41	7.40	7.69	08/31/2005
				0.19	0.96	0.63	1.06	0.79	0.32	0.41	08/31/2005
				1.09	7.02	11.26	12.10	16.68	9.50	8.83	10/31/2003
				0.37	4.58	13.76	11.83	16.60	8.85	8.33	10/31/2003
				0.73	2.44	-2.50	0.27	5.08	0.65	0.49	10/31/2003
				0.55	4.69	4.27	7.35	15.54	6.84	8.46	09/30/2003
				0.21	3.48	16.20	9.70	16.15	5.85	3.38	09/30/2003
				0.76	1.21	-9.83	-2.35	-0.61	0.18	0.07	09/30/2003
				0.72	7.16	6.40	7.51	16.62	9.78	6.15	06/30/2006
				0.89	7.90	15.19	7.49	16.07	7.38	7.19	06/30/2006
				0.17	-0.74	-8.79	0.02	0.95	2.41	-1.94	06/30/2000



NORTHERN TRUST

Peer Group Rankings

All Funds Over \$1B - Rate of Return - Total Fund Gross of Fees

Period	Min	Max
One Year	5.00 (95)	14.21 (7)
Three Years	6.42 (59)	8.31 (18)
Five Years	10.26 (36)	12.34 (6)

NORTHERN TRUST | RESULTS REVIEWED BY Raghav Deepak 21-Apr-2018 09:28 | TSTC GAM-C DEMO1 - NON-US FIXE DZZ104 | Valuation Date: April 18, 2018

Compliance Breach

RULE NAME: CN21583 - Country Exposure(%)
 RULE NARRATIVE:
 RESULT TYPE: **FAIL**
 BREACH STATUS: Recommend No Issue
 ACTIVE/PASSIVE (CAUSE): N/A (Rule Set Up)
 Breach Start Date (Age): 09-Nov-2017 (162)
 Category: Country
 Rule Type: Restrict
 Apply To: Aggregate

Restrict Attribute	Market Value %	Warnings
Alerts		
Min	0%	-
Max	3%	-

BREACH SUMMARY

Account ID	Account Name	Country Of Risk	Total Market Value	Securities Triggered	% Results	
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Australia	36,158,060.89	0	0.23
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Brazil	23,401,452.89	3	4.92
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Global Region	28,685,531.51	1	6.03
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Indonesia	15,058,968.60	2	3.16
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Malaysia	38,073,429.35	7	8.00
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Mexico	67,241,903.49	5	14.13
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Multi-National Agencies Region	39,293,580.72	3	8.26
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	Poland	36,948,516.94	3	7.77
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	South Africa	28,235,332.54	2	5.93
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	United Kingdom	22,244,373.78	1	4.68
✖	DZZ104	TSTC GAM-C DEMO1 - NON-US FIXE	United States	70,698,066.94	10	14.86

All data is offered on the basis of the best available information, and is subject to the limits and constraints set forth in the Northern Trust Terms for Compliance Analyst Service. We offer the Compliance Analyst service based on Northern Trust's definition of security classifications and prices, which are obtained through internal processes and verified information.

1 of 15 | Investment Risk & Analytical Services | Breach Id: DZZ104.R6.116

DATA DIRECT FOR EXCEL

Provides clients complete control of analytical output formats and facilitates more efficient production of critical reporting

Overview

Designed to integrate Northern Trust analytical data directly to Excel spreadsheets.

Formats can be saved and refreshed at any point in the future.

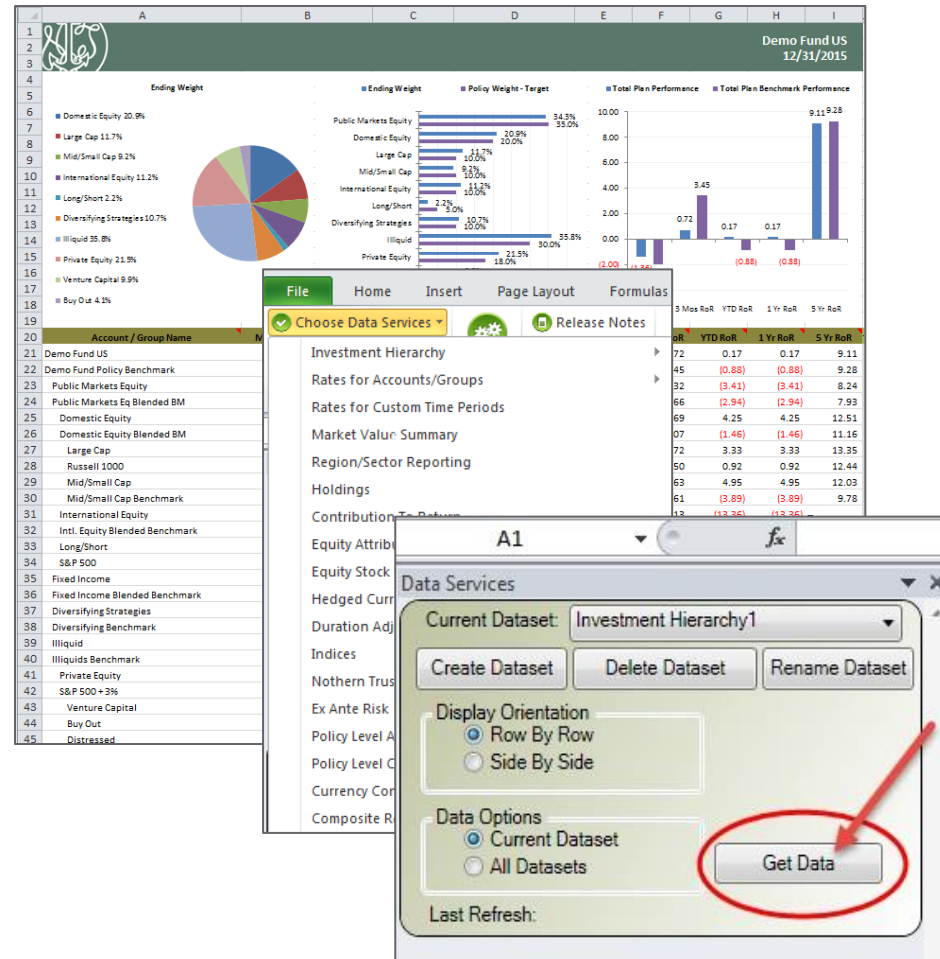
Simple data calls populate client risk and performance data that can be integrated with user defined calculations and formats.

Key Benefits

Updates can be produced to a timetable set by the client.

Files can be shared and refreshed on multiple computers.

Application is transportable – secured authentication is done through any available internet proxy.

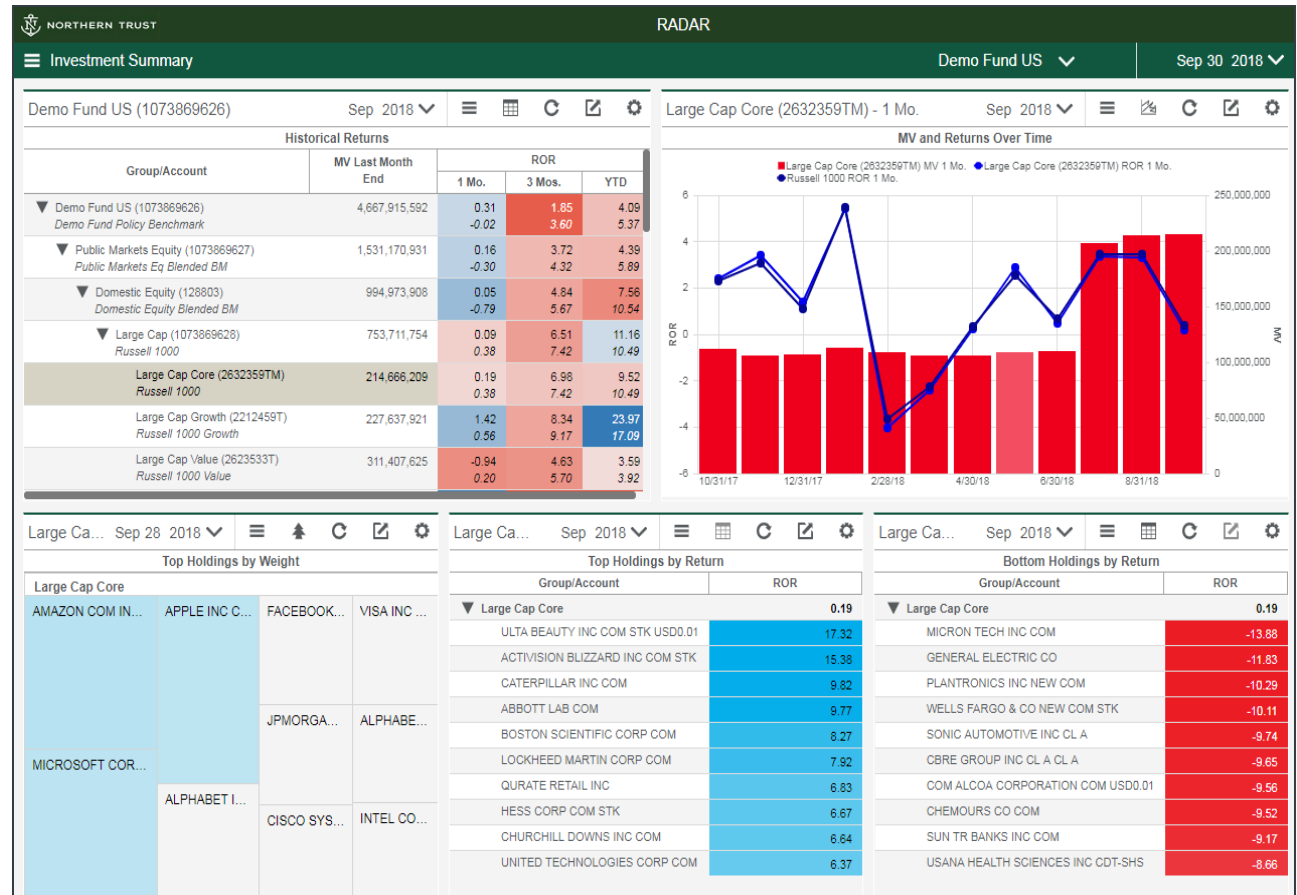


Performance:

PERFORMANCE RADAR

Access the information you need, when you need it, in a way that suits you through Northern Passport

- Flexible dashboards allow you to access multiple views of information on a single page
- Intuitive graphs and charts quickly summarize substantial amounts of complex data
- Powerful graphics such as heat maps help you focus on what's important
- Linked exhibits and drill through capabilities provide transparency and valuable insight



PERFORMANCE SERVICES FOR ASSET OWNERS

A depth and breadth of performance capabilities are available to suit your performance needs.



Expertise

- **Mature product:** Over four decades of performance services
- **Consultative approach:** Dedicated consultant who understands your investment approach and portfolios
- **Experienced team:** Expert analysis and specialists with a range of asset owners including. Corporate Pensions, Insurance, Sovereign Wealth, Public Funds, Foundations, Endowments, Ultra High Net Worth.
- **Local Support:** Regional service teams provide thought leadership, solutions and support in your time zone



Technology

- **Proprietary technology:** Internally owned and developed performance engine, audit tools, client reporting
- **Scale:** Supporting over 1,000 clients
- **Multi-channel delivery:** Flexible user experience platform, including mobile



Capabilities

- **Performance:** At the core of what we produce is accurate and timely Rates of Return
- **Attribution:** Supporting multi-currency equity, fixed, and total plan attribution. As frequently as daily and as granular as holdings level.
- **Statistics:** Ratio analysis and core statistics as well as higher moment hedge fund statistics such as skewness and kurtosis
- **Characteristics:** Fundamental portfolio analysis to understand manager style, risk factors, and factor exposures

IMPORTANT INFORMATION

Confidentiality Notice: This communication is confidential, may be privileged, and is meant only for the intended recipient. If you are not the intended recipient, please notify the sender as soon as possible. All materials contained in this presentation, including the description of Northern Trust, its systems, processes and pricing methodology, are proprietary information of Northern Trust. In consideration of acceptance of these materials, the recipient agrees that it will keep all such materials strictly confidential and that it will not, without the prior written consent of Northern Trust, distribute such materials or any part thereof to any person outside the recipient's organization or to any individual within the recipient's organization who is not directly involved in reviewing this presentation, unless required to do so by applicable law. If the recipient is a consultant acting on behalf of a third party client, the recipient may share such materials with its client if it includes a copy of these restrictions with such materials. In such event, the client agrees to comply with these restrictions in consideration of its accepting such materials.

© 2019 Northern Trust Corporation. Head Office: 50 South La Salle Street, Chicago, Illinois 60603 U.S.A. Incorporated with limited liability in the U.S. Products and services provided by subsidiaries of Northern Trust Corporation may vary in different markets and are offered in accordance with local regulation. This material is directed to professional clients only and is not intended for retail clients. For Asia-Pacific markets, it is directed to expert, institutional, professional and wholesale investors only and should not be relied upon by retail clients or investors. **For legal and regulatory information about our offices and legal entities, visit northerntrust.com/disclosures.** The following information is provided to comply with local disclosure requirements: The Northern Trust Company, London Branch; Northern Trust Global Services SE; Northern Trust Global Investments Limited; Northern Trust Securities LLP. Northern Trust Global Services SE, Abu Dhabi Branch, registration Number 000000519 licenced by ADGM under FSRA # 160018. The Northern Trust Company of Saudi Arabia - a Saudi closed joint stock company - Capital SAR 52 million. Licensed by the Capital Market Authority - License No. 12163-26 - C.R: 1010366439. Northern Trust Global Services SE Luxembourg Branch, 6 rue Lou Hemmer, L-1748 Senningerberg, Grand-Duché de Luxembourg, *Succursale d'une société de droit étranger* RCS B129936. Northern Trust Luxembourg Management Company S.A., 6 rue Lou Hemmer, L-1748 Senningerberg, Grand-Duché de Luxembourg, *Société anonyme* RCS B99167. Northern Trust (Guernsey) Limited (2651)/Northern Trust Fiduciary Services (Guernsey) Limited (29806)/Northern Trust International Fund Administration Services (Guernsey) Limited (15532) Registered Office: Trafalgar Court Les Banques, St Peter Port, Guernsey GY1 3DA.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.5

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

SUBJECT: Report on Update of Verus Capital Market Assumptions

Recommendation

Review the attached report from Verus that summarizes their latest capital market assumptions and the impact on SamCERA's total fund policy expectations.

Background

Verus updates their capital market assumptions annually. These assumptions will form the basis for the upcoming asset liability analysis, which will take place later this year.

Discussion

The attached report from Verus summarizes their latest asset class capital market assumptions and the resulting impact on the total fund policy expectations. Margaret Jadallah from Verus will present this report to the Board.

Attachment

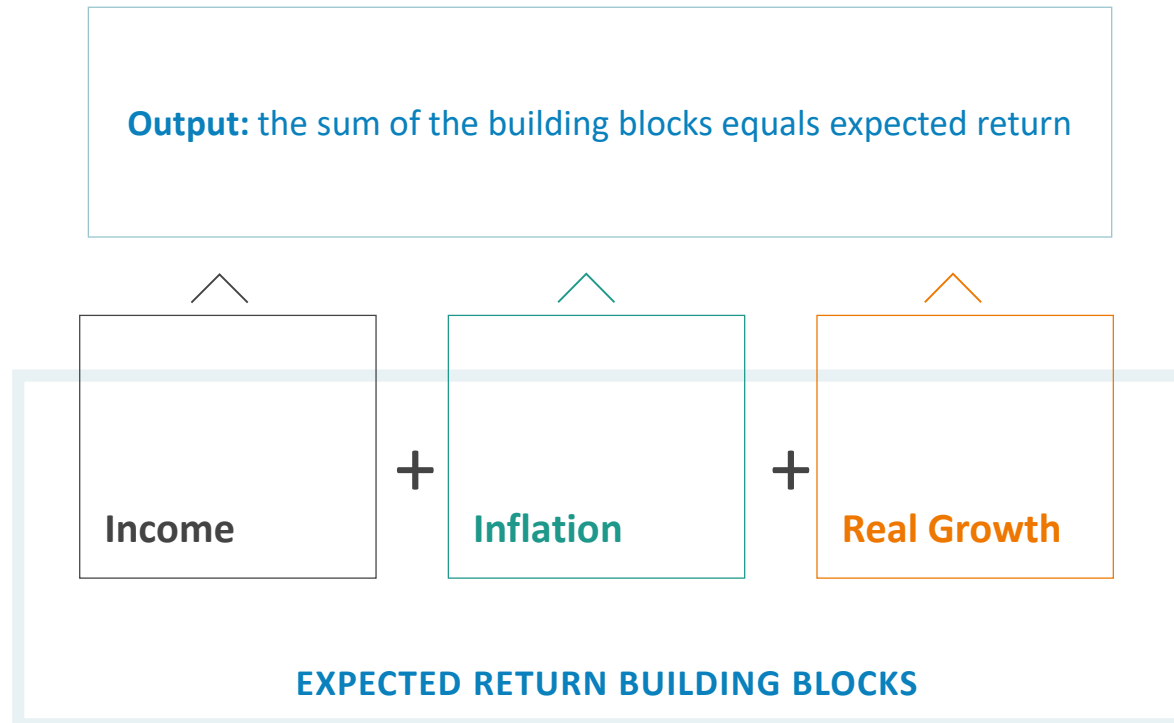
Verus 2019 Capital Market Assumptions



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

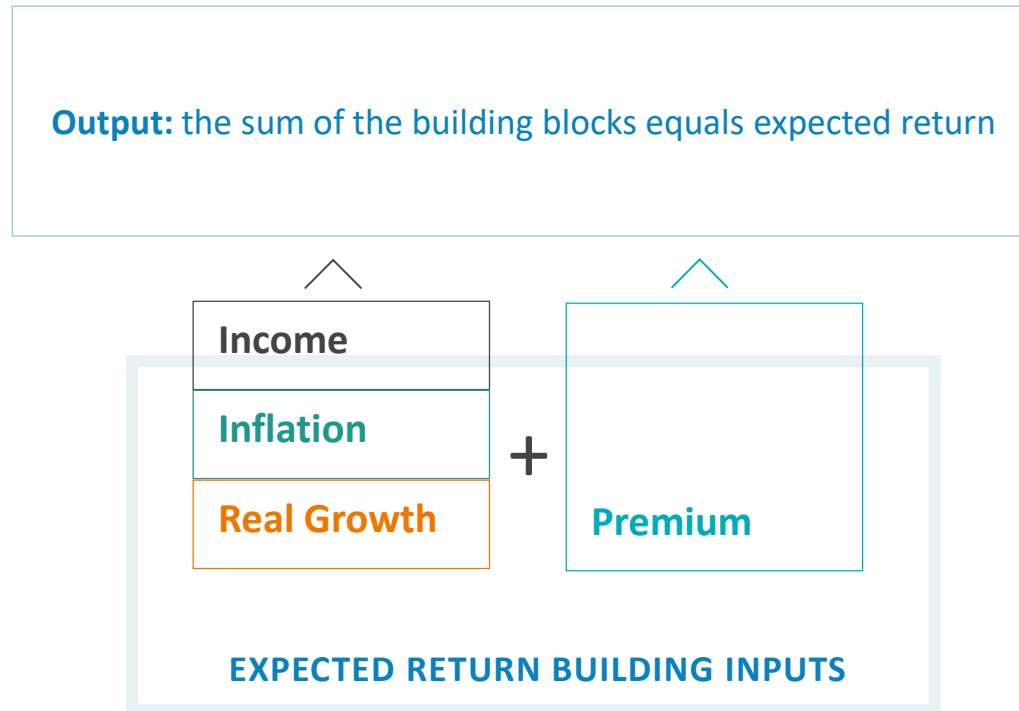
MARCH 26, 2019
Capital Market Assumptions

Building block methodology



For illustrative purposes only

Build-up/spread



For illustrative purposes only

Expected return methodology

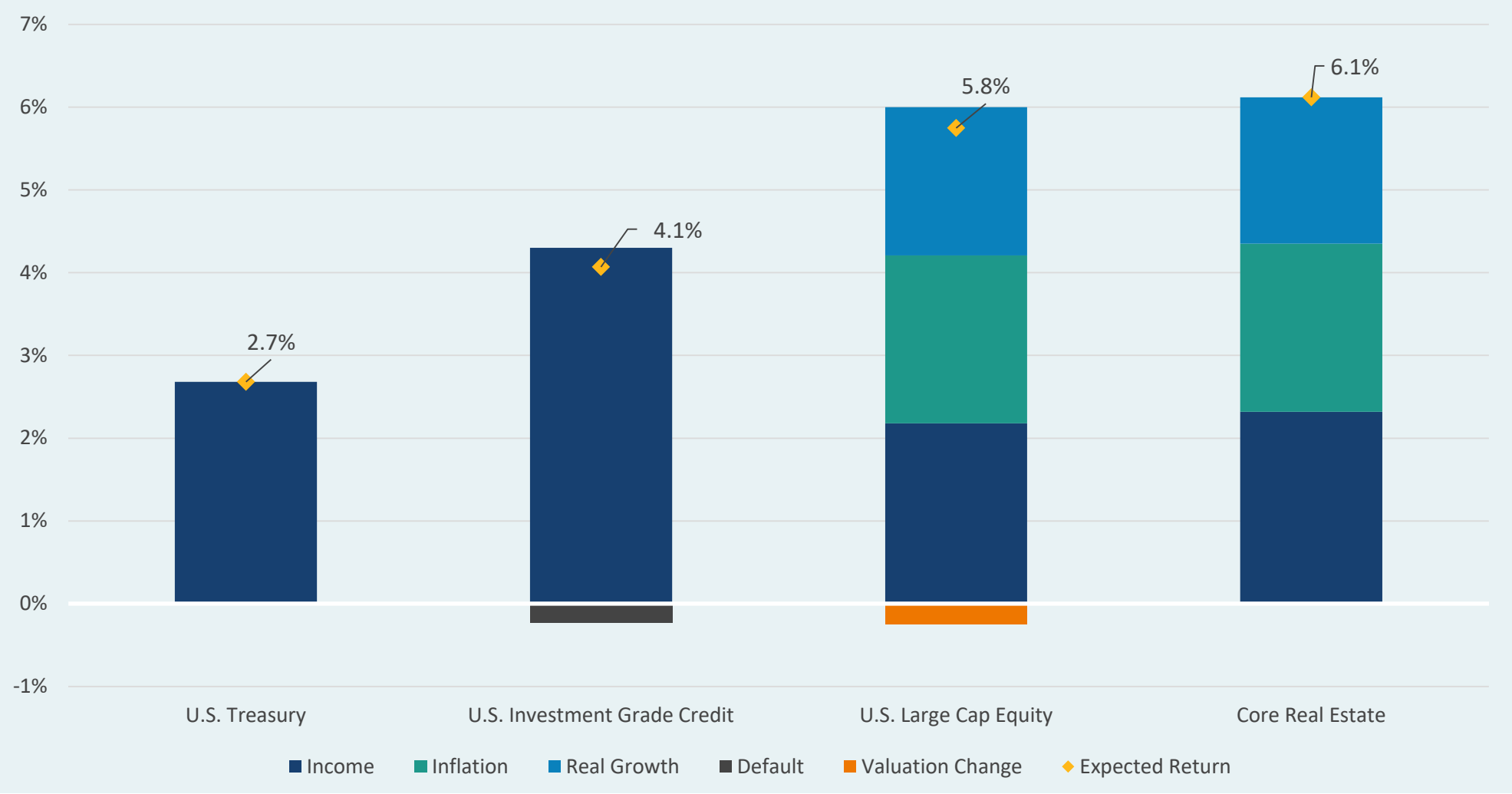
BUILDING BLOCK METHODOLOGY

Cash	Real yield estimate + inflation forecast
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)
Core Real Estate	Cap rate + real income growth – capex + inflation forecast
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)

BUILD-UP/SPREAD METHODOLOGY

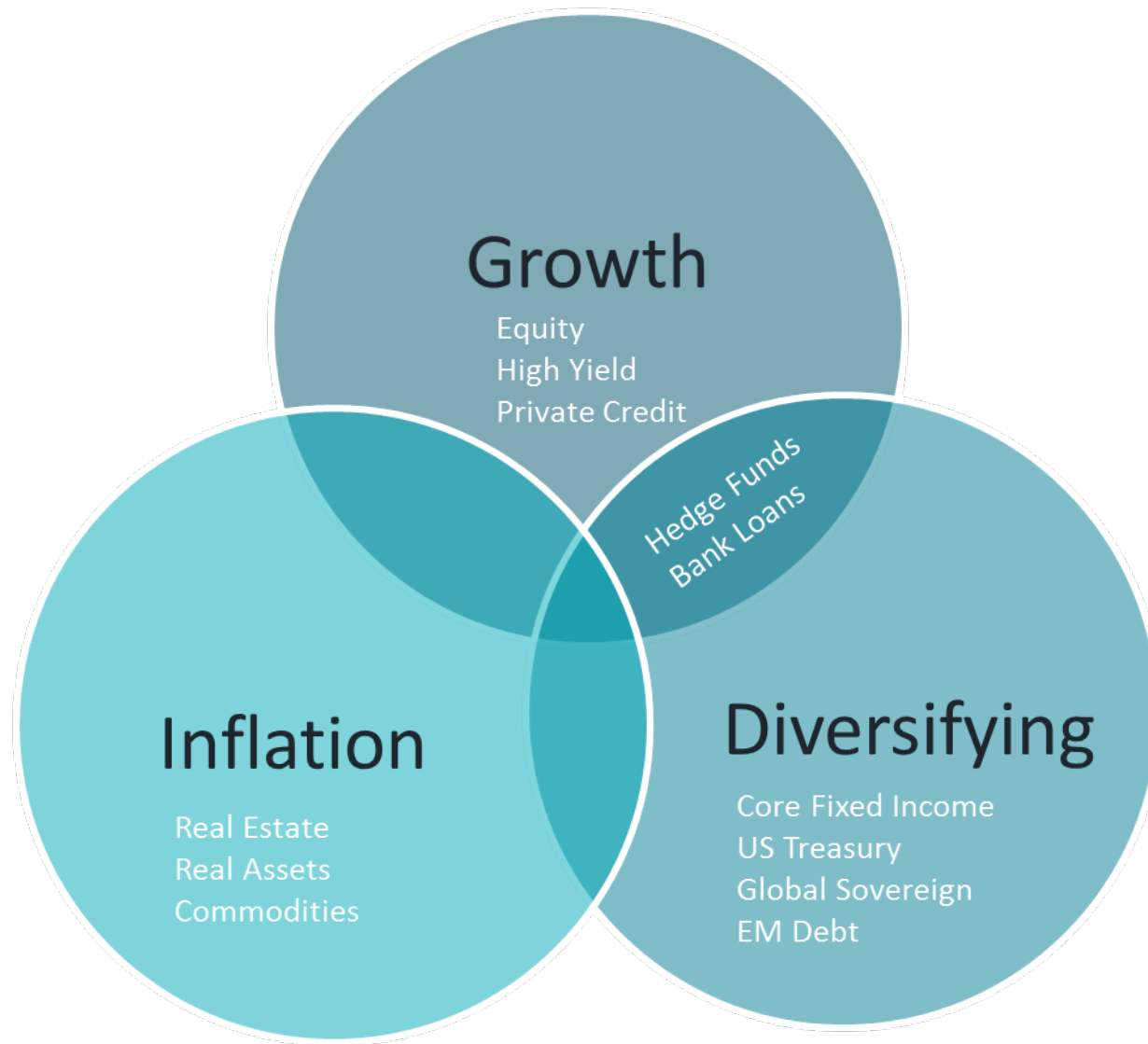
Private Equity	U.S. large cap domestic equity forecast * 1.85 beta adjustment
Private Credit	Bank loan forecast + 1.75% private credit premium

Expected return methodology

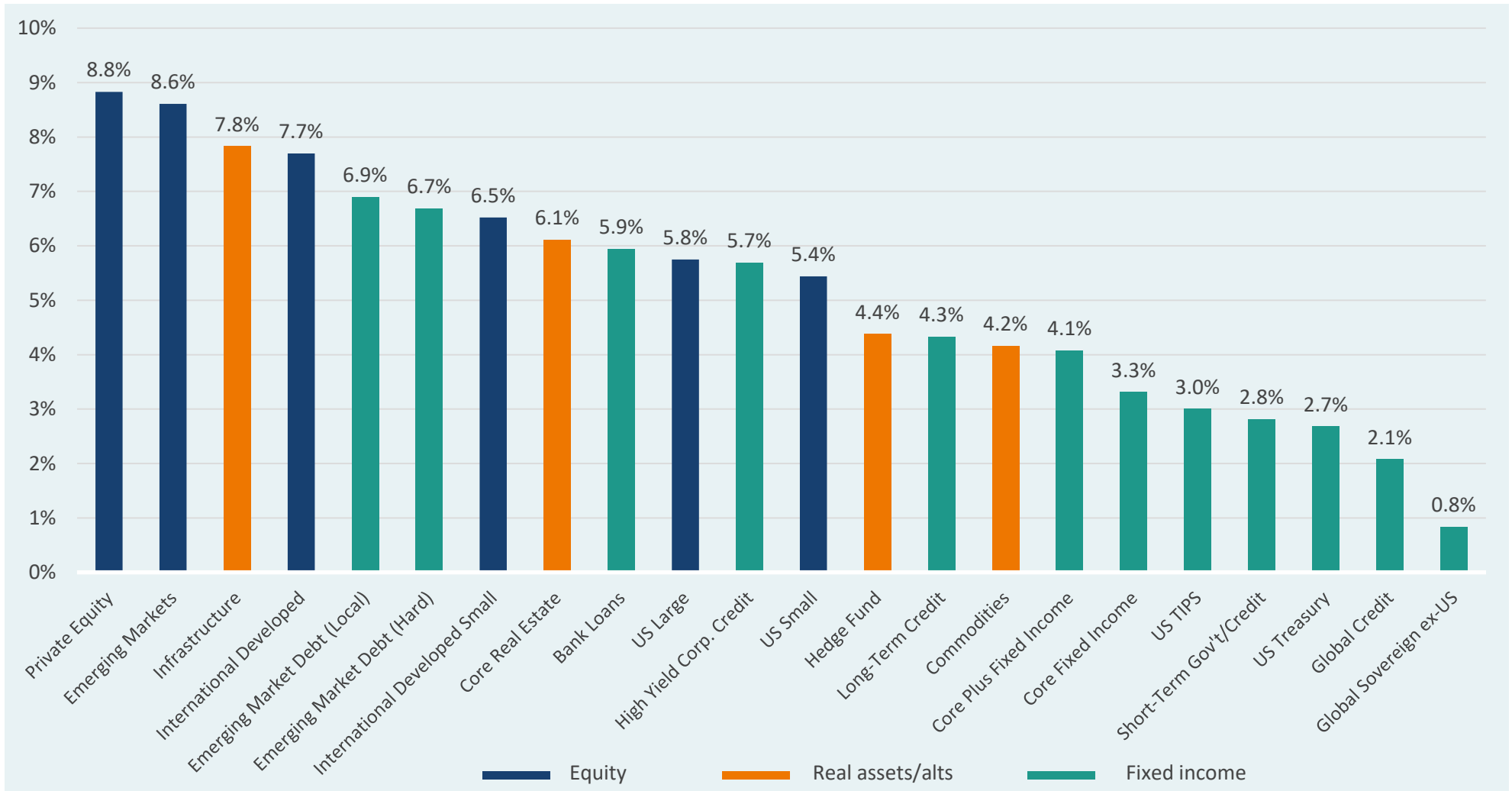


Source: Verus

Functional Labels

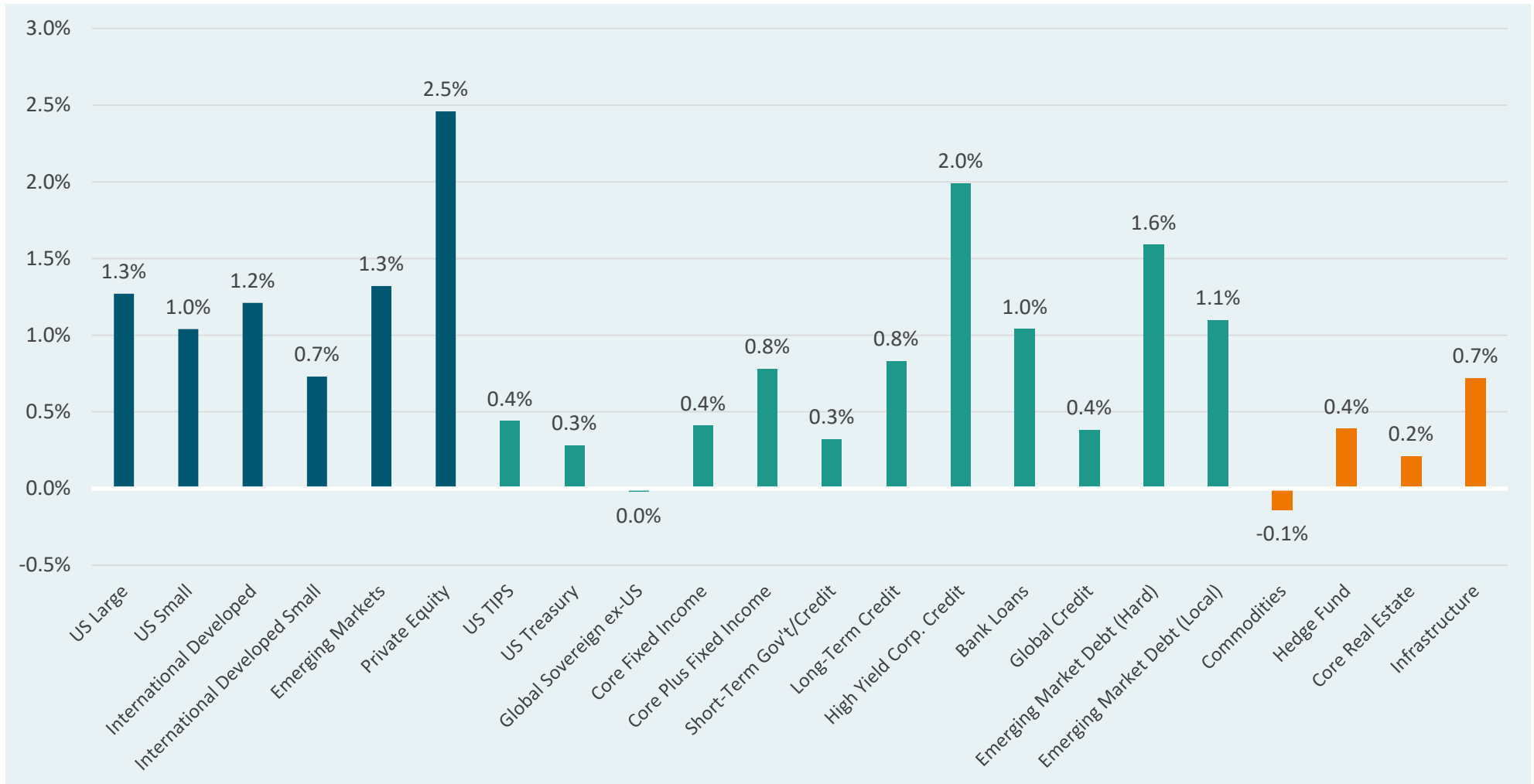


10-year expected returns



Source: Verus

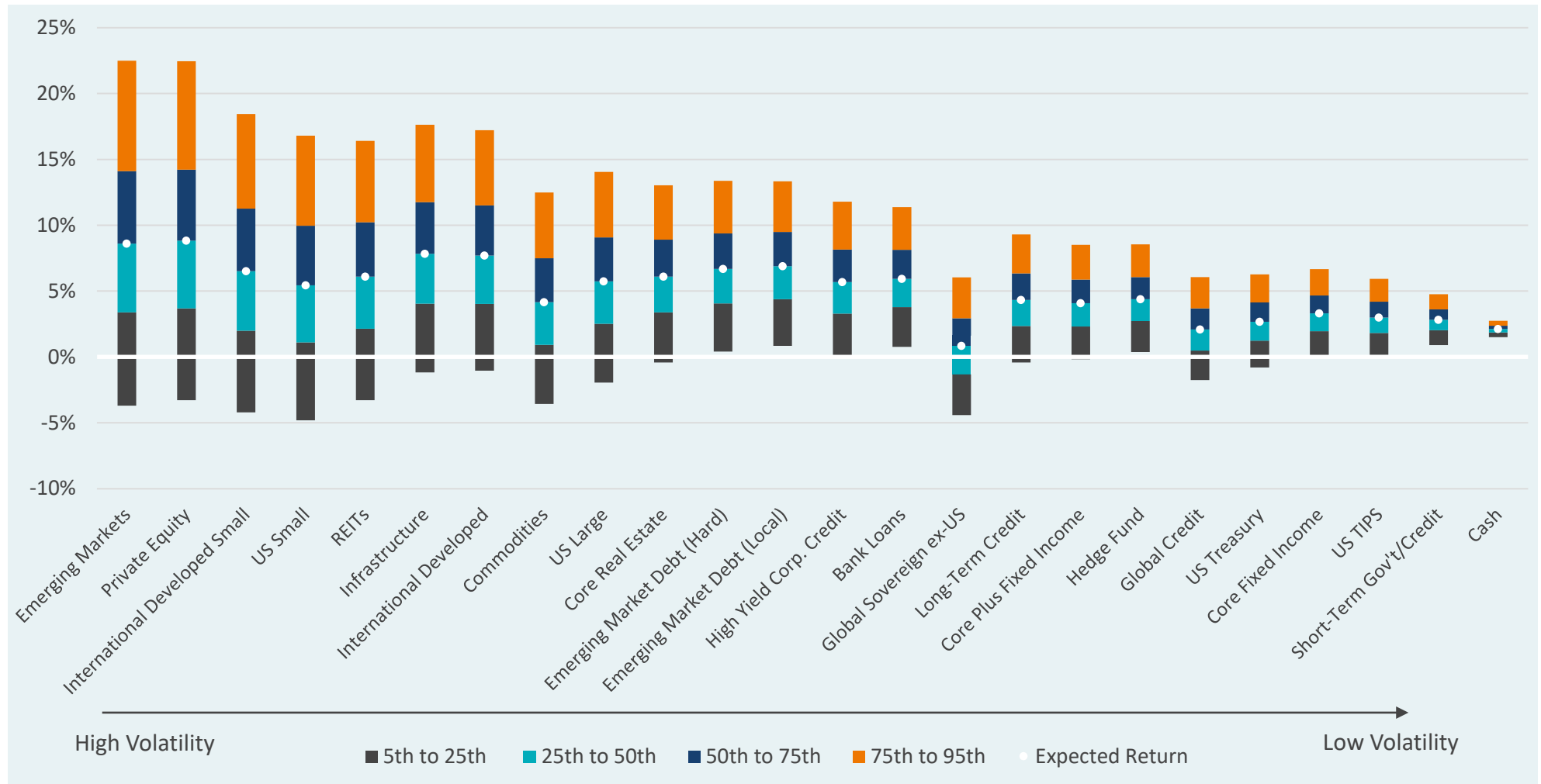
2019 vs. 2018 return forecast



Note: the year-over-year change is based on the 2019 methodology

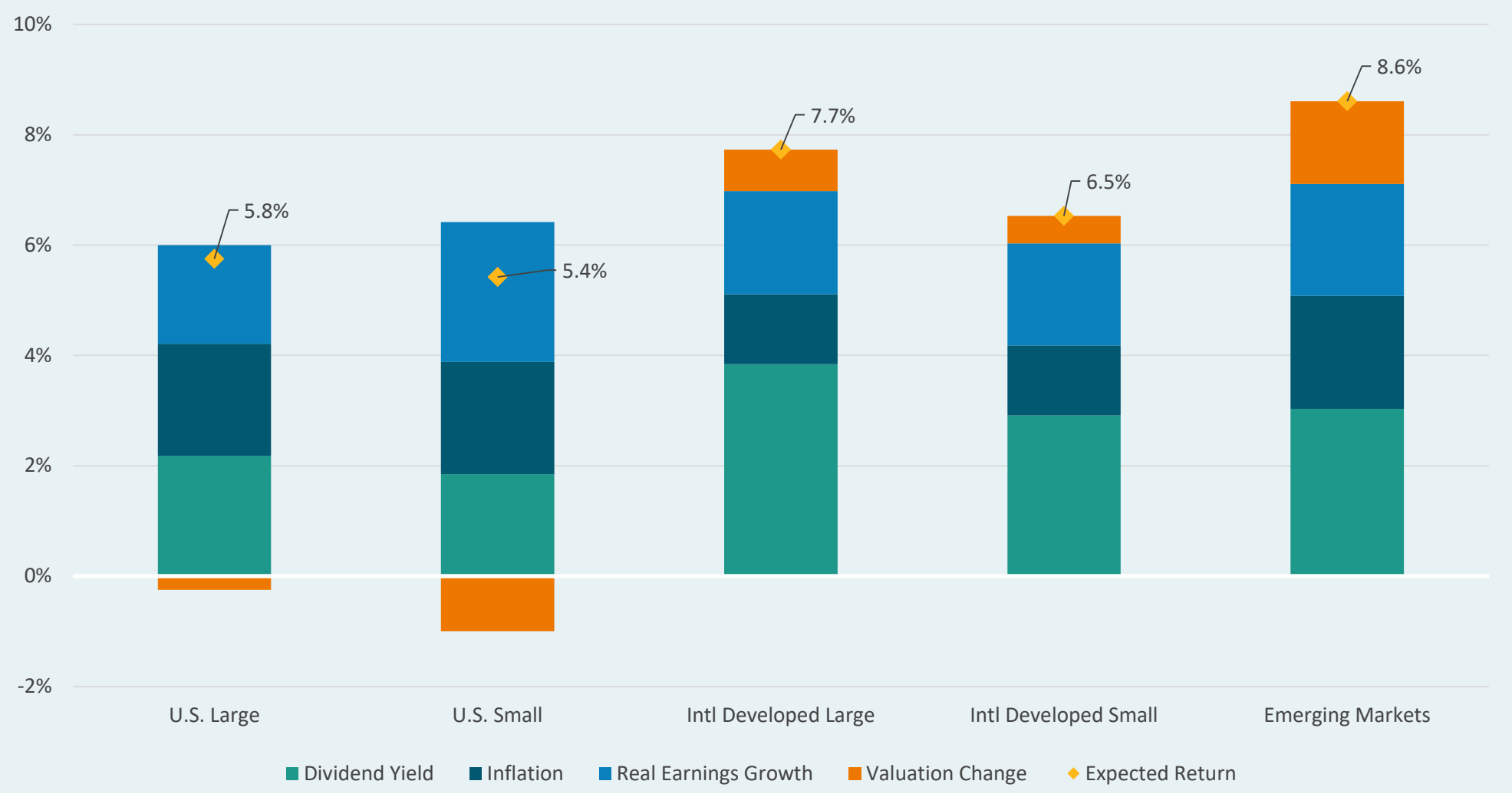
Range of likely 10 year outcomes

10-YEAR RETURN 90% CONFIDENCE INTERVAL



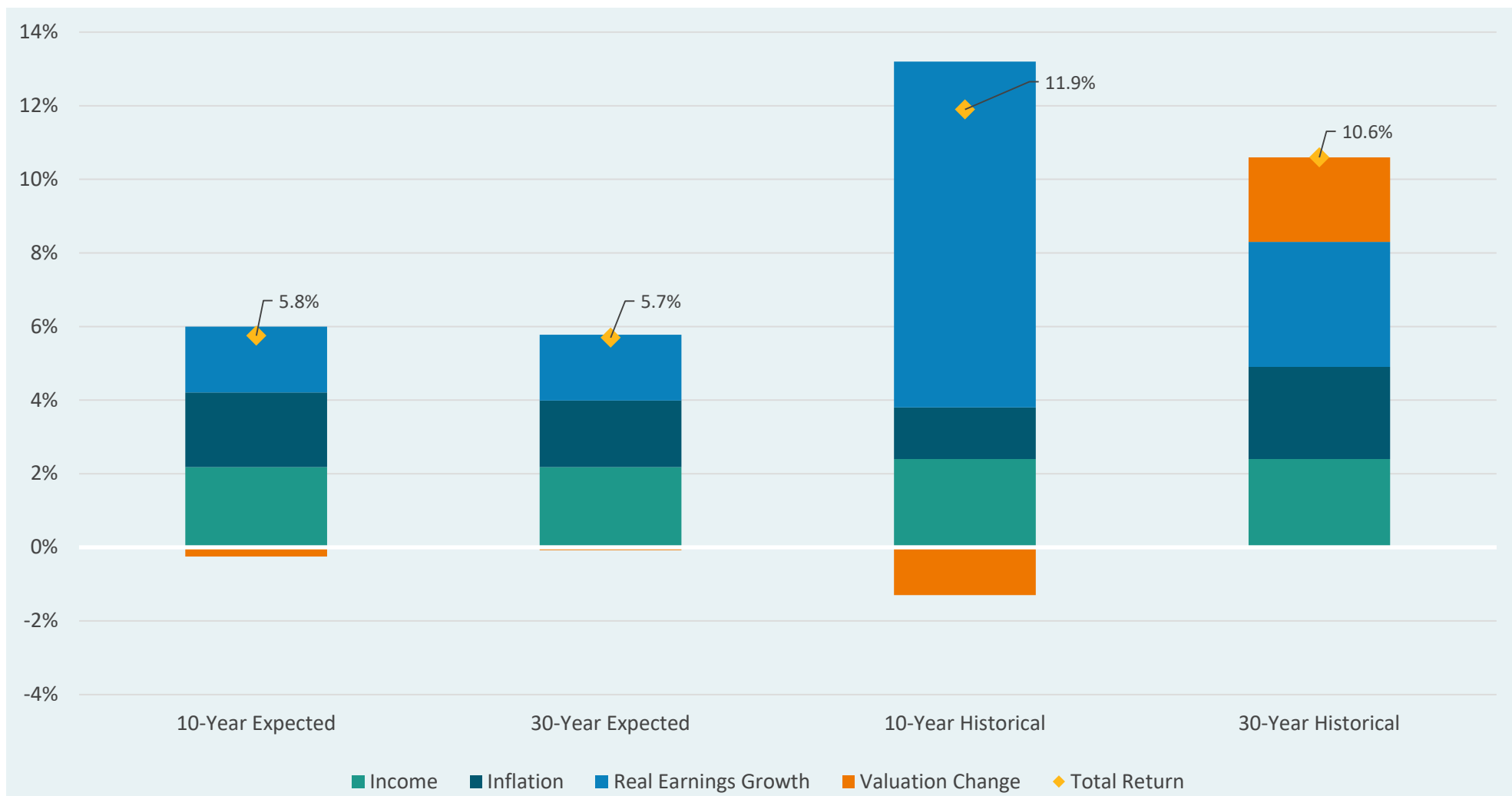
Equity

Equity return forecasts



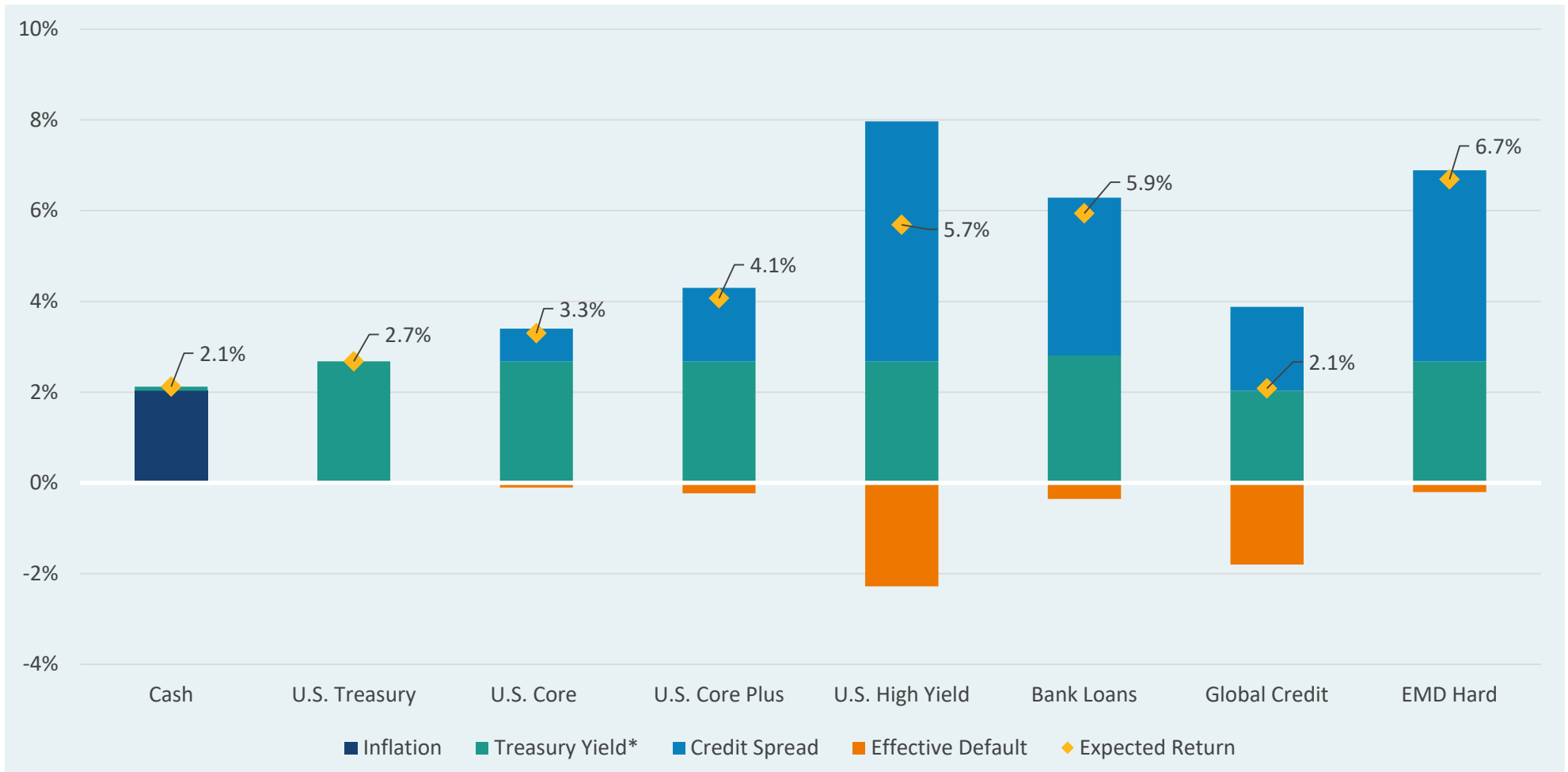
Source: Verus

U.S. equity – expected vs. history



Fixed income

Fixed income return forecasts



Source: Verus

*Bank loans uses 3-month USD Libor instead of the Treasury yield

Portfolio expectations

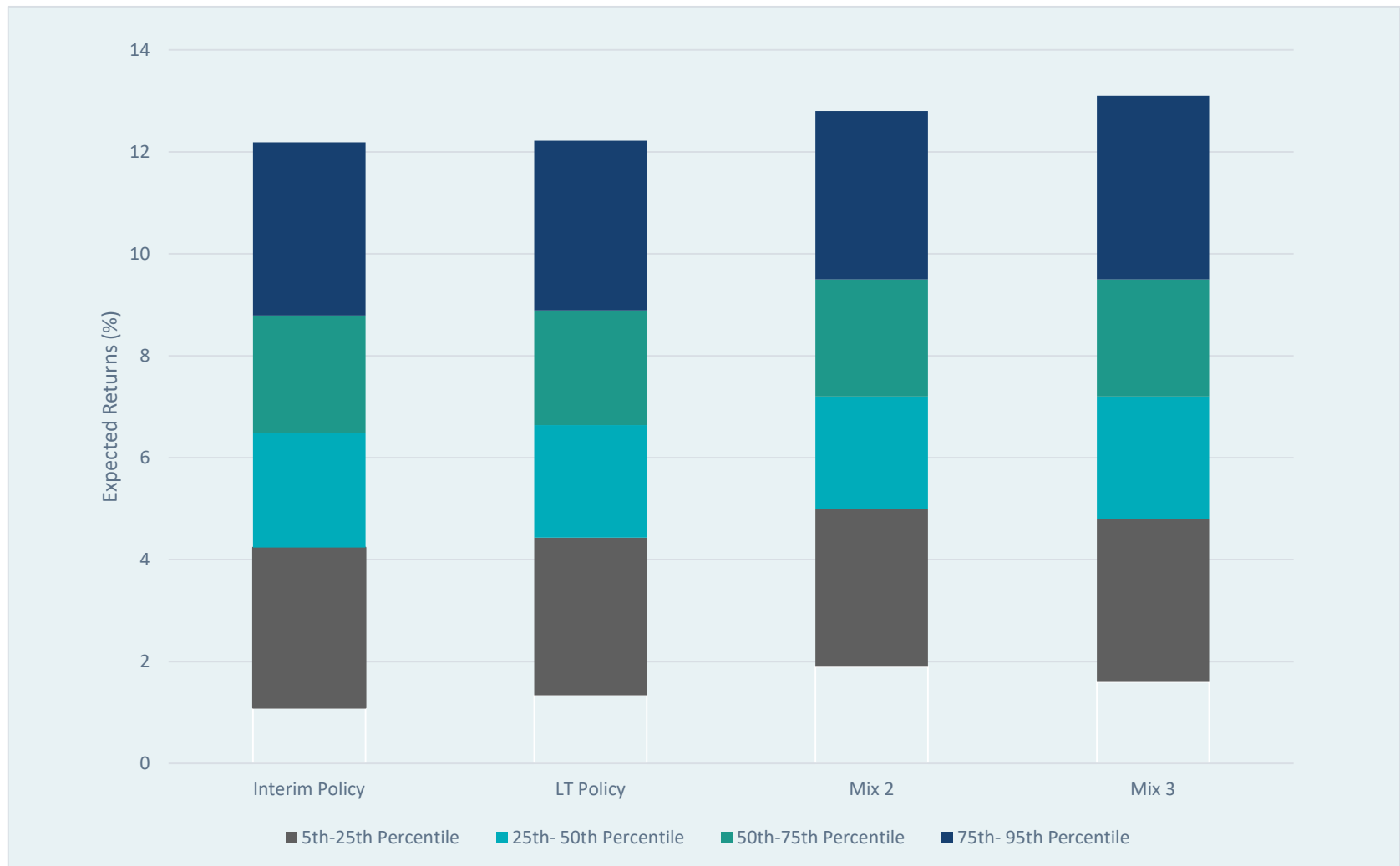
Portfolio expected returns

CMA's (10 Yr)

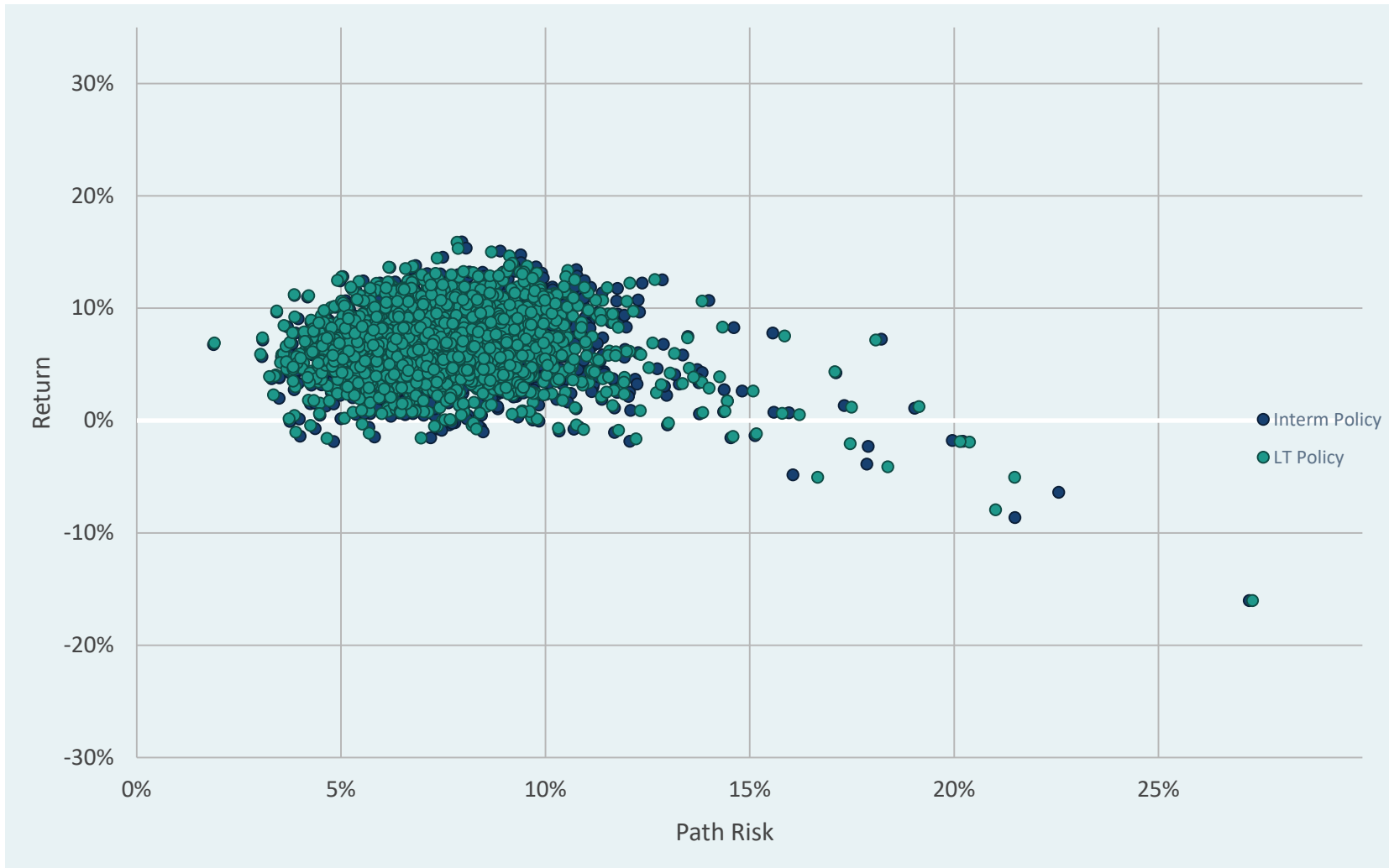
	Interim Policy	LT Policy	Return (g)	Std Dev	Sharpe Ratio
US Large	14.0	11.0	5.8	15.6	0.31
US Low Vol	6.0	6.0	5.2	12.6	0.31
US Small	2.0	2.0	5.4	21.3	0.25
Total Domestic Equity	22	19			
International Developed	15.0	14.0	7.7	17.8	0.39
Emerging Markets	4.0	4.0	8.6	26.1	0.36
Total Int'l Equity	19	18			
Core Fixed Income	14.0	14.0	3.3	6.4	0.22
High Yield Corp. Credit	5.0	6.0	5.7	11.5	0.37
US TIPS	2.0	0.0	3.0	5.5	0.18
Total Fixed Income	21	20			
Commodities	4.0	5.0	4.2	15.7	0.20
Core Real Estate	8.0	10.0	6.1	12.9	0.37
Infrastructure	4.0	5.0	7.9	18.2	0.40
Total Real Assets	16	20			
Hedge Fund	6.0	6.0	4.4	7.8	0.33
Risk Parity	8.0	8.0	7.1	9.5	0.55
Private Equity	6.0	6.0	8.8	25.6	0.37
Private Credit	2.0	3.0	7.7	10.2	0.60
Total Non-Public Investments	22	23			
Total Allocation	100	100			

	Interim Policy	LT Policy
Mean Variance Analysis		
Forecast 10 Year Return	6.5	6.6
Standard Deviation	10.6	10.4
<i>Return/Std. Deviation</i>	<i>0.6</i>	<i>0.6</i>
<i>1st percentile ret. 1 year</i>	<i>-12.4</i>	<i>-11.6</i>
Sharpe Ratio	0.46	0.47

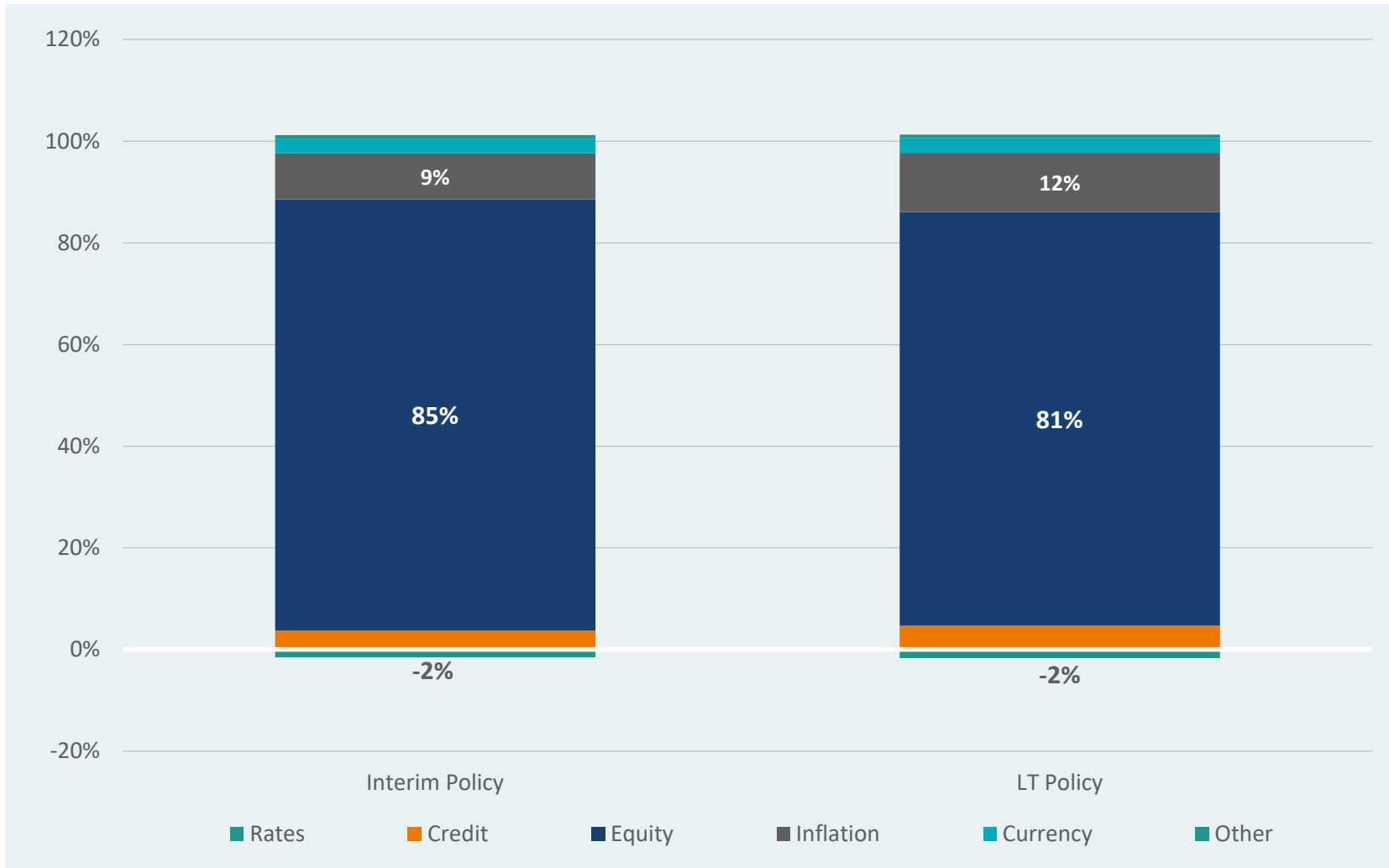
Range of 10 year Expected Returns



Monte Carlo



Risk Decomposition



Appendix

Methodology

CORE INPUTS

- We use a fundamental building block approach based on several inputs, including historical data and academic research to create asset class return forecasts.
- For most asset classes, we use the long-term historical volatility after adjusting for autocorrelation.
- Correlations between asset classes are calculated based on the last 10 years. For illiquid assets, such as private equity and private real estate, we use BarraOne correlation estimates.

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	Real yield estimate + inflation forecast	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Bank loan forecast + 1.75% private credit premium**	Long-term volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return	Long-term volatility
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

*Long-term historical volatility data is adjusted for autocorrelation (see Appendix)

**The private credit premium is generated by illiquidity, issuer size, and lack of credit rating

10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
U.S. Large	S&P 500	5.8%	6.9%	15.6%	0.24	0.31	0.94	0.95
U.S. Small	Russell 2000	5.4%	7.5%	21.3%	0.15	0.25	0.63	0.69
International Developed	MSCI EAFE	7.7%	9.1%	17.8%	0.31	0.39	0.37	0.43
International Small	MSCI EAFE Small Cap	6.5%	8.8%	22.4%	0.20	0.30	0.61	0.66
Emerging Markets	MSCI EM	8.6%	11.6%	26.1%	0.25	0.36	0.40	0.48
Global Equity	MSCI ACWI	6.8%	8.2%	17.1%	0.27	0.36	0.62	0.67
Private Equity*	Cambridge Private Equity	8.8%	11.7%	25.6%	0.26	0.37	-	-
Fixed Income								
Cash	30 Day T-Bills	2.1%	2.1%	1.2%	-	-	-	-
U.S. TIPS	BBgBarc U.S. TIPS 5-10	3.0%	3.1%	5.5%	0.16	0.18	0.67	0.68
U.S. Treasury	BBgBarc Treasury 7-10 Year	2.7%	2.9%	6.7%	0.09	0.12	0.46	0.48
Global Sovereign ex U.S.	BBgBarc Global Treasury ex U.S.	0.8%	1.3%	9.8%	-0.13	-0.08	0.14	0.18
Core Fixed Income	BBgBarc U.S. Aggregate Bond	3.3%	3.5%	6.4%	0.19	0.22	1.09	1.08
Core Plus Fixed Income	BBgBarc U.S. Corporate IG	4.1%	4.4%	8.4%	0.24	0.27	1.23	1.22
Short-Term Gov't/Credit	BBgBarc U.S. Gov't/Credit 1-3 Year	2.8%	2.9%	3.6%	0.19	0.22	1.38	1.37
Short-Term Credit	BBgBarc Credit 1-3 Year	3.2%	3.2%	3.7%	0.30	0.30	1.66	1.64
Long-Term Credit	BBgBarc Long U.S. Corporate	4.3%	4.7%	9.4%	0.23	0.28	0.88	0.89
High Yield Corp. Credit	BBgBarc U.S. Corporate High Yield	5.7%	6.3%	11.5%	0.31	0.37	1.39	1.36
Bank Loans	S&P/LSTA Leveraged Loan	5.9%	6.4%	10.2%	0.37	0.42	1.50	1.47
Global Credit	BBgBarc Global Credit	2.1%	2.4%	7.5%	0.00	0.04	0.88	0.89
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.7%	7.4%	12.6%	0.37	0.42	1.19	1.18
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	6.9%	7.6%	12.1%	0.40	0.45	0.26	0.31
Private Credit	Bank Loans + 175bps	7.7%	8.2%	10.2%	0.55	0.60	-	-
Other								
Commodities	Bloomberg Commodity	4.2%	5.3%	15.7%	0.13	0.20	-0.29	-0.22
Hedge Funds*	HFRI Fund Weighted Composite	4.4%	4.7%	7.8%	0.29	0.33	0.76	0.76
Core Real Estate	NCREIF Property	6.1%	6.9%	12.9%	0.31	0.37	1.28	1.26
Value-Add Real Estate	NCREIF Property + 200bps	8.1%	9.8%	19.4%	0.31	0.40	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	10.1%	13.0%	25.9%	0.31	0.42	-	-
REITs	Wilshire REIT	6.1%	7.8%	19.3%	0.21	0.30	0.55	0.63
Global Infrastructure	S&P Global Infrastructure	7.9%	9.3%	18.2%	0.32	0.40	0.52	0.57
Risk Parity	Risk Parity	7.1%	7.6%	10.0%	0.50	0.55	-	-
Currency Beta	Russell Conscious Currency	2.1%	2.2%	4.1%	0.02	0.02	0.25	0.26
Inflation		2.0%	-	-	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Return expectations differ depending on method of implementation

Correlation assumptions

	Cash	US Large	US Small	Intl Large	Intl Large Hdg	Intl Small	Intl Small Hdg	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign ex US	Global Sovereign ex US Hdg	US Core	US Core Plus	ST Govt/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	Global Credit Hdg	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Global Infra	Risk Parity	Currency Beta	Inflation			
Cash	1.0																																			
US Large	-0.1	1.0																																		
US Small	-0.1	0.9	1.0																																	
Intl Large	-0.1	0.9	0.7	1.0																																
Intl Large Hdg	-0.1	0.8	0.8	0.9	1.0																															
Intl Small	-0.1	0.8	0.7	1.0	0.8	1.0																														
Intl Small Hdg	-0.1	0.8	0.8	0.9	0.9	0.9	1.0																													
EM	0.0	0.8	0.7	0.8	0.7	0.8	0.7	1.0																												
Global Equity	-0.1	1.0	0.8	1.0	0.9	0.9	0.9	0.9	1.0																											
PE	-0.2	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	1.0																										
US TIPS	-0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.3	0.2	0.1	1.0																									
US Treasury	0.0	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4	-0.2	-0.3	-0.2	0.7	1.0																								
Global Sovereign ex US	0.1	0.3	0.1	0.4	0.1	0.5	0.1	0.5	0.4	0.0	0.5	0.4	1.0																							
Global Sovereign ex US Hdg	-0.1	-0.1	-0.2	-0.1	-0.2	-0.2	-0.2	-0.1	-0.1	0.0	0.5	0.7	0.3	1.0																						
US Core	-0.1	-0.1	-0.1	0.0	-0.1	0.0	-0.1	0.1	0.0	-0.1	0.7	0.9	0.5	0.7	1.0																					
US Core Plus	-0.1	0.2	0.1	0.4	0.3	0.4	0.3	0.4	0.3	0.0	0.6	0.5	0.5	0.5	0.8	1.0																				
ST Govt/Credit	0.1	0.0	0.0	0.2	0.0	0.2	0.0	0.3	0.1	-0.1	0.6	0.5	0.6	0.3	0.8	0.7	1.0																			
Short-Term Credit	0.0	0.3	0.2	0.4	0.3	0.5	0.4	0.5	0.4	0.0	0.4	0.0	0.4	0.0	0.4	0.7	0.8	1.0																		
Long-Term Credit	-0.1	0.2	0.1	0.3	0.2	0.3	0.2	0.3	0.2	0.0	0.5	0.5	0.5	0.5	0.8	0.9	0.5	0.5	1.0																	
US HY	-0.1	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.3	-0.2	0.3	-0.1	0.1	0.6	0.4	0.7	0.4	1.0																
Bank Loans	-0.2	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.5	0.4	0.1	-0.4	0.1	-0.2	0.0	0.4	0.2	0.7	0.2	0.9	1.0															
Global Credit	0.0	0.6	0.4	0.8	0.5	0.7	0.5	0.8	0.7	0.2	0.5	0.1	0.8	0.2	0.5	0.8	0.6	0.7	0.7	0.7	0.5	1.0														
Global Credit Hdg	-0.1	0.4	0.3	0.5	0.4	0.5	0.4	0.6	0.5	0.2	0.5	0.3	0.5	0.4	0.7	0.9	0.6	0.7	0.9	0.7	0.5	0.8	1.0													
EMD USD	-0.1	0.5	0.3	0.6	0.5	0.6	0.4	0.7	0.6	0.2	0.5	0.2	0.6	0.3	0.5	0.7	0.5	0.6	0.6	0.6	0.7	0.4	0.8	0.8	1.0											
EMD Local	0.0	0.6	0.4	0.7	0.5	0.7	0.5	0.8	0.7	0.3	0.4	0.1	0.7	0.1	0.3	0.5	0.4	0.5	0.4	0.6	0.3	0.8	0.6	0.8	1.0											
Commodities	0.0	0.5	0.5	0.6	0.4	0.6	0.4	0.6	0.6	0.2	0.2	-0.2	0.5	-0.2	0.0	0.2	0.2	0.3	0.1	0.5	0.3	0.6	0.3	0.4	0.6	1.0										
Hedge Funds	-0.1	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.8	0.6	0.1	-0.3	0.2	-0.2	-0.1	0.3	0.0	0.3	0.2	0.6	0.5	0.5	0.4	0.4	0.4	0.5	1.0									
Real Estate	-0.1	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.1	0.1	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.4	1.0								
REITs	-0.1	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.4	0.2	0.1	0.3	0.2	0.3	0.5	0.3	0.4	0.4	0.6	0.4	0.5	0.6	0.5	0.5	0.3	0.4	0.7	1.0							
Global Infra	0.0	0.8	0.6	0.9	0.8	0.8	0.7	0.8	0.8	0.2	0.3	-0.1	0.6	0.0	0.2	0.5	0.3	0.5	0.4	0.7	0.4	0.8	0.6	0.7	0.8	0.6	0.6	0.3	0.7	1.0						
Risk Parity	-0.1	0.5	0.4	0.5	0.4	0.5	0.4	0.6	0.5	0.3	0.5	0.3	0.6	0.3	0.5	0.6	0.5	0.4	0.5	0.5	0.2	0.7	0.7	0.6	0.6	0.5	0.4	-0.1	0.4	0.6	1.0					
Currency Beta	0.0	0.2	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.2	-0.1	-0.2	0.0	0.0	-0.1	-0.1	-0.1	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	-0.1	0.1	0.1	0.1	1.0				
Inflation	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	-0.1	0.1	-0.2	-0.1	-0.1	0.0	0.1	-0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.2	0.1	-0.1	-0.1	0.0	0.1	0.0	0.1	0.0	1.0	

Note: Correlation assumptions are based on the last ten years. Private Equity and Real Estate correlations are especially difficult to model – we have therefore used BarraOne correlation data to strengthen these correlation estimates.

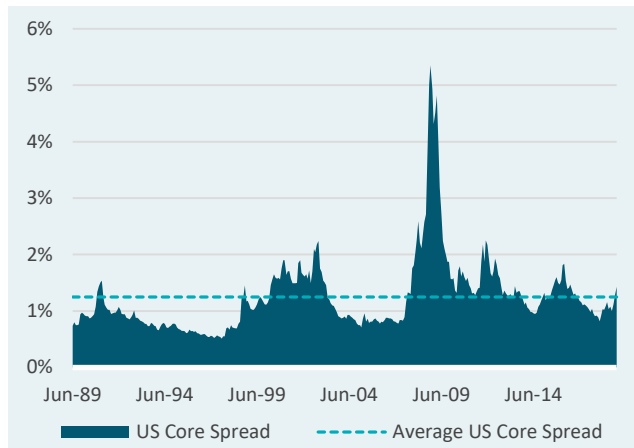
Core fixed

Credit fixed income return is composed of a bond term premium (duration) and credit spread. The bond term premium is represented by the 10-year U.S. Treasury yield.

We use appropriate default rates and credit spreads for each fixed income category to provide our 10-year return forecast. Our default rate assumption is derived from a variety of sources, including historical data and academic research. The effective default that is subtracted from the return forecast is based on our assumed default and recovery rates.

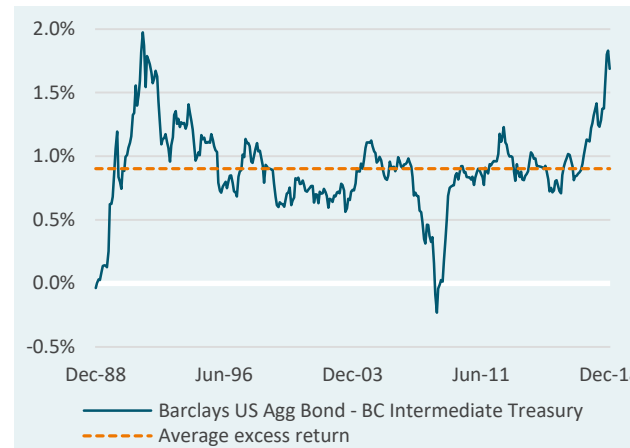
Spreads moved materially higher in the fourth quarter, but remain slightly below the 30-year average. Continued moves higher in credit spreads would be consistent with typical late-cycle behavior, as investors demand greater compensation for higher perceived credit risk. Wider credit spreads, along with a rise in interest rates, has improved our outlook for future core fixed income return.

U.S. CORE CREDIT SPREAD



Source: Barclays, as of 12/31/18

ROLLING EXCESS RETURN (10-YR)



Source: Barclays, as of 12/31/18

FORECAST

	10-Year Forecast
Barclays U.S. Option-Adjusted Spread	+0.7%
Effective Default	-0.1%
U.S. 10-Year Treasury	+2.7%
Nominal Return	3.3%
Inflation Forecast	-2.0%
Real Return	1.3%

Source: Verus, as of 12/31/18

Equities

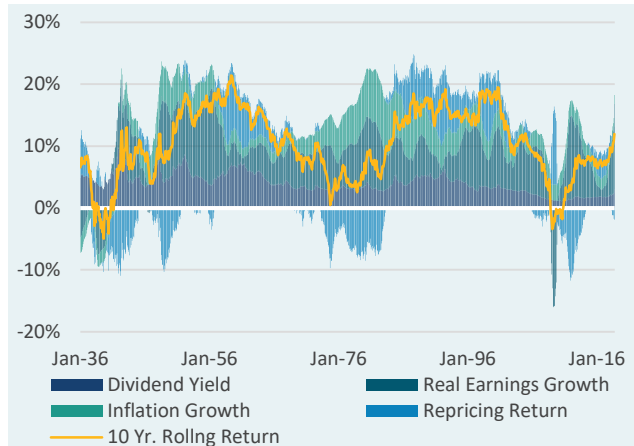
Investment returns in the equity space can be broken down into earnings growth, dividend yield, inflation, and repricing. Over the very long-term, repricing represents a small portion of return to equity investors, but over shorter time frames, the effect on return can vary considerably.

If investors are willing to pay more for earnings, it could signal that investors are more confident in positive earnings growth going forward, while the opposite is true if investors pay less for earnings. It is somewhat surprising that investor confidence varies so much given that the long-term earnings growth is relatively stable.

Investor confidence in earnings growth can be measured using both the Shiller P/E ratio and the trailing 12-month P/E ratio. We take an average of these two valuations metrics when determining our repricing assumption. In short, if the P/E ratio is too high (low) relative to history, we expect future returns to be lower (higher) than the long-term average. Implicit in this analysis is the assumption that P/E's will exhibit mean reversion over 10 years.

We make a conservative repricing estimate given how widely repricing can vary over time. We then skew the repricing adjustment because the percentage change in index price is larger with each incremental rise in valuations when P/E's are low, compared to when they are high.

TRAILING 10-YR S&P 500 RETURN COMPOSITION



Source: Shiller, Standard & Poor's, as of 9/30/18

U.S. LARGE SHILLER P/E



Source: Shiller, as of 9/30/18

P/E REPRICING ASSUMPTION

Average P/E Percentile Bucket	Lower P/E	Upper P/E	Repricing Assumption
Lower 10%	-	10	2.00%
10% - 20%	10	13	1.50%
20% - 30%	13	15	0.75%
30% - 45%	15	18	0.50%
45% - 55%	18	19	0.0%
55% - 70%	19	21	-0.25%
70% - 80%	21	22	-0.50%
80% - 90%	22	24	-0.75%
Top 10%	24	-	-1.00%

Source: Verus

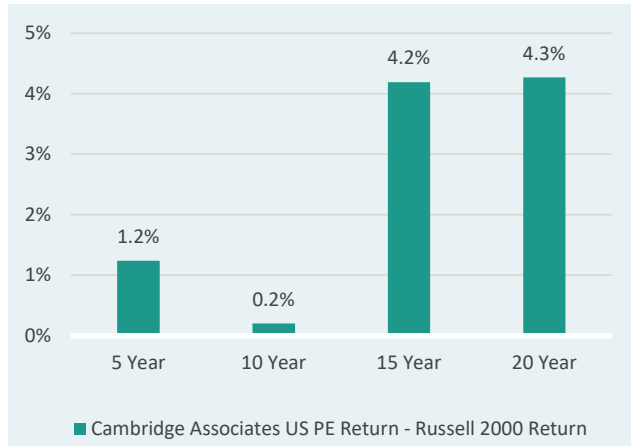
Private equity

Private equity and public equity returns have been correlated historically because the underlying economic forces driving these asset class returns are quite similar. The return relationship between the two can vary in the short-term, but over the long-term investors have received a premium, driven by leverage, concentrated factor exposure (smaller and undervalued companies), skill, and possibly illiquidity.

Historically, the beta of private equity relative to public equities has been high. We use a beta assumption of 1.85 to U.S. large cap equities in our capital market forecast.

Private equity performance typically differs based on the implementation approach. We provide a 10-year forecast for the entire private equity universe of 8.8%. Direct private equity programs have historically outperformed the broader universe by approximately 1.0%, and we forecast direct private equity accordingly with a forecast of 9.8%. Private equity fund-of-fund programs have historically lagged the universe by 1.0%, and we forecast private equity FoF at 7.8% to reflect this drag.

PRIVATE EQUITY EXCESS RETURN (PE – U.S. SMALL CAP)



Source: Cambridge, Russell, as of 6/30/18

PRIVATE EQUITY IMPLEMENTATION FORECASTS

	10-Year Forecast
Private Equity Universe Forecast	+8.8%
Private Equity FoF Forecast	+7.8%
Private Equity Direct Forecast	+9.8%

Source: Verus, as of 12/31/18

PRIVATE EQUITY UNIVERSE FORECAST

	10-Year Forecast
U.S. Large Cap Forecast	+5.8%
1.85 Beta Multiplier	+3.0%
Nominal Return	+8.8%
Inflation Forecast	-2.0%
Real Return	+6.8%

Source: Verus, as of 12/31/18

Hedge funds

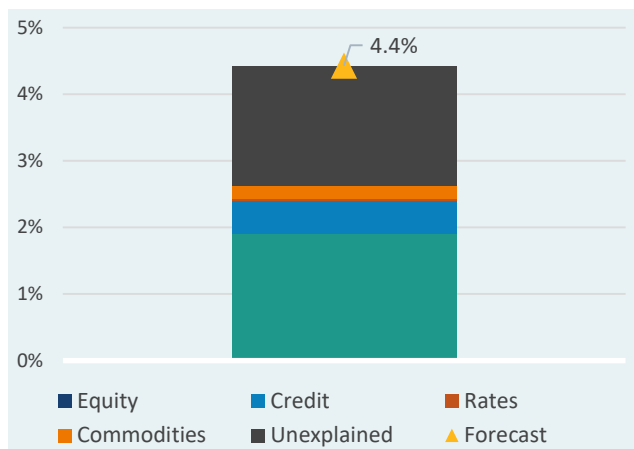
Hedge fund performance variation through time can be partly explained by public market betas (ex: equity, rates, credit, commodities) and partly explained by non-public sources of return (ex: alternative betas, skill, luck). Certain hedge fund strategies can be mostly explained by public market betas, while other types of hedge fund strategies are driven mostly by non-public sources of return.

To forecast hedge fund returns, we identified the portion of historical hedge fund performance that can be attributed to public market betas, and the portion of hedge fund returns that cannot be attributed to public market beta. This means our forecast has two components:

the public market return (explained return) and the non-public market return (unexplained return).

To forecast the public market beta portion of hedge funds, we take the historical sensitivity of hedge funds to equity, rates, credit, and commodities and pair these with our current 10-year public market forecasts for each asset class. To forecast the non-public market return portion of hedge funds (unexplained return) we simply assume the historical performance contribution of these sources will continue over the next 10 years.

HEDGE FUND FORECAST



Source: Verus, as of 12/31/18

HEDGE FUND PUBLIC MARKET SOURCES OF RETURN (EXPLAINED RETURN)

Equity
Rates
Credit
Commodities

HEDGE FUND NON-PUBLIC SOURCES OF RETURN (UNEXPLAINED RETURN)

Alternative betas
Skill
Luck

Source: Verus

FORECAST

	10-Year Forecast
Public Market % of Return	+2.6%
Non-Public Market % of Return	+1.8%
Nominal Return	+4.4%
Inflation Forecast	-2.0%
Real Return	+2.4%

Source: Verus, as of 12/31/18

Private core real estate/REITS

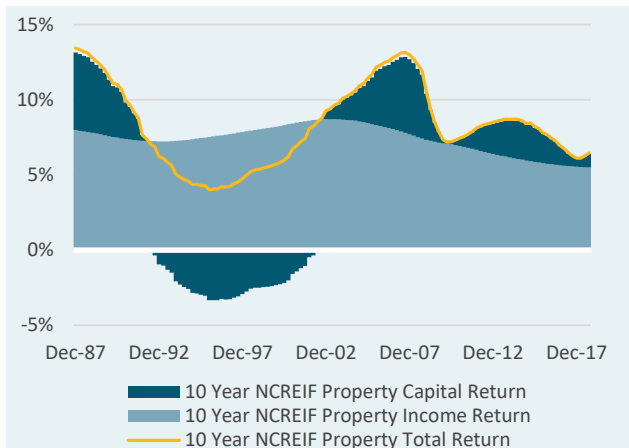
Performance of the NCREIF property index can be decomposed into an income return (cap rate) and capital return. The return coming from income has historically been more stable than the return derived from capital changes.

The cap rate is the ratio earnings less expenses to price, and does not include extraordinary expenses. A more accurate measure of the yield investors receive should include non-recurring capital expenditures; we assume a 2.0% capex expenditure. We also assume income growth will track inflation as higher prices are passed through to rents.

Private real estate and REITs have provided very similar returns over the long-term. Investors should be careful when comparing risk-adjusted returns of publicly traded assets to returns of appraisal priced assets, due to smoothing effects. While private real estate appears to be less volatile than REITs, the true risks to investors are very similar.

We assume the effects of leverage and liquidity offset each other. Therefore, our return forecast is the same for private real estate and REITs.

TRAILING 10-YR NCREIF RETURN COMPOSITION



Source: NCREIF, as of 9/30/18

PRIVATE REAL ESTATE

	Private Real Estate 10-Year Forecast
Current Cap Rate	+4.3%
Real Income Growth	+1.8%
Capex Assumption	-2.0%
Inflation	+2.0%
Nominal Return	6.1%
Inflation Forecast	-2.0%
Real Return	4.1%

Source: Verus, as of 12/31/18

REITS

	10-Year Forecast
Nominal Return Forecast	6.1%
Inflation Forecast	-2.0%
Real Return	4.1%

Source: Verus, as of 12/31/18

Infrastructure

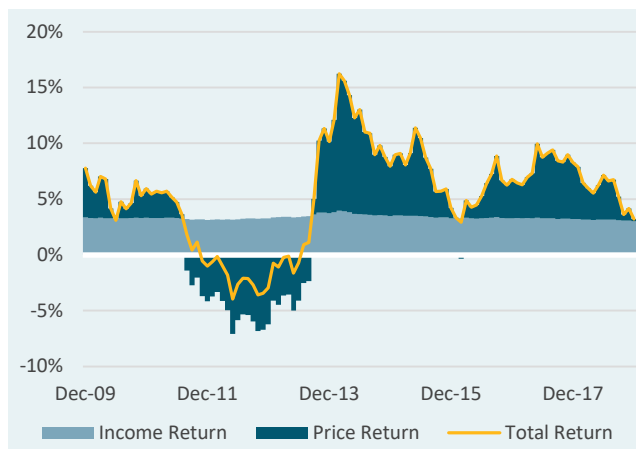
Infrastructure includes a variety of investment types across a subset of industries. There is not one definition for what can be included within infrastructure. The asset class has grown dramatically in the last decade years as investors sought assets that might provide more attractive yield relative to fixed income along with the potential for inflation protection.

Similar to real estate investment, income plays a significant role in the returns investors receive. Income yields are currently lower than average due to higher prices and competition in the space, which

might reasonably be expected to translate to lower expected future returns.

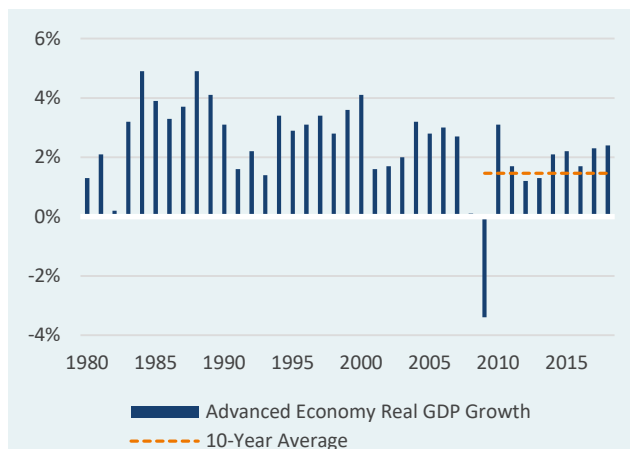
Due to the discount rate effect, infrastructure asset valuations would generally be negatively affected by material increases in interest rates. Because leverage is used in this space, higher interest rates would also impact investors in the form of higher borrowing costs.

5-YR ROLLING RETURN COMPOSITION



Source: S&P Global Infrastructure Index, as of 12/31/18

ADVANCED ECONOMY REAL GDP GROWTH



Source: IMF, as of 10/31/18

FORECAST

	10-Year Forecast
Inflation	1.8%
Yield	4.6%
Income Growth	1.5%
Nominal Return	7.9%
Global Inflation Forecast	-1.8%
Real Return	6.1%

Source: Verus, as of 12/31/18

Commodities

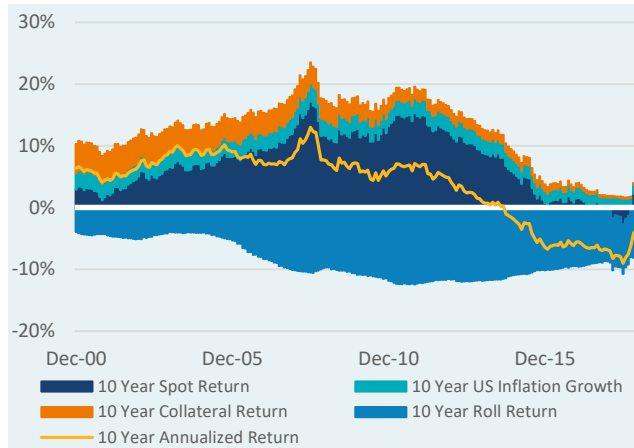
Commodity returns can be decomposed into three sources: collateral return (cash), spot changes (inflation), and roll yield.

Roll return is generated by either backwardation or contango present in futures markets. Backwardation occurs when the futures price is below the spot price, which results in positive yield. Contango occurs when the futures price is above the spot price, and this results in a loss to commodity investors. Historically, futures markets have fluctuated between backwardation and contango but with a zero net effect over the very long-term (since 1877). Therefore, roll return is assumed to

be zero in our forecast. Over the most recent 10-year period, roll return has been negative, though this is likely the result of multiple commodity crises and a difficult market environment.

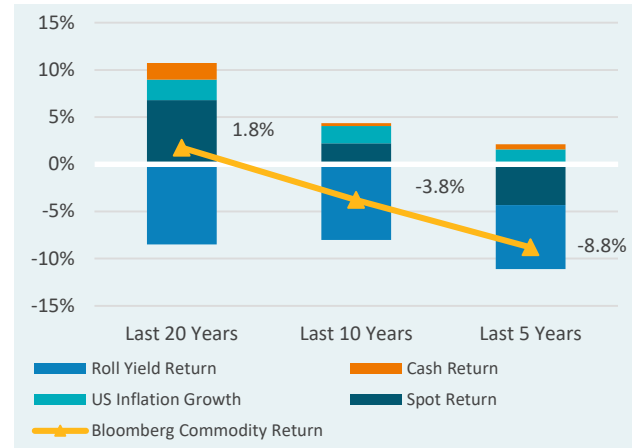
Our 10-year commodity forecast combines collateral (cash) return with spot return (inflation) to arrive at the nominal return, and subtracts out inflation to arrive at the real return.

TRAILING 10YR BLOOMBERG COMMODITY RETURN COMPOSITION (%)



Source: MPI, Bloomberg, as of 12/31/18

BLOOMBERG COMMODITY RETURN COMPOSITION (%)



Source: MPI, Bloomberg, as of 12/31/18

FORECAST

	10-Year Forecast
Collateral Return (Cash)	+2.1%
Roll Return	+0.0%
Spot Return (Inflation)	+2.0%
Nominal Return	4.2%
Inflation Forecast	-2.0%
Real Return	2.2%

Source: Verus, as of 12/31/18

Risk parity

Risk parity is built upon the philosophy of allocating to risk premia rather than to asset classes. Because risk parity by definition aims to diversify risk, the actual asset allocation can appear very different from traditional asset class allocation.

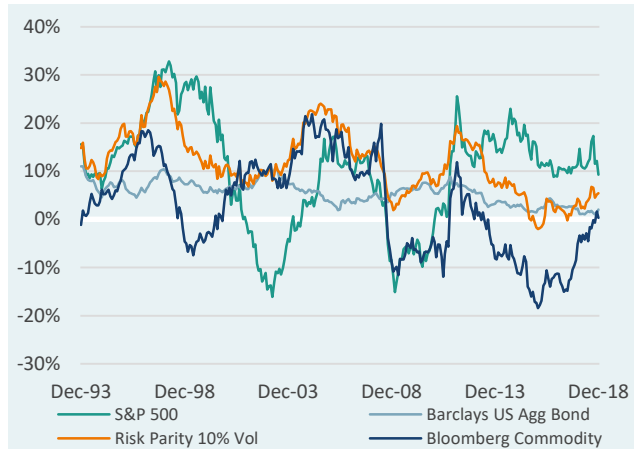
We model risk parity using an assumed Sharpe Ratio of 0.5, which considers the historical performance of risk parity. This assumed Sharpe Ratio is higher than other asset class forecasts, but is consistent with these forecasts because *portfolios* of assets tend to deliver materially higher Sharpe Ratios than individual assets.

The expected return of Risk Parity is determined by this Sharpe Ratio forecast, along with a 10% volatility assumption.

We used a 10-year historical return stream from a market-leading product to represent risk parity correlations relative to the behaviors of each asset class. Risk parity funds are suggested to be better able to withstand various difficult economic environments - reducing volatility without sacrificing return, over longer periods.

It is difficult to arrive at a single model for risk parity, since strategies can differ significantly across firms/strategies. Risk parity almost always requires explicit leverage. The amount of leverage will depend on the specific strategy implementation style, as well as expected correlations and volatility.

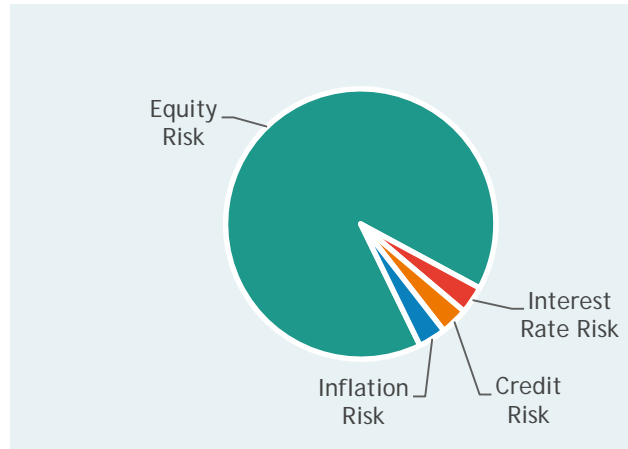
VS. TRADITIONAL ASSET CLASSES



Source: Morningstar, AQR, as of 12/31/18

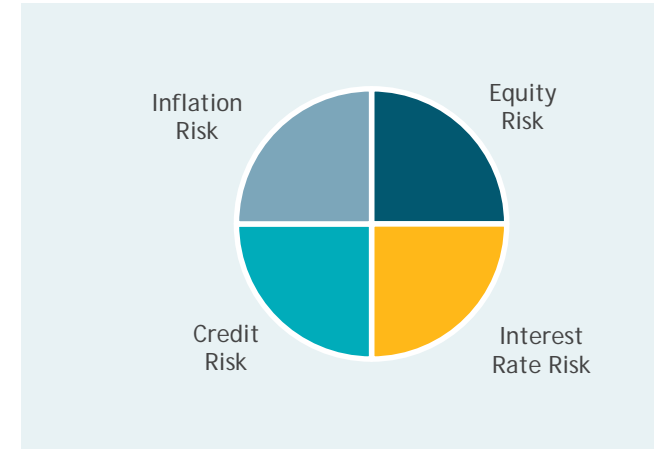
Note: Risk parity is modeled here using the AQR GRP-EL 10% Volatility fund. Performance is back tested prior to February 2015

TRADITIONAL ASSET ALLOCATION



Source: Verus

RISK PARITY



Source: Verus

Glossary

Glossary

Allocation Effect: An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

Alpha (α): The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: (Portfolio Return – Risk-free Rate) x Portfolio Beta x (Market Return - Risk-free Rate).

Benchmark R-squared: Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

Beta (β): A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

Correlation: A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of –1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

Excess Return: A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

Information Ratio: A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: alpha divided by tracking error.

Interaction Effect: An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

Mean Variance Analysis: A mathematical framework for constructing an asset allocation's expected return and risk.

Monte Carlo Analysis: A simulation that builds models calculated through a range of values, the simulation is run over and over again to attain various outcomes.

Portfolio Turnover: The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

Sharpe Ratio: A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

Standard Deviation (σ): A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

Style Analysis: A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.6

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

SUBJECT: Report on SamCERA's Plan Liquidity

Recommendation

Review the report on SamCERA's plan liquidity and provide direction to staff as needed.

Background

Last month Milliman presented cash flow projections to the Board. The presentation showed that SamCERA is anticipated to have negative net cash flows within 5 years (dependent on the plan meeting its assumed earnings rate of return) due to significant decrease in employers' projected contributions.

With this potential backdrop, Verus analyzed the liquidity profile of the plan using several metrics. SamCERA is expected to have more than enough liquidity over the next 5 years but will need to better plan for liquidity as we project beyond the 5-year period.

Discussion

Margaret Jadallah from Verus will review the liquidity report.

Attachment

Verus Liquidity Analysis Presentation



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**



MARCH 26, 2019

SamCERA

Liquidity Analysis

Table of contents



VERUSINVESTMENTS.COM

SEATTLE 206-622-3700

LOS ANGELES 310-297-1777

SAN FRANCISCO 415-362-3484

Introduction 3

Liquidity Risk Framework 8

Summary Results 19

***Past performance is no guarantee of future results.** This document is provided for informational purposes only and is directed to institutional clients and eligible institutional counterparties only and is not intended for retail investors. Nothing herein constitutes investment, legal, accounting or tax advice, or a recommendation to buy, sell or hold a security or pursue a particular investment vehicle or any trading strategy. This document may include or imply estimates, outlooks, projections and other “forward-looking statements.” No assurance can be given that future results described or implied by any forward looking information will be achieved. Investing entails risks, including possible loss of principal. Verus Advisory Inc. and Verus Investors, LLC (“Verus”) file a single form ADV under the United States Investment Advisors Act of 1940, as amended.*

Introduction

Assumptions and Goals

Defined Benefit Plan

ASSUMPTIONS

Assumes \$7.3M in annual expenses

Assumes \$541M in capital inflows and \$531M in outflows for the next 5 years in Real Assets and Private Equity

Assets grow at the actuarial rate of return

GOALS

1. Achieve 6.75% Long Term Rate of Return Assumption
2. Achieve the return as efficiently & effectively as possible
3. ***Always have enough cash on hand to fund benefit payments and fund commitments***

Managing liquidity risk is increasingly important for mature plans

Purpose and Objective

Purpose

The purpose of the liquidity management framework is to ensure that the 5-year liquidity profile of SamCERA is prudent and appropriate to manage its obligations given expected cash flows.

Objective

The objective of the liquidity management framework is to inform the Board of possible liquidity concerns in the intermediate term (5-year time period) under normal and stressed market environments.

Liquidity assumptions

Liquidity assumptions estimate days to convert to cash*

Account Name	Manager Normal Liquidity	Manager Stressed Liquidity	Market Value
Cash	1	1	97,005,843
TIPS	1	3	45,255,188
BlackRock Intermediate Gov	1	7	224,623,998
Mondrian	3	15	227,739,257
BlackRock EAFE Index	3	7	214,588,077
Baillie Gifford	3	15	213,761,751
Panagora Def Eq	3	7	121,010,273
BlackRock R1000	3	7	405,600,329
Acadian	3	7	121,771,078
Liquid Pool	7	15	287,076,739
Parametric Core	7	15	82,916,150
FIAM Bond	15	15	263,327,350
Western TRU	15	15	129,670,356
QMA Small CAP	15	15	75,330,005
DE Shaw	15	30	125,653,854
Abderdeen Standard GARS	30	180	96,556,718
AQR GRP	30	90	167,213,070
PanAgora	30	90	163,946,359
Brigade	30	45	74,678,157
Franklin Templeton	30	90	41,040,245
PIMCO Diversified	45	90	80,085,677
Real Estate	90	365	361,205,384
AQR Delta	90	180	150,030,805
Private Real Assets	365	365	66,415,429
Private Equity	365	365	290,757,410
Private Credit	365	365	45,314,273
AG OWL	365	365	6,456,000
AG STAR	365	365	5,795,000
BeachPoint	365	365	48,825,225

*Investments that convert to cash in 1-3 days are considered the most liquid; Investments that convert to cash in 365 days are defined as illiquid.

Cash flow and growth assumptions

- Portfolio grows at a rate of 6.75%/year
- Investment income is 2.0%
- Benefit Payments, Contributions and Expenses from Milliman

CONTRIBUTIONS, BENEFIT PAYMENTS AND PLAN EXPENSES

Fiscal Year	Employee/Employer Contributions	Benefit Payments	Other Expenses
2018	\$260,600,000	\$235,700,000	\$6,500,000
2019	\$259,100,000	\$ 245,100,000	\$6,700,000
2020	\$266,200,000	\$261,600,000	\$6,900,000
2021	\$271,800,000	\$277,600,000	\$7,100,000
2022	\$274,200,000	\$292,300,000	\$7,300,000
2023	\$192,700,000	\$307,700,000	\$7,500,000
2024	\$145,400,000	\$322,700,000	\$7,800,000
2025	\$149,100,000	\$339,300,000	\$8,000,000
2026	\$153,000,000	\$354,600,000	\$8,200,000
2027	\$157,000,000	\$370,900,000	\$8,500,000
2028	\$161,000,000	\$389,500,000	\$8,700,000

RETURN AND CASHFLOW ASSUMPTIONS

Analysis Date	12/31/2018
Funded Ratio	100.0%
Drawdown Scenario	0.0%
Expected Return	6.75%
Distribution Shock (Reduction)	0%
Capital Call Shock (Reduction)	0%
Amortization Period (years)	15
LCR Time Period (years)	5
Contribution Reduction	0%
Investment Income	2.0%
Illiquid Asset Allocation Increase	0%
Assumed Return	6.75%

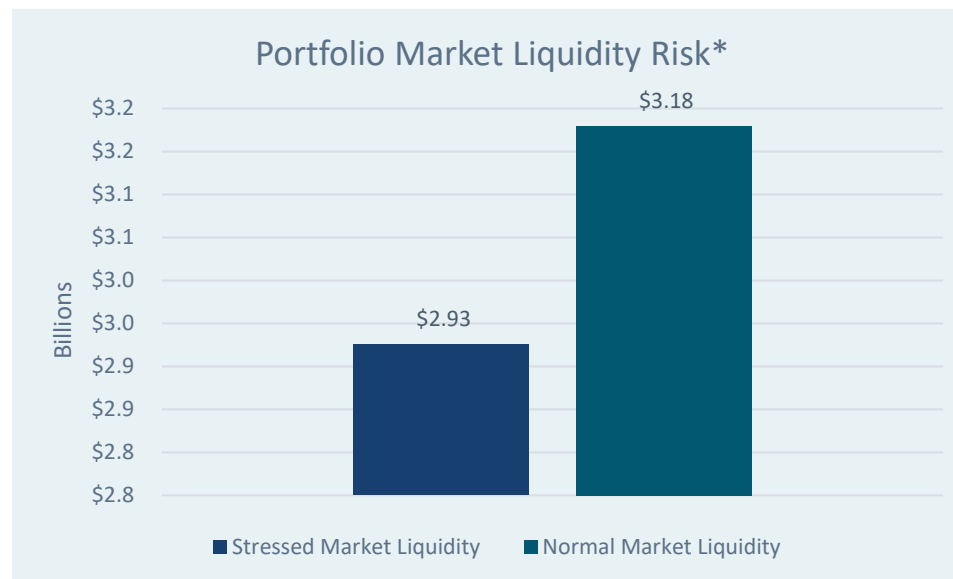
Liquidity Risk Framework

Liquidity Risk

Market Liquidity Risk

A measurement of the timing required to convert an investment position to cash

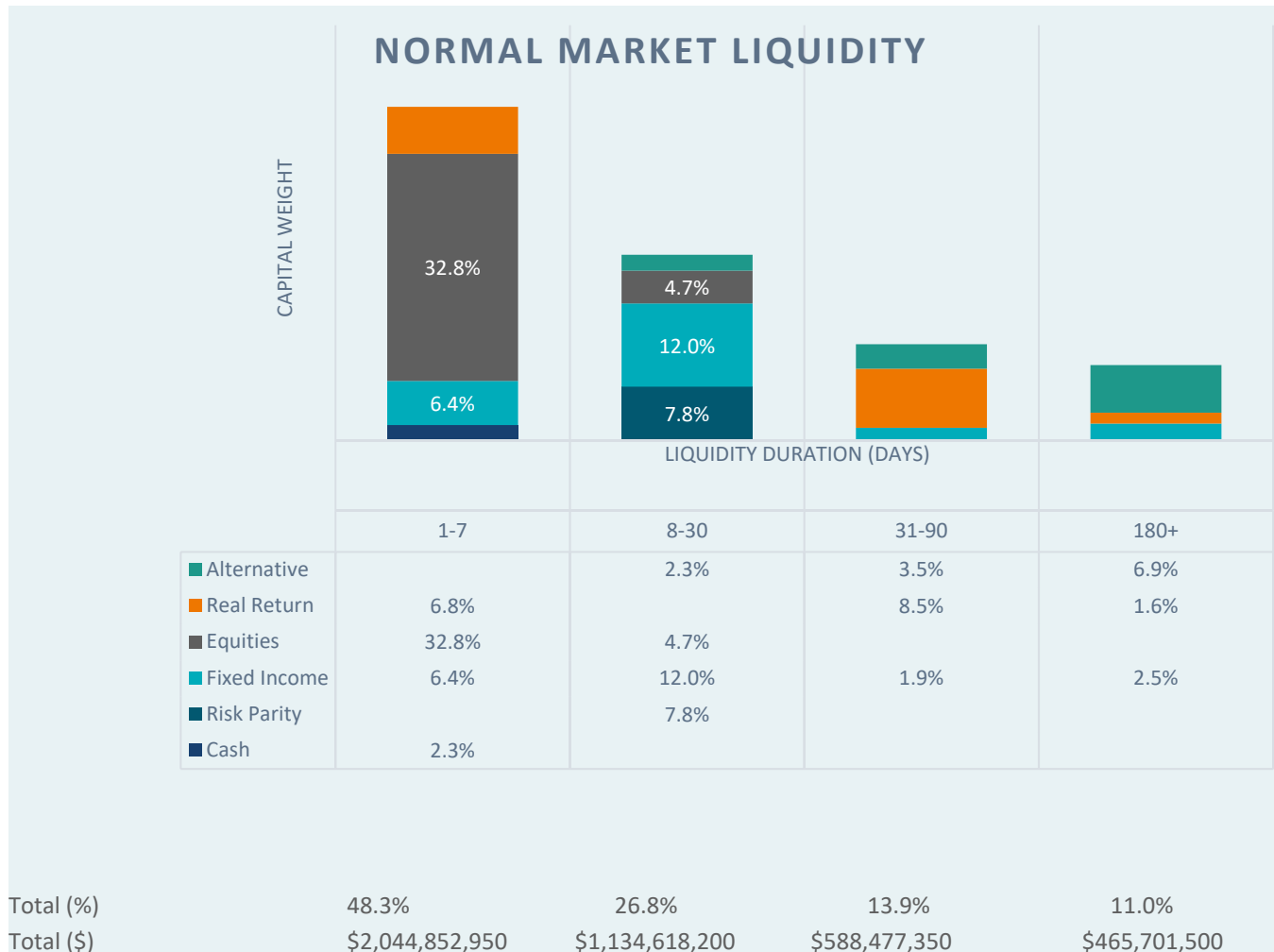
- Normal market conditions: defined as periods when liquidity is consistent with historical functioning markets and managers are not imposing gates.
- Stressed market conditions: defined as periods when liquidity is withdrawn from the market and managers are imposing gates.



*Assets that can be liquidated within 30 days

Liquidity – Normal markets

NORMAL MARKET LIQUIDITY

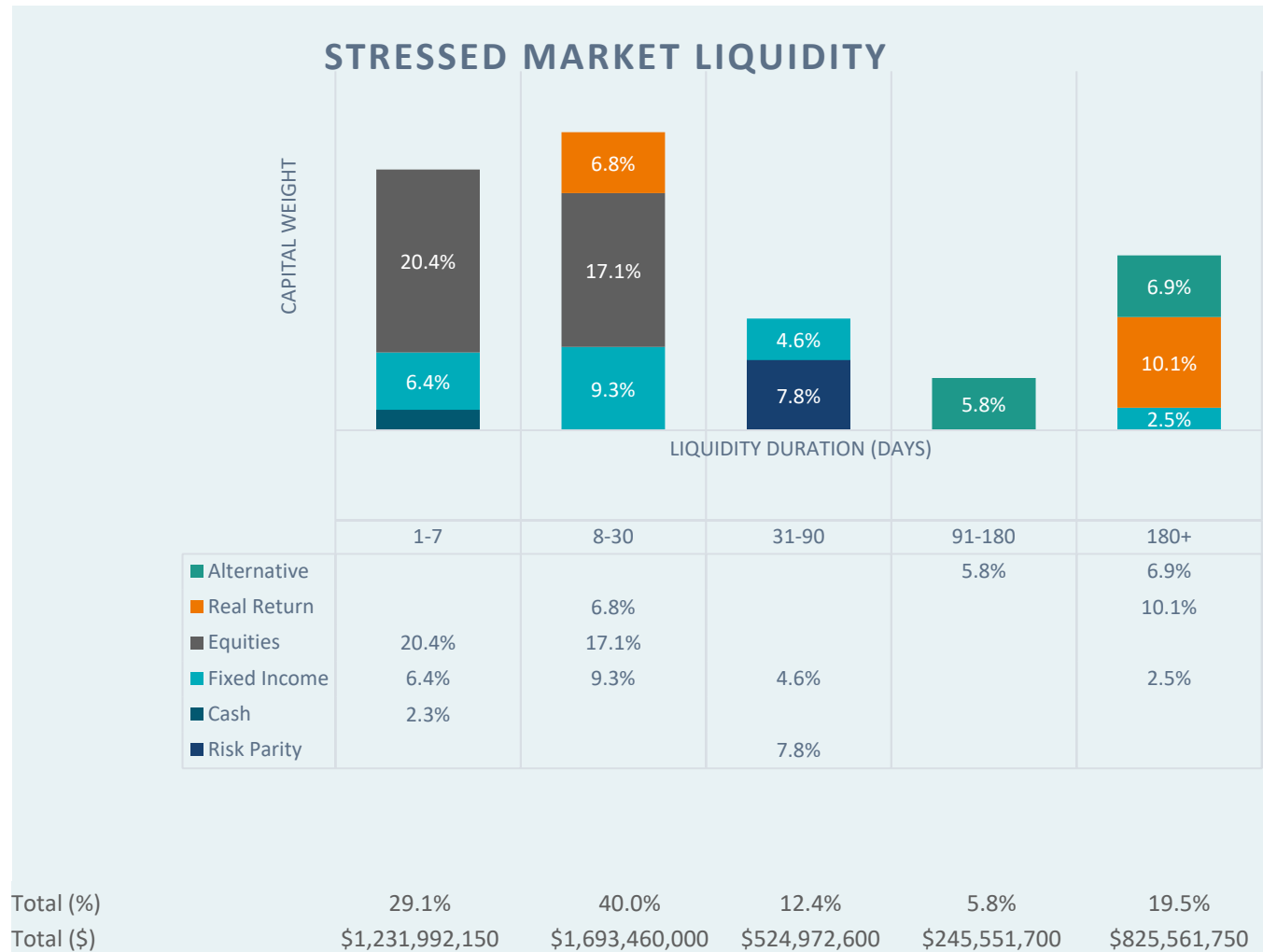


48% of SamCERA's portfolio can be converted to cash within 1-7 days in a normal market environment

Around 11.0% of SamCERA's assets would be considered mostly or completely illiquid

Liquidity – Stressed markets

STRESSED MARKET LIQUIDITY



29.1% of SamCERA' portfolio can be converted to cash within 1-7 days in a stressed market environment

19.5% of SamCERA' assets would be considered mostly or completely illiquid in a stressed market environment

Funding Liquidity Risk

Funding Liquidity Risk

1. **Liquidity Coverage Ratio (LCR):** Does the plan need to sell illiquid assets to cover cash outflows in the next 5 years?
2. **Modified Liquidity Coverage Ratio (MLCR):** Does the plan need to sell less liquid assets to cover cash outflows in the next 5 years?

LCR

Does the plan need to sell illiquid assets to cover cash outflows in the next 5 years?

$$\text{Liquidity Coverage Ratio (LCR)} = \frac{\begin{aligned} & \text{Liquid Financial Assets (stressed market condition)} \\ & \sum(\text{Distributions from Illiquid Assets}) \\ & \sum\left(\frac{\text{Employer}}{\text{Employee}} \text{Contributions}\right) \\ & \sum(\text{State Appropriations}) \\ & \sum(\text{Investment Income}) \end{aligned}}{\begin{aligned} & \sum(\text{Benefit Payments}) \\ & \sum(\text{Capital Calls for Illiquid Assets}) \\ & \sum(\text{Plan Expenses}) \end{aligned}}$$

LCR Value	Implication
<1	The plan will need to sell illiquid assets to cover cash flows
1	The plan has sufficient liquidity to cover all cash flows
>1	The plan will not be required to sell illiquid assets to cover liquidity needs

LCR using normal environment

Liquidity Available	Liquid Financial Assets	\$	4,384,044,683.08
	Distributions from LT Illiquids	\$	541,492,607.00
	Employer + Employee Contributions + Appropriations	\$	1,331,900,000.00
	Investment Income	\$	211,682,500.00
Liquidity Needs	Benefit Payments	\$	1,312,300,000.00
	Capital Calls	\$	531,053,016.00
	Plan Expenses	\$	34,500,000.00
LCR			3.44

Drawdown and Assumed Return Sensitivity Analysis

		Assumed Return (Subsequent 5-years)					
		1.75%	2.75%	3.75%	4.75%	5.75%	6.75%
Drawdown Scenario (Immediate)	-50%	1.77	1.81	1.86	1.92	1.98	2.04
	-40%	1.96	2.03	2.10	2.17	2.25	2.34
	-30%	2.19	2.27	2.36	2.47	2.58	2.71
	-20%	2.44	2.56	2.68	2.81	2.89	2.98
	-10%	2.74	2.85	2.93	3.02	3.11	3.21
	0%	2.95	3.04	3.13	3.23	3.34	3.44

Contribution Sensitivity Analysis

Contribution Reduction	Analysis	
	0%	3.44
10%	3.37	
20%	3.30	
30%	3.23	
40%	3.16	
50%	3.09	
60%	3.02	

Illiquid Asset Sensitivity Analysis

Illiquid Asset Allocation Increase	Analysis	
	0%	3.44
2%	3.38	
4%	3.32	
6%	3.26	
8%	3.19	
10%	3.13	
12%	3.07	

LCR using stressed environment

Liquidity Available	Liquid Financial Assets	\$	3,653,208,549
	Distributions from LT Illiquids	\$	541,492,607
	Employer + Employee Contributions + Appropriations	\$	1,331,900,000
	Investment Income	\$	211,682,500
Liquidity Needs	Benefit Payments	\$	1,312,300,000
	Capital Calls	\$	531,053,016
	Plan Expenses	\$	34,500,000
LCR			3.06

Capital Call / Distribution Sensitivity Analysis

		Spending Policy Reduction					
		5%	15%	25%	35%	45%	55%
Distribution Reduction	95%	2.82	2.91	2.99	3.09	3.19	3.29
	85%	2.85	2.94	3.02	3.12	3.22	3.33
	75%	2.88	2.97	3.06	3.15	3.25	3.36
	65%	2.91	3.00	3.09	3.18	3.29	3.40
	55%	2.94	3.03	3.12	3.22	3.32	3.43
	45%	2.97	3.06	3.15	3.25	3.35	3.46

Contribution Sensitivity Analysis

		3.06
Contribution Reduction	0%	3.06
	10%	2.98
	20%	2.91
	30%	2.84
	40%	2.77
	50%	2.70
	60%	2.63

Illiquid Asset Sensitivity Analysis

		3.06
Illiquid Asset Allocation Increase	0%	3.06
	2%	2.99
	4%	2.93
	6%	2.87
	8%	2.81
	10%	2.74
	12%	2.68

LCR using normal environment in 2023*

Liquidity Available	Liquid Financial Assets	\$	4,384,044,683
	Distributions from LT Illiquids	\$	541,492,607
	Employer + Employee Contributions + Appropriations	\$	797,200,000
	Investment Income	\$	211,682,500
Liquidity Needs	Benefit Payments	\$	1,695,200,000
	Capital Calls	\$	531,053,016
	Plan Expenses	\$	40,000,000
LCR			2.62

Capital Call / Distribution Sensitivity Analysis

		Spending Policy Reduction					
		5%	15%	25%	35%	45%	55%
Distribution Reduction	95%	2.42	2.48	2.54	2.61	2.67	2.75
	85%	2.44	2.50	2.57	2.63	2.70	2.77
	75%	2.47	2.53	2.59	2.66	2.73	2.80
	65%	2.49	2.55	2.62	2.68	2.75	2.83
	55%	2.52	2.58	2.64	2.71	2.78	2.86
	45%	2.54	2.60	2.67	2.74	2.81	2.88

Contribution Sensitivity Analysis

		Analysis
Contribution Reduction		2.62
	0%	2.62
	10%	2.58
	20%	2.55
	30%	2.51
	40%	2.48
	50%	2.44
60%	2.41	

Illiquid Asset Sensitivity Analysis

		Analysis
Illiquid Asset Allocation Increase		2.62
	0%	2.62
	2%	2.57
	4%	2.52
	6%	2.46
	8%	2.41
	10%	2.36
12%	2.31	

* When County funding drops significantly

MLCR

Does the plan need to sell liquid assets to cover cash outflows in the next 5 years?

$$\text{Modified Liquidity Coverage Ratio (MLCR)} = \frac{\begin{aligned} &\Sigma(\text{Distributions from Illiquid Assets}) \\ &\Sigma\left(\frac{\text{Employer}}{\text{Employee}} \text{Contributions}\right) \\ &\Sigma(\text{State Appropriations}) \\ &\Sigma(\text{Investment Income}) \end{aligned}}{\begin{aligned} &\Sigma(\text{Benefit Payments}) \\ &\Sigma(\text{Capital Calls for Illiquid Assets}) \\ &\Sigma(\text{Plan Expenses}) \end{aligned}}$$

MLCR Value	Implication
<1	The plan will need to sell liquid assets to cover cash flows
1	The plan has sufficient liquidity to cover all cash flows
>1	The plan has excess liquidity and may consider increasing illiquid allocation

Assumes the sale of no financial assets

Current MLCR

Liquidity Available	Distributions from LT Illiquids	\$	541,492,607
	Employer + Employee Contributions + Appropriations	\$	1,331,900,000
	Investment Income	\$	211,682,500
Liquidity Needs	Benefit Payments	\$	1,312,300,000
	Capital Calls	\$	531,053,016
	Plan Expenses (from CAFR)	\$	34,500,000
MLCR			1.11

Capital Call / Distribution Sensitivity Analysis

		Capital Call Reduction						
		5.0%	15.0%	25.0%	35.0%	45.0%	55.0%	65.0%
Distribution Reduction	5.0%	1.11	1.14	1.18	1.22	1.26	1.30	1.34
	15.0%	1.08	1.11	1.15	1.18	1.22	1.26	1.31
	25.0%	1.05	1.08	1.12	1.15	1.19	1.23	1.27
	35.0%	1.02	1.05	1.09	1.12	1.16	1.20	1.24
	45.0%	0.99	1.02	1.06	1.09	1.12	1.16	1.20
	55.0%	0.97	0.99	1.02	1.06	1.09	1.13	1.17
	65.0%	0.94	0.96	0.99	1.02	1.06	1.09	1.13
	75.0%	0.91	0.93	0.96	0.99	1.02	1.06	1.10
	85.0%	0.88	0.90	0.93	0.96	0.99	1.02	1.06
	95.0%	0.85	0.87	0.90	0.93	0.96	0.99	1.02

Contribution Reduction Sensitivity Analysis

Contribution Reduction	MLCR
0%	1.11
10%	1.04
20%	0.97
30%	0.90
40%	0.83
50%	0.76
60%	0.68
70%	0.61
80%	0.54

MLCR in 2023*

Liquidity Available	Distributions from LT Illiquids	\$	541,492,607
	Employer + Employee Contributions + Appropriations	\$	797,200,000
	Investment Income	\$	211,682,500
Liquidity Needs	Benefit Payments	\$	1,695,200,000
	Capital Calls	\$	531,053,016
	Plan Expenses (from CAFR)	\$	40,000,000
MLCR			0.68

Capital Call / Distribution Sensitivity Analysis

		Capital Call Reduction						
		5.0%	15.0%	25.0%	35.0%	45.0%	55.0%	65.0%
Distribution Reduction	5.0%	0.68	0.70	0.71	0.73	0.75	0.77	0.79
	15.0%	0.66	0.67	0.69	0.71	0.72	0.74	0.76
	25.0%	0.63	0.65	0.66	0.68	0.70	0.72	0.74
	35.0%	0.61	0.62	0.64	0.65	0.67	0.69	0.71
	45.0%	0.58	0.60	0.61	0.63	0.64	0.66	0.68
	55.0%	0.56	0.57	0.59	0.60	0.62	0.63	0.65
	65.0%	0.54	0.55	0.56	0.58	0.59	0.61	0.62
	75.0%	0.51	0.52	0.54	0.55	0.56	0.58	0.60
	85.0%	0.49	0.50	0.51	0.52	0.54	0.55	0.57
95.0%	0.46	0.47	0.49	0.50	0.51	0.52	0.54	

Contribution Reduction Sensitivity Analysis

Contribution Reduction	0%	0.68
	10%	0.65
	20%	0.61
	30%	0.58
	40%	0.54
	50%	0.51
	60%	0.47
	70%	0.44
	80%	0.40

* When County funding drops significantly

Summary results

- As measured by the LCR, SamCERA has sufficient liquidity (3.4x) to cover any planned cash flow needs over the next 5 years.
- Coverage ratios above 1 indicates sufficient liquidity and SamCERA has 3.5x coverage
- Based on the MLCR coverage, SamCERA should have 1.11x of what they need to cover 5 year benefit payments in a stressed environment not including any liquid assets

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 6.7

TO: Board of Retirement

FROM: Michael Coultrip, Chief Investment Officer *Michael R. Coultrip*

SUBJECT: Approval of Resolution Amending the Investment Policy Statement

Recommendation

Adopt a resolution amending the SamCERA Investment Policy Statement.

Background

SamCERA's Investment Policy Statement is periodically updated to reflect the Board's recent actions. Staff combines these changes and typically updates the Investment Policy Statement up to two times per year, as warranted. The Investment Policy Statement was last updated in September 2018.

Discussion

Over the past two years, SamCERA has been grouping its investments by the underlying performance drivers within each asset class composite. Section 6.0 (G) "Asset Allocation by Performance Driver" is a new section that summarizes these groupings into "Growth", "Diversifying", and "Inflation-Hedge".

In May 2018, SamCERA's Board approved a new asset allocation, which slightly modifies the allocation adopted in 2017 following the Plan's asset-liability study. As part of the revised allocation, SamCERA approved a 6% allocation to U.S. Low Volatility Equity. The changes in Section 6.0 (A) "Public Equity Assets" and Section 9.0 "Public Equity Investment Policies" are amended to reflect this change.

Staff is also proposing the following additional changes to the Investment Policy:

1. Adding new delegation of authority on terminating investment managers to Section 2.0 (B) "3. Terminating Existing Managers", which is consistent with the language shared with the Board in the February meeting.
2. Amending Section 3.0 "Investment Objectives" by removing objective B, which contains very specific funding criteria, which would best be served in a potential separate funding policy.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

3. Amending Section 9.0 "Public Equity Investment Policies", Section 10.0 "Fixed Income Investment Policies", and Section 12.0 "Alternative Assets Investment Policies" with additional descriptive summaries of the various investment categories.
4. Amending Section 10.0 "Fixed Income Investment Policies" by adding additional characteristics and risk exposures for Opportunistic Credit.

Attachments

Proposed Amendments to the Investment Policy Statement (Redlined Version)

Proposed Amendments to the Investment Policy Statement (Clean Version)

Resolution Revising the Investment Policy Statement and Attached Investment Policy Statement



**SamCERA's
Investment Policy Statement**

Latest Revision March 2019

1.0 ESTABLISHMENT OF INVESTMENT POLICY

The Board of Retirement (the "Board"), having exclusive authority and exclusive fiduciary responsibility for the investment and administration of the Trust Fund (the "Fund"), hereby establishes the following Investment Policy (the "Policy") for the investment of the San Mateo County Employees' Retirement Association ("SamCERA") assets. The Board reserves the right to amend, supplement or rescind this Policy at any time.

The purpose of this Policy is to assist SamCERA in effectively supervising its investments in order to meet the requirements of the California Constitution, the County Employees Retirement Law of 1937 ("the 1937 Act"), the Mission and Goals of SamCERA and other requirements, and to encourage effective communication between SamCERA and its investment managers (the "Manager(s)") and investment consultants (the "Consultant(s)").

A. GOVERNING DOCUMENTS FOR THE INVESTMENTS OF THE FUND.

The powers and duties of the Board are set forth in the 1937 Act and in Article XVI of the State Constitution. They are further defined by the Mission and Goals adopted by the Board.

SamCERA was created by San Mateo County Ordinance No. 564 adopted by the Board of Supervisors, effective July 1, 1944. This ordinance established the retirement system in accordance with the provisions of California's County Employees' Retirement Law of 1937.

Constitution of the State of California

Article XVI, Section 17, relates to the administration of the system and investment of the Fund assets. It reads in pertinent part:

"(a)...The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system.

"(b) The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty.

"(c) The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

"(d) The members of the retirement board of a public pension or retirement system shall diversify the investments of the system so as to minimize the risk of loss and to

maximize the rate of return, unless under the circumstances it is clearly not prudent to do so.”

The 1937 Act

The 1937 Act contains language similar to that in the State Constitution regarding the investments of the Fund:

Government Code section 31595.

“The board has exclusive control of the investment of the employees retirement fund. The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system. Except as otherwise expressly restricted by the California Constitution and by law, the board may, in its discretion, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding, or sale of any form or type of investment, financial instrument, or financial transaction when prudent in the informed opinion of the board.

The board and its officers and employees shall discharge their duties with respect to the system: (a) Solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system.

(b) With the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

(c) Shall diversify the investments of the system so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.

SamCERA’s Mission and Goals

The Board has adopted a Mission and Goals statement. The Mission summarizes SamCERA’s reason to exist.

“Mission: SamCERA exists to serve as loyal fiduciary for its members and as prudent administrator of the retirement system.”

The Mission is further defined by three goals. One goal speaks to the management of the assets of the Fund. This asset management goal reads:

“Prudently manage the assets in order to appropriately fund the actuarial liabilities of the retirement system, to ensure the ability to pay all earned benefits while minimizing the costs to employers.”

In recognition of the requirements of the California Constitution, the 1937 Act, the SamCERA Mission and Goals and other legal requirements, the SamCERA Board has established this Investment Policy.

2.0 MANAGEMENT OF THE FUND

A. ROLES AND PRINCIPAL DUTIES

The Fund investments shall be prudently planned, implemented, managed, and monitored by the Board. Investment Staff (the “Staff”), Investment Consultant (the “Consultant”), Custodian Bank (the “Custodian”), and Investment Managers (the “Managers”) shall support the Board in this activity. The roles are set forth below:

1. The Board establishes and maintains the investment policy, including: investment philosophy, investment objectives, strategic asset allocation, allocation-level performance benchmarks, and risk philosophy. The Board makes investment and monitoring decisions based upon the recommendations of Staff, Consultants, and other service providers engaged by the Board. The Board reviews and monitors all investments, as well as the policies, guidelines and procedures required to prudently administer the Fund and to effectively mitigate risk to the Fund. From time to time, the Board will utilize its Investment Committee to assist the Board in these activities and related specified tasks.
2. Staff oversees the Fund’s investment program activities, implements the Board’s decisions, makes recommendations to the Board regarding Fund management, including investment-related policies and procedures. Staff makes recommendations regarding the selection of the Consultant, Managers, Custodian as set forth below and monitors the performance and compliance of these and other investment related service providers.
3. The Consultant reviews, analyzes and evaluates the Fund’s effectiveness and efficiency and makes fund management related recommendations. Consultant assists Staff in implementing the Board’s decisions and developing all investment-related policies. Consultant’s responsibilities are detailed in the service agreement between SamCERA and Consultant.
4. The Custodian provides custody of SamCERA’s investment assets. In addition, the Custodian manages the securities lending program. The Custodian’s responsibilities are detailed in the service agreement between SamCERA and Custodian.
5. The Managers manage their mandated allocations in accordance with all applicable laws, Board-established policies, guidelines and procedures, as well as specific investment guidelines. For separately managed accounts, managers’ responsibilities are detailed in the Investment Management Agreements (IMA) between SamCERA and each Manager. For commingled funds, managers’ responsibilities are detailed in the related Fund documents.

B. INVESTMENT PORTFOLIO MANAGEMENT

The Board, with the assistance of Staff and Consultant, select and monitor Managers to manage the assets of the Fund.

1. Hiring New Managers

For public markets manager searches (i.e. non private equity and private real assets), Staff will inform the Board about the search process, including scope of the mandate, and the investment style, benchmark, and the minimum qualifications for candidates. Staff will update the Board on the short list of potential managers. Consultant and Staff will perform due diligence activities deemed applicable by the Chief Investment Officer, which may include analysis of performance records, meetings, due diligence questionnaires, interviews, and on-site visits. Upon completion of such due diligence, Staff and Consultant will bring a finalist to the Board for approval. The recommendation shall provide the Board with a summary description of the conducted due diligence activities.

For private markets (private equity and private real assets), the Consultant, with Staff input, sources managers that can best fit the desired mandate consistent with the annual pacing study and applicable investment policy. Consultant and Staff will bring potential private markets opportunities to the Board for approval. An exception to this policy is when an investment decision for a private market opportunity must be made prior to the date of the next regularly scheduled Board meeting. In these instances, and for investments of \$25 million or less, the Chief Executive Officer is authorized to make the investment decision after consulting with the Board Chair, or if the Chair is not available, the Vice Chair, and one member of the Investment Committee as long as such decision is in the best interest of the fund and consistent with applicable Board policy. Any action under this authorization will be reported to the Board at a subsequent regularly scheduled meeting.

2. Monitoring Existing Managers

The Board monitors the individual investment managers on a continuous basis through information provided by Staff, the Consultant, the Managers, and other investment service providers. Monthly, the Chief Investment Officer will present a preliminary performance report to the Board that is meant to provide a high-level summary of how the fund and each monthly-valued manager is performing. In addition, for SamCERA's separate accounts, Staff receives holdings and attribution reports from each separate account Manager on a monthly basis. For commingled funds, staff receives from the Manager either monthly or quarterly portfolio performance, attribution, exposure, and commentary reports.

Quarterly, the Consultant, with assistance from the Chief Investment Officer, will present an investment performance report to the Board, as specified in Section 14.0 (Quarterly Investment

Performance Reporting) in the Investment Policy. This report provides a more detailed performance attribution for the total plan and individual Managers, and helps to identify any short-term outlier deviations from expectations.

Semi-annually (month-end June and December of each year), every public markets (i.e. not private equity or private real asset) Manager completes a compliance statement identifying any significant firm, regulatory, and portfolio issues. In addition, semi-annually as of June and December of each year, Consultant will present performance reports for both the Private Equity and Private Real Assets programs that summarize each program and shows total program performance and program diversification by strategy, geography, industry, and vintage year.

Annually, Staff and Consultant will convene an investment strategy session, as specified in Section 15.0 (Annual Investment Strategy) in the Investment Policy, to allow a longer-term assessment of the Managers and the total fund performance. Lastly, all public markets Managers are interviewed annually by Staff and Consultant, and must complete a due diligence questionnaire.

During these presentations at SamCERA, Managers will provide an update on the Manager's organization and business plan, any changes to the investment process, and a summary of investment performance. Staff and Consultant report to the Board following these meetings.

3. Terminating Existing Managers

The Board recognizes investments may need to be adjusted or removed from the Fund from time to time for a variety of reasons, including organization changes at the Manager, changes in Manager style, underperformance relative to expectations, and the Managers' strategy is no longer appropriate for the fund. The Board determines if a Manager should be terminated after receiving input and or recommendations from Staff and Consultant.

In situations in which developments give immediate concern that an investment with a Manager is no longer prudent for the investment program and a termination or other related investment decision should be made prior to the next regularly scheduled Board meeting, the Chief Executive Officer is authorized to terminate the Manager and or move Fund assets after consulting with the Board Chair (or Vice Chair or Secretary based on availability, in that order) and one member of the Investment Committee. Situations causing an immediate concern, include, but are not limited to, when: (1) the firm suffers the resignation or other loss of its key portfolio managers on the strategy, (2) the firm dissolves, ceases to exist, or is otherwise incapable of carrying out its activities in the ordinary course of its business, (3) the firm is actually or effectively shut down by a regulatory agency or is accused of theft or fraud or other serious malfeasance by a regulatory agency, or (4) the fund's investment is in jeopardy of material loss. The Board will be promptly notified of the determination by the Chief Executive Officer.

3.0 INVESTMENT OBJECTIVES

The Board shall develop an investment program, consistent with the Investment Beliefs and General Investment Policies as stipulated in Sections 4.0 and 5.0, respectively, in order to meet the following objectives:

- A. Generate risk-adjusted returns that exceed the Asset Allocation Policy Benchmark (as defined in Section 6.0) on a net-of-fee basis over five-year rolling periods.
- B. Achieve a Fund return that meets or exceeds the long-term forecast of capital market returns for the asset allocation portfolio benchmark over multiple economic cycles (e.g. 15-20 years).
- C. Provide a more consistent return stream than a traditional 60% Equity / 40% Fixed Income portfolio as measured by lower portfolio drawdowns over a full market cycle.

4.0 INVESTMENT BELIEFS

The following section summarizes the Board's investment beliefs that have guided it in the development of this Policy document and will guide it in the oversight of the Plan assets.

- Strategic asset allocation is the primary driver of portfolio risk and return.
- SamCERA should have a long-term horizon and not be tempted to deviate from its long-term plan in response to short-term volatility.
- Everything else being equal, simplicity is preferred over complexity.
- For those asset classes evidencing market efficiencies, the manager structure may favor the employment of passive strategies.
- Diversification is fundamental.
- There is no single definition of risk. There are various measures of 'risk' that can be used for various purposes.

- The portfolio should be diversified across many risk dimensions/timeframes.
- SamCERA should not pursue investments that will not adequately compensate it for the risks that those investments bring.
- Costs matter.

5.0 GENERAL INVESTMENT POLICIES

Consistent with the investment beliefs contained in Section 4.0, it is the investment policy of the Board to:

- Achieve long-term risk-adjusted returns consistent with its fiduciary duty.
- Pursue an investment strategy that reduces the volatility of returns through prudent diversification of the portfolio across a broad selection of distinct asset classes, as provided for in Section 6.0 of this Investment Policy.
- Further diversify other risks, including extreme events, liquidity, and leverage by looking beyond traditional asset class definitions by utilizing multiple lenses on portfolio risks.
- Adopt an asset allocation target to guide the structure of the investment portfolio, as provided for in Section 6.0, and reevaluate on an annual basis.
- Reevaluate the asset-liability study every three to five years.
- Delegate full discretion, including whether to include environmental, social, and governance factors, if such factors have a direct relationship to the economic and financial value of an investment, when analyzing the financial merits of competing investment choices on behalf of SamCERA, to each investment manager to the extent authorized in their Investment Management Agreement (IMA).
- Adopt objectives that encourage investment managers to maximize their performance, within acceptable risk parameters, relative to their individual investment style benchmark.
- Refrain from drastically shifting asset class allocations over short time spans, unless it is in the Fund's best interest to do so.
- Rebalance the portfolio in accordance to the Rebalancing Policy set forth in Section 7.0.

6.0 ASSET ALLOCATION & PORTFOLIO STRUCTURE

The target asset class allocation, rebalancing ranges, and the sub-asset class portfolio structure of the Fund shall be allocated as follows:

ASSET CLASS	TARGET ALLOCATION	REBALANCE RANGE
Public Equity	41%	±3%
Fixed Income	21%	±2%
Risk Parity	8%	±2%
Alternative Assets *	12%	±2%
Inflation Hedge *	18%	±2%

* Recognizing the illiquidity of the asset class, rebalancing will be considered over six- to twelve-month periods.

A. Public Equity Assets shall be allocated to managers within the following sub-asset classes:

PUBLIC EQUITY ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Large Capitalization Domestic	20.0%	±2%
Passive Core	11.0%	±2%
Active Core	3.0%	±2%
Active Low-Volatility Core	6.0%	±2%
Small Capitalization Domestic	2.0%	±2%
Active Core	2.0%	±2%
International	19.0%	±2%
Passive Core	5.7%	±2%
Growth	5.7%	±2%
Value	5.7%	±2%
Emerging Market	2.0%	±2%
TOTAL PUBLIC EQUITY	41.0%	

B. Fixed Income Assets shall be allocated to managers within the following sub-asset classes:

FIXED INCOME ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Core	11.0%	±2%
Core Unconstrained	3.0%	±2%

Opportunistic Credit	7.0%	±2%
TOTAL FIXED INCOME	21.0%	

C. Risk Parity Assets shall be allocated as follows:

RISK PARITY ASSET CLASS	TARGET ALLOCATION	REBALANCE RANGE
Risk Parity	8.0%	±2%
TOTAL RISK PARITY	8.0%	

D. Alternative Assets shall be allocated to managers within the following sub-asset classes:

ALTERNATIVE ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Private Equity	6.0%	±2%
Absolute Return	6.0%	±2%
TOTAL ALTERNATIVE ASSETS	12.0%	

E. Inflation Hedge Assets shall be allocated as follows:

INFLATION HEDGE ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Real Estate	8.0%	±2%
Private Real Assets	2.0%	±2%
Public Real Assets	6.0%	±2%
TIPS	2.0%	±2%
TOTAL INFLATION HEDGE ASSETS	18.0%	

F. Asset Allocation Policy Benchmark

The Asset Allocation Policy Benchmark defined below is derived by assigning a passive benchmark to each of the sub-asset classes referenced in Sections 6.0 (A) through 6.0 (E) and weighting each by the Target Allocation. The performance of the Asset Allocation Policy Benchmark is computed by the Plan's investment consultant.

Asset Allocation

Benchmark	Policy Benchmark
Public Equity	41%
Russell 3000 Index	22%
MSCI ACWI x US IMI Index Hedged*	19%
Fixed Income	21%
BC Aggregate Index	14%
BC BA Intermediate High Yield Index	7%
Risk Parity	8%
60% MSCI World / 40% BC Global Aggregate	8%
Alternatives	12%
Russell 3000 +3% (One Quarter Lagged)	6%
LIBOR + 4%	6%
Inflation Hedge	18%
NCREIF ODCE	8%
Custom Public Real Asset Index**	6%
Custom Private Real Asset Index***	2%
BC TIPS Index	2%

*The hedge ratio will increase quarterly as follows: 10% hedge starting 10/1/18, 20% hedge starting 1/1/19, 30% hedge starting 4/1/19, 40% hedge starting 7/1/19, and 50% hedge starting 10/1/19.

**Comprised of 34% Bloomberg Roll Select Commodity Index, 33% S&P Global LargeMidCap Commodity and Resources Index, and 33% S&P Global Infrastructure Index.

***Comprised of 50% S&P Global LargeMidCap Commodity and Resources Index, 50% S&P Global Infrastructure Index + 2% (One Quarter Lagged)

G. Asset Allocation by Performance Driver:

In addition to the current practice of grouping investments into traditional asset classes as shown above, SamCERA has also begun grouping its investments by the underlying performance drivers within each asset class composite. As part of this process, SamCERA classifies its portfolio into three main drivers of performance: 1) Growth, 2) Diversifying, and 3) Inflation Hedge. In addition, Risk Parity is its own category as it contains components of all three drivers of performance.

The Growth category includes assets in which their primary driver of returns is tied to the general strength of economic output. These assets will generally do well when economic conditions are favorable, but generally struggle in times of economic weakness and recession. Examples of assets classified in Growth include U.S. Equity, International Equity, Private Equity in Alternatives, and Opportunistic Credit in Fixed Income.

Diversifying assets provide protection from equity risk and may be characterized as being more defensive (i.e. help provide stability when markets fall) or more absolute-return oriented (i.e. performance is not as dependent on the overall strength of equity markets).

Formatted: Left, Space After: 0 pt

Formatted: Left, Indent: Before: 0", Space After: 0 pt

Formatted: Left, Space After: 0 pt

Examples of Diversifying assets are our core fixed income assets and absolute return strategies.

Lastly, Inflation Hedge assets provide additional diversification from equity risk and provide a potential hedge against unexpected inflation. Examples of assets in this category include real estate, commodities, TIPS, public real assets, and private real assets.

Asset Allocation Policy: Performance Driver View

Growth	54%
Public Equity	41%
Private Equity	6%
Opportunistic Credit	7%
Diversifying	20%
Core Fixed Income	11%
Core Unconstrained Fixed Income	3%
Absolute Return	6%
Inflation Hedge	18%
Real Estate	8%
Private Real Assets	2%
Public Real Assets	6%
TIPS	2%
Risk Parity	8%

7.0 REBALANCING POLICY

- A. The Chief Investment Officer (CIO) shall rebalance the portfolio as needed in conformance with the asset allocation tactical ranges set forth in Section 6.0.
- B. The potential need to rebalance will be continuously monitored and will be subject to deviations within the established rebalance ranges specified in Section 6.0.
- C. The CIO will have discretion to rebalance to Target or to some other allocation, as long as it is within policy ranges.
- D. Cash flows will be used first to rebalance, and to the extent possible, exchange-traded derivatives will be used to rebalance in a cost-effective manner.
- E. All rebalancing activity shall be reported to the Board at the next scheduled meeting.

8.0 GENERAL MANAGER INVESTMENT PERFORMANCE POLICIES

Formatted: Left, Indent: Before: 0", Space After: 0 pt

Formatted: Left

The responsibility for securities selection, purchase and sale decisions, and proxy voting (where appropriate) is delegated to the external investment managers. The individual investment guideline parameters (including diversification constraints, concentration limits, asset type exclusions, etc.) and performance objectives for each investment manager will be established within the IMA or other applicable legal agreement(s) with each firm.

The Board expects to measure investment performance quarterly and will generally follow prudent time horizons when evaluating short term, intermediate term, and long term performance of its investment managers. Generally, the Board defines underperformance as: Cumulative annualized performance (net of fees) over a three-year period below a broad market-based benchmark return times 0.9, or five year return (net of fees) below the broad market based benchmark return.

Performance will also be evaluated in light of the manager’s stated style and discipline.

9.0 PUBLIC EQUITY INVESTMENT POLICIES

PUBLIC EQUITY OVERVIEW: Public equity assets include funds shares/stock of a company through a public market. SamCERA invests utilizing both passive approaches (meant to track the performance and characteristics of major market indices, like the Russell 1000 Index and MSCI EAFE Index), and via active approaches that are meant to outperform the major market benchmarks. Public Equity is expected to produce returns higher than that provided from Fixed Income but at potentially higher levels of volatility. Exposure to this asset class will provide return streams generally correlated to that of general economic growth. There are two primary components to the Public Equity category: 1) Domestic Equity, and 2) International Equity.

PUBLIC EQUITY MANAGER STRUCTURE:

Domestic Equity: SamCERA further breaks out its U.S. public equity holdings into two sub-composites: 1) U.S. Large Capitalization Domestic, which is comprised of U.S. companies valued generally over \$10 billion, and 2) U.S. Small Capitalization Domestic, which is comprised of U.S. companies valued generally under \$2 billion.

For the domestic equity program, the majority of the tracking error will come from stock selection via active management as the overall manager structure for domestic equities will not possess any significant biases in terms of investment style. The Domestic Equity composite will consist of two sub-composites: 1) Large-Capitalization Equity, and 2) Small-Capitalization Equity. Large Capitalization Equity will consist of four Core strategies: one passive, one low-tracking error active, and two low-volatility active strategies. Small-Capitalization Equity will consist of an actively-managed Core strategy.

International Equity: International Equity is broken out between developed (public companies domiciled in developed market countries such as Germany, France, UK, Japan, etc.) and emerging markets (public companies domiciled in emerging market countries such as China, Brazil, Mexico, Russia, etc.)

Formatted: Font: (Default) +Body (Calibri), Complex Script Font: +Body (Calibri)

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Formatted: Font: 12 pt, Complex Script Font: 12 pt

International Equity will consist of two sub-composites: 1) Developed Equity, and 2) Emerging Markets Equity. Developed Equity will consist of a passive Core component and active Value and Growth (although both have exposure to emerging markets). Emerging Markets Equity will consist of an active Core mandate.

PUBLIC EQUITY PERFORMANCE OBJECTIVE:

The performance objective of the Public Equity Category is to outperform on a net-of-fee basis a customized index (Customized Benchmark Portfolio) incorporating the weighted average components for both the domestic and international equity parts (which results in the following weights: 54% Russell 3000, and 46% MSCI ACWI ex US IMI Index hedged*), with a maximum tracking error of 3% to this benchmark.

PUBLIC EQUITY RISK EXPOSURES AND RISK MITIGATION:

The primary risk factors for Public Equity are correlation to general economic growth, high volatility in returns, and potential illiquidity in smaller-capitalization and certain emerging market stocks. SamCERA will control for these risk factors by diversifying the plan across assets that exhibit limited correlation to economic growth. In addition, SamCERA’s rebalancing ranges for small-cap and emerging market equities will help ensure adequate diversification within the equity portion of the SamCERA portfolio.

ASSET CLASS	BENCHMARK INDEX
Total Public Equity	Customized Benchmark Portfolio
Domestic Equity	Russell 3000
Large Capitalization Domestic Equity	Russell 1000
Passive Core	Russell 1000
Active Core	Russell 1000
Active Low Volatility Core	Russell 1000
Small Capitalization Domestic Equity	Russell 2000
Active Core	Russell 2000
International Equity	MSCI All Country World ex US IMI hedged*
Developed International	MSCI All Country World ex US hedged*
Developed International Passive Core	MSCI EAFE
Developed International Growth	MSCI ACWI Free ex US Growth
Developed International Value	MSCI ACWI Free ex US Value
Emerging Markets	MSCI Emerging Markets Free

*The hedge ratio will increase quarterly as follows: 10% hedge starting 10/1/18, 20% hedge starting 1/1/19, 30% hedge starting 4/1/19, 40% hedge starting 7/1/19, and 50% hedge starting 10/1/19.

10.0 FIXED INCOME INVESTMENT POLICIES

FIXED INCOME OVERVIEW: Fixed income assets are debt investments that provide a return in periodic payments in debt instruments issued by governments and corporations. Fixed Income is expected to provide a lower but steadier stream of returns than public equity asset classes, but is also expected to reduce the risk of the overall portfolio because bonds have lower risk than most other major asset classes. That said, there are a number of sub-categories within Fixed Income that exhibit very different risk/return trade-offs and hold different tasks in terms of role in the portfolio. Fixed Income is broken out into three subcategories:

- 1) Core, 2) Core Unconstrained, and 3) Opportunistic Credit

Core: Core is generally considered the lowest-risk fixed income category, and one that invests in primarily liquid, investment grade U.S. Dollar denominated bonds. It also generally consists of sectors that comprise the Barclays Aggregate Index. Core's role in the portfolio is to dampen portfolio volatility and protect the portfolio in times of economic duress.

Core Unconstrained: Core Unconstrained is a medium-risk fixed income sub-category, and contains the sectors contained in Core plus high yield (below investment grade bonds), non-U.S. Dollar denominated bonds, and emerging market fixed income securities. Core Unconstrained's role in the portfolio is a combination of total portfolio volatility dampening combined with some moderate return enhancement.

Opportunistic Credit: Opportunistic Credit is expected to be the highest-risk fixed income category, and will be used to enhance return by investing via public and private investments in non-traditional sectors of the fixed income market, including emerging market debt, high yield bonds, direct lending, bank loans, convertible bonds, and CMBS/ABS securities. This sub-category will be exposed to general economic risk factors, similar to public equities.

FIXED INCOME PERFORMANCE OBJECTIVE:

The performance objective of the Fixed Income Composite is to outperform, on a net-of-fee-basis, a customized index incorporating the weighted average components for three sub-categories highlighted above (which results in the following weights: 67% Barclay's Capital Aggregate Bond Index and 33% Barclays BA Intermediate High Yield Index), with a maximum tracking error of 2% to this benchmark.

FIXED INCOME RISK EXPOSURES AND RISK MITIGATION:

The fixed income sub-sectors have very different risk factor exposures, with Core being generally the lowest risk, highest liquidity sub-category, while Opportunistic Credit is generally the highest risk, lowest liquidity sub-category. SamCERA will take into account these unique risk factors when constructing the fixed income portfolio to help ensure that the overall risk profile of the total portfolio is consistent with expectations.

Core: The primary risk factors are sensitivity to changes in interest rates, changes in mortgage prepayment speeds, and investment-grade corporate and sovereign credit risk.

Core Unconstrained: Typically includes the risk factors found in Core with additional exposures to high-yield default risks, emerging markets sovereign/corporate default risk, and

potential illiquidity. The allocation to these risk exposures will be dynamic over time as the portfolio is not constrained to a benchmark.

Opportunistic Credit: Typically includes the risk factors contained in Core and Core Unconstrained, but, depending on the mandate, with higher emphasis to credit default risks, emerging markets sovereign/corporate default risk, potential leverage, and potential illiquidity. It is expected that strategies within Opportunistic Credit will have a maximum leverage ratio of 2.5x at the fund level (i.e. certain holdings may be levered higher than the 2.5x limit, as long as the fund (or strategy) has a maximum 2.5x leverage). Strategies employing higher leverage will be relegated to the debt/special situations category of Private Equity (see Section 12).

Formatted: Font: Not Bold

ASSET CLASS	BENCHMARK INDEX
Fixed Income	Customized Benchmark Portfolio
Core/Core Unconstrained	Barclays Capital Aggregate Bond Index
Opportunistic Credit	Barclays Capital BA Intermediate High Yield Index

11.0 INFLATION HEDGE INVESTMENT POLICIES

INFLATION HEDGE OVERVIEW: The Inflation Hedge category combines inflation-sensitive assets under a single asset class to simplify the asset allocation process and enable better performance monitoring of the plan's overall, direct exposure to assets with inflation-hedging properties. The plan also has indirect exposure to inflation-sensitive assets through other asset classes, such as Public Equity, Fixed Income, Risk Parity, and Alternatives. When determining the appropriate allocation of inflation protection, both direct and indirect exposures to inflation-sensitive assets across the plan are taken into account. The Inflation Hedge category is expected to provide a high degree of inflation beta, attractive risk-adjusted returns and diversification benefits to the overall plan.

Inflation Hedge is broken out into four subcategories:

- 1) Real Estate, 2) Private Real Assets, 3) Public Real Assets, and 4) TIPS

Real Estate: Real Estate is expected to provide a return and risk profile between that provided by fixed income and equities. Real estate will be composed of three sub-categories: 1) Core, 2) Value-Add, and 3) Debt. The majority of exposure will be in Core real estate assets of the highest quality located in the best locations in North America, Europe, and Asia. Value-Add properties are expected to provide somewhat higher return potential along with somewhat higher risk than Core assets. Real Estate Debt strategies range from lower risk senior loans on stable properties to higher risk/return mezzanine and construction loans. SamCERA utilizes Debt strategies for risk mitigation and to enhance the portfolio's yield.

Income will be a large part of the return stream generated from the Real Estate portfolio. The role of this portfolio is to provide diversification benefits, some protection against unanticipated inflation, and a steady income stream. Higher risk Opportunistic/Development

real estate strategies will reside in the Private Real Assets composite due to their higher-risk, longer time horizon, and the less liquid nature of the investment set compared to Core, Value-Add, and Debt strategies. The sub-allocation targets and target ranges are summarized below:

Real Estate Strategy	Target Allocation	Range
Core Real Estate	60%	50 -70%
Value-Add Real Estate	20%	0 - 30%
Real Estate Debt	20%	0 - 30%

Private Real Assets: Private Real Assets are expected to provide attractive total and risk-adjusted returns that exhibit low correlations with traditional asset classes but positive correlation with inflation. Private Real Assets will be composed of two sub-categories: 1) Infrastructure (Core and Value-Add, Secondary, Midstream Energy, and Power), and 2) Natural Resources (Energy Exploration & Production, Mining, Farmland, Timber, and Water). These allocations will be implemented via allocation to primary and secondary fund investments and co-investment opportunities. The sub-allocation targets and target ranges are summarized below:

Sub-Category	Target Allocation	Range
Infrastructure	50%	+/- 25%
Natural Resources	50%	+/- 25%

Public Real Assets: Similar to Private Real Assets, Public Real Assets is expected to provide positive correlation to inflation, but with potentially higher beta to public equity markets. Public Real Assets may be used to fund new strategies in Private Real Assets and will be composed of three sub-categories: 1) Commodities, 2) Listed Global Natural Resources, and 3) Listed Global Infrastructure. All three sub-categories are meant to provide some protection from higher levels of unanticipated inflation while providing a diversifying return stream from that of public markets. Listed Global Natural Resources and Listed Global Infrastructure may be implemented through the use of relatively inexpensive, passive indices. The sub-allocation targets and target ranges are summarized below:

Sub-Category	Target Allocation	Range
Commodities	34%	0 - 50%

Listed Global Natural Resources	33%	0 – 50%
Listed Global Infrastructure	33%	0 – 50%

TIPS: Treasury Inflation-Protected Securities are expected to provide some protection against higher rates of inflation.

INFLATION HEDGE PERFORMANCE OBJECTIVE:

The performance objective of the Inflation Hedge Composite is to outperform, on a net-of-fee basis, a customized index incorporating the weighted average components for four composite sub-asset classes (which results in the following weights: 44% NCREIF ODCE, 34% Custom Public Real Asset Index, 11% Custom Private Real Asset Index, and 11% BC TIPS Index).

INFLATION HEDGE RISK EXPOSURES AND RISK MITIGATION:

Real Estate: Many real estate funds utilize leverage to enhance returns. Lack of liquidity is also a concern, but less so for core real estate and senior debt investments. Value-add, mezzanine debt, and opportunistic strategies also tend to have more exposure to general economic conditions than core properties.

These risks will be mitigated in a number of ways. First, the primary emphasis of SamCERA’s real estate program will be focused on Core properties, with a secondary emphasis to Value-Add properties and Debt strategies. Opportunistic-oriented strategies will reside in our Private Real Assets portfolio due to their higher risk profile. In addition, SamCERA’s core real estate fund has a leverage limit of 35%, and SamCERA also sits on the Fund’s Advisory Committee.

Private Real Assets: By their nature, Private Real Assets are generally illiquid in that the life of these fund investments can be as long as ten to twelve years. SamCERA recognizes that this illiquidity is a necessary characteristic (and source of return premium) for these asset classes and as such will endeavor to take this illiquidity into account at the total plan level when addressing total plan liquidity needs during strategic planning asset liability studies. Leverage can be employed by alternative managers to enhance the overall risk-adjusted returns. SamCERA will control leverage exposure through partnership selection and portfolio construction and diversification.

TIPS: The primary risk factors are to changes in real interest rates, deflationary environments (although deflation floors could mitigate some of this risk), and potential illiquidity.

ASSET CLASS	BENCHMARK INDEX
INFLATION HEDGE	CUSTOMIZED BENCHMARK PORTFOLIO
REAL ESTATE	NCREIF ODCE
PRIVATE REAL ASSETS	CUSTOM PRIVATE REAL ASSET INDEX
PUBLIC REAL ASSETS	CUSTOM PUBLIC REAL ASSET INDEX

TIPS	BC TIPS INDEX
------	---------------

12.0 ALTERNATIVE ASSETS INVESTMENT POLICIES

ALTERNATIVES OVERVIEW: Alternatives are investments that do not neatly fit into public equities or fixed income. SamCERA’s alternatives program is broken out into the following two sub asset classes:

- 1) Private Equity, and 2) Absolute Return

Private Equity: Private Equity are funds, typically illiquid investments, that directly invest in private companies, or that engage in buyouts of public companies. Private Equity is expected to be one of the highest returning asset classes over the long-term. Its role in the portfolio is to provide high return potential in order to maximize the ability of the Fund to meet its performance objectives. The Private Equity program will contain manager allocations to three primary sub-categories: 1) Buyouts, 2) Venture Capital, and 3) Debt/Special Situations. These allocations will be implemented via allocation to primary and secondary fund investments and co-investment opportunities. The sub-allocation targets and target ranges are summarized below:

Formatted: Font: 12 pt, Complex Script Font: 12 pt

Sub-Category	Target Allocation	Range
Buyouts	60%	+/- 20%
Venture Capital	20%	0 – 30%
Debt/Special Situations	20%	+/- 10%

The responsibility for private equity sourcing is delegated to SamCERA’s investment consultant.

The private equity portfolio shall adhere to the following investment guidelines covering diversification and quality:

(a) **Diversification:** Subject to availability of sufficient attractive opportunities, the portfolio is to be diversified over multiple years by the following:

Vintage Year: It is expected that roughly equal amounts of new funding will be committed in each calendar year, with deviations permitted to accommodate market opportunities and to facilitate initial entry into the asset class.

Investment Manager: No more than twenty (20) percent of the private equity portfolio’s target allocation may be committed to any one investment manager (excluding fund of funds).

Geography: Through commitments to funds located and/or investing both in and outside of the United States.

Industry: It is expected that the private equity portfolio will be generally diversified by sector/industry.

(b) Quality: All commitments to private equity by SamCERA must be of institutional quality as evidenced by other tax-exempt institutional investors' commitments to the investment manager's prior or current funds.

Fund managers are expected to comply with SamCERA's private placement disclosure rules.

Absolute Return: The absolute return category will focus on funds that have an absolute return orientation and are not expected to contain significant levels of public market beta over the long term. This category is expected to provide a diversifying return stream to the total plan that is not correlated to the public markets. Suitable investment strategies include multi-strategy funds, GTAA or global macro funds, and CTA/Managed Futures trend following funds. It is expected that this category will be implemented via commingled funds and not in separate accounts so that SamCERA's investment in any single fund would be 'ring-fenced' (i.e. any potential losses would be limited to the investment in the single fund, and not extend to the total plan assets).

ALTERNATIVES PERFORMANCE OBJECTIVE:

The performance objective of the Alternatives Composite is to outperform, on a net-of-fee basis, a customized index incorporating the weighted average components for two sub-asset classes highlighted above (which results in the following weights: 50% Russell 3000+3% (One Quarter Lagged), and 50% LIBOR+4%).

ASSET CLASS	BENCHMARK INDEX
Alternatives	Customized Benchmark Portfolio
Private Equity	Russell 3000 + 3% (One Quarter Lagged)
Absolute Return	LIBOR + 4%

ALTERNATIVES RISK EXPOSURES AND RISK MITIGATION

Alternatives, while expected to provide attractive returns that are less correlated to the returns provided by public asset classes, also have a number of risks. Chief among these are illiquidity risk and leverage. By their nature Private Equity is generally illiquid in that the life of these fund investments can be as long as ten to twelve years. SamCERA recognizes that this illiquidity is a necessary characteristic (and source of return premium) for these asset classes and as such will endeavor to take this illiquidity into account at the total plan level when addressing total plan liquidity needs during strategic planning asset liability studies. Leverage can be employed by alternative managers to enhance the overall risk-adjusted

returns. SamCERA will control leverage exposure through partnership selection and portfolio construction and diversification.

13. RISK PARITY INVESTMENT POLICIES

RISK PARITY OVERVIEW: Risk Parity is a risk-diversified balanced portfolio that is expected to provide a more diversified return and risk profile than that of a traditional 60% equity / 40% fixed income portfolio. It is generally designed to be more balanced between equity risk, interest rate risk, credit risk, and inflation risk than a traditional balanced portfolio.

RISK PARITY PERFORMANCE OBJECTIVE:

The performance objective of the Risk Parity Composite is to outperform, on a net-of-fee basis, the 60% MSCI World / 40% BC Global Aggregate over a 5 year rolling period.

RISK PARITY RISK EXPOSURES AND RISK MITIGATION:

Risk parity managers utilize leverage in order to enhance returns. Moderate leverage may be utilized and the portfolio managers should avoid strategies that might place the portfolio outside the expected ranges outlined. Gross exposures are expected to range from 250% to 350%. In addition, the risk parity portfolio shall consist of a portfolio of generally liquid trading instruments.

Counter-parties for Over the Counter (OTC) derivatives must either: (1) have a long-term rating from Standard & Poor's of at least A-, or from Moody's of at least A3; or (2) be approved by the manager's counter-party committee. In the event that the OTC derivative counterparty is an unrated affiliate whose performance is unconditionally guaranteed by the parent company, the parent's credit rating shall apply.

ASSET CLASS	BENCHMARK INDEX
Risk Parity	60% MSCI World / 40% BC Global Aggregate

14.0 QUARTERLY INVESTMENT PERFORMANCE REPORTING

The quarterly investment performance reports will be designed as a risk management tool and will afford the Board the opportunity to timely identify potential risk issues within the portfolio and to assess the relative performance of the investment managers.

The report will provide sufficient information to assess the following:

- A. Total and active risk assessment at total fund, composite and individual manager level.
- B. Performance attribution at total fund, composite and individual manager level.
- C. Adherence to the investment style for which the manager is retained, as measured by the quarterly risk adjusted active return (deviation of the manager's performance from the specified performance benchmark) over the last quarter, six months, one-, three-, and

five-year periods, including updates from previous quarterly reports regarding adherence to the style for which the firm was retained;

D. Ability of the active manager to demonstrate consistently positive information ratios, including updates from previous quarterly reports regarding the firm's information ratios;

E. Quarterly, annual, three- and five-year total time-weighted returns relative to the specified performance benchmark and manager style peer group.

15.0 ANNUAL INVESTMENT STRATEGY

Annually, the Board/Staff shall convene an investment strategy session (typically as part of the annual retreat) with the objective of addressing strategic investment policy issues and to deliberate any policies that could benefit the performance of the retirement Fund. The agenda for these sessions should include (but is not limited to) the following information:

(a) Compare the Fund's actual investment performance for the prior fiscal year against the investment objectives set forth in Section 3.0 and evaluate the relative success or failure of the prior year's performance; specific commentary to this objective shall be an integral part of the performance measurement process.

(b) Compare each investment manager's investment performance for the prior fiscal year against the relevant benchmarks and peer groups and evaluate the relative success or failure of their prior year's performance.

(c) Evaluate and review the total Fund performance attribution and contribution to return at the composite level to isolate performance drivers.

(d) Evaluate and review the various risk exposures of the plan versus appropriate policy limits and on-going trends through time.

(e) Evaluate and review the portfolio rebalancing activity for the year.

(f) Evaluate the Fund's liquidity requirements for the current and next fiscal years.

(g) Compare each investment manager's fees to their respective peer universe.

16.0 PROXY VOTING

The Investment Managers are delegated authority for the voting of proxies, subject to the following guidelines:

A. All proxies shall be voted in the best interest of the shareholders, but in no instance shall the economic interests of the retirement Fund be subordinated to any other interest.

B. Investment managers shall provide staff with quarterly reports on all proxies cast, in a mutually acceptable format.

17.0 SECURITIES LENDING

- A. Pursuant to Section 2.0 (A), the Custodian shall manage a securities lending program to enhance income in accordance with the terms and conditions set forth in a mutually acceptable securities lending agreement and guaranty.
- B. The Board reserves exclusive authority to approve the securities lending agreement prior to the commencement of securities lending activity.
- C. Unless otherwise specified in the agreement(s):
- (i) All loans shall be marked-to-market daily.
 - (ii) Collateral on each loan shall be maintained daily at 102% of loan value for domestic securities and 105% of loan value for international securities.
 - (iii) Acceptable collateral shall be in the form of cash or obligations issued or guaranteed by the U.S. Government, or its agencies or instrumentalities.
 - (iv) Borrower must have a long-term credit rating of either "A" from S&P or "A2" from Moody's. For split rated borrowers, the higher rating shall prevail if not the same rating, with the lower rating having a minimum long-term credit rating of either "A-" from S&P or "A3" from Moody's.
 - (v) The maximum allowable amount of assets on loan to any single borrower shall not be greater than \$3 million.
 - (vi) The maximum total amount of program assets on loan shall not be greater than \$10 million.
- D. The Chief Investment Officer shall be responsible for monitoring the securities lending program and recommending changes as appropriate.

APPENDIX A

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Investment Committee Charter as Amended
RESOLUTION 99-00-09

*This Resolution, adopted by the Board of Retirement (Board)
of the San Mateo County Employees' Retirement Association (SamCERA),
sets forth the Charter for the Board's Investment Committee.*

WHEREAS, Article XVI, §17 of the Constitution of the State of California as amended in 1992 to read, in pertinent part, as follows:

Notwithstanding any other provisions of law or this Constitution to the contrary, the retirement board of a public pension or retirement system shall have plenary authority and fiduciary responsibility for investment of moneys and administration of the system, subject to all of the following:

(a) The retirement board ... shall have the sole and exclusive fiduciary responsibility over the assets of the ... system. The retirement board shall also have sole and exclusive responsibility to administer the system in a manner that will assure prompt delivery of benefits and related services to the participants and their beneficiaries. The assets ... are trust funds and shall be held for the exclusive purposes of providing benefits to participants ... and their beneficiaries and defraying reasonable expenses of administering the system.

(b) The members of the retirement board ... shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty.

(c) The members of the retirement board ... shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

(d) The members of the retirement board...shall diversify the investments of the system so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly not prudent to do so.

(e) The retirement board..., consistent with the exclusive fiduciary responsibilities vested in it, shall have the sole and exclusive power to provide for actuarial services in order to assure the competency of the assets of the... system. &

WHEREAS, California Government Code §31595 states, as follows:

The Board has exclusive control of the investment of the employees retirement fund. The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and

defraying reasonable expenses of administering the system. Except as otherwise expressly restricted by the California Constitution and by law, the Board may, in its discretion, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding, or sale of any form or type of investment, financial instrument, or financial transaction when prudent in the informed opinion of the Board...; &

WHEREAS, *The Board of Retirement*, wishes to exercise these powers as follows:

EXERCISE OF POWERS: *The Board shall exercise its investment, management and administrative authority and responsibility through the approval of motions recorded in public meeting &*

WHEREAS, the Board has adopted SamCERA's Investment Policy and amendments thereto to direct the investments of the Retirement Fund and now wishes to establish an Investment Committee to guide the future evolution of SamCERA's Investment Policy. Therefore, be it

RESOLVED that the Board hereby establishes a standing Investment Committee to direct the Board in its ongoing evaluation of SamCERA's Investment Policy, including but not limited to

- 1.0 CONDUCT ASSET ALLOCATION STUDIES
 - 1.1 Determine the characteristics of the Policy's liabilities in regards to the nature of Fund's cash flows
- 2.0 DEVELOP ASSET MIX ALTERNATIVES TO MEET LIABILITY REQUIREMENTS
 - 2.1 Establish allowable asset classes
 - 2.2 Determine asset class benchmarks
 - 2.3 Develop risk, return & correlation projections
- 3.0 EVALUATE EFFICIENT FRONTIER ALTERNATIVES
 - 3.1 Define risk, return and correlation
 - 3.2 Evaluate mean variance optimization
 - 3.3 Determine low risk alternatives and high risk alternatives
 - 3.4 Scale portfolios between two extremes
 - 3.5 Evaluate optimized efficient frontier
 - 3.6 Integrate optimized efficient frontier with asset-liability relationships
- 4.0 ANALYZE BOARD RISK TOLERANCE
 - 4.1 Assess risk/reward trade-offs
 - 4.2 Assess contribution rate sensitivity & variability
 - 4.3 Assess ability to exceed actuarial interest rate
 - 4.4 Assess comfort level with characteristics of specific asset mixes
- 5.0 RECOMMEND PREFERRED ASSET MIX
 - 5.1 Evaluate differences from current target
 - 5.2 Evaluate Board's willingness to implement new target asset mix
 - 5.3 Evaluate appropriateness of variance from peer public fund norms
- 6.0 RECOMMEND AMENDMENTS TO SAMCERA'S INVESTMENT POLICY
 - 6.1 Adjust target asset mix
 - 6.2 Introduce new benchmarks

- 6.3 Include required asset class/portfolio modifications
- 7.0 RECOMMEND REVISIONS TO MANAGER STRUCTURE
 - 7.1 Adjust manager/style line-up as necessary
 - 7.2 Introduce new managers/asset classes
 - 7.3 Terminate managers/asset classes as necessary
 - 7.4 Establish active & passive allocation targets as appropriate
- 8.0 IMPLEMENT CHANGES TO MANAGER STRUCTURE
 - 8.1 Recommend time-line & approach to revise structure
 - 8.2 Conduct manager evaluations
 - 8.3 Establish portfolio and asset allocation rebalancing procedures
- 9.0 EVALUATE MANAGER PERFORMANCE
 - 9.1 Monitor results of managers both gross and net of investment management fees
 - 9.2 Assess consistency of portfolio decision making
 - 9.3 Evaluate organizational, ownership, personnel & other firm developments
- 10.0 RECOMMEND AND EVALUATE INVESTMENT CONSULTANT STRUCTURE & PERFORMANCE
 - 10.1 Recommend for Board determination the retention and termination of Investment Consultant(s) as necessary
 - 10.2 Define and assign special projects as warranted
 - 10.3 Monitor performance of Investment Consultant(s)
 - 10.4 Conduct evaluations of Investment Consultant(s)
 - 10.5 Evaluate organizational, ownership, personnel and other firm developments
- 11.0 INITIATE & EVALUATE SPECIAL INVESTMENT STUDIES
- 12.0 UNDERTAKE OTHER WORK ASSIGNED TO IT BY THE BOARD Be it further

RESOLVED that the Chair may appoint the members of the Investment Committee per Regulation 2.5.1. Be it further

RESOLVED that the Chief Executive Officer is hereby instructed to provide the Committee with access to all appropriate and available resources and records, so long as such access is consistent with sound fiduciary practices. Be it further

RESOLVED that the Chief Executive Officer is hereby authorized to provide compensation of \$100 per meeting for not more than two meetings per month to the members of the Committee eligible for such compensation, per GC§31521. Be it further

RESOLVED that the Board hereby reserves to itself sole authority to accept, modify, or reject the recommendations, which the Investment Committee may present from time to time pursuant to the provisions of this Resolution, per Regulation 2.3.

ADOPTED by unanimous vote, January 25, 2000

AMMENDED by unanimous vote, May 22, 2001

AMMENDED by unanimous vote, October 25, 2004

APPENDIX B

Derivatives Investment Policy

1) Introduction

There is a genuine need to allow SamCERA's separate account managers to evaluate new securities and introduce them into their portfolios, given that the investment process followed by the investment managers complies with the subsequent provisions of this policy statement. This policy statement allows SamCERA's separate account Managers to exercise reasonable investment freedom, while minimizing the possibility of adverse implications for the Board.

2) Derivative Definition

A 'derivative' commonly is defined as a financial instrument whose performance is derived, at least in part, from the performance of an underlying asset (such as a security or an index of securities).

3) Types of Securities Included or Excluded

Since the derivative sector of the market is likely to experience considerable change, provisions must be made for the general characteristics of a derivative security, its evaluation and monitoring. Therefore, it is most appropriate to not attempt to definitively list all of the derivative securities that are covered by this policy. Instead, what will be explicitly stated is the investment process that governs derivative investments and the evaluation and monitoring requirements of this policy.

4) Approach to Policy

An approach has been developed which states allowable derivative investments, limited allocation derivative investments and restricted derivative investments.

Derivative securities not specified in the above three groups of securities must be evaluated in accordance with the following section entitled Derivative Investment Process. If the security meets these provisions and the spirit of these policies, the manager may establish a prudent position in the instrument. However, the manager must be able to demonstrate the appropriateness of such an investment in light of SamCERA's guidelines.

5) Counter-Party Evaluation

When entering into a non-exchange traded derivative investment, the investment manager must fully evaluate the other side of the derivative transaction—the counter-parties to the trade. Due to the possibility of counter-party default, SamCERA's investment managers must evaluate the risks associated with the counter-party as if an investment were being made in the traditional securities issued by the counter-party.

At a minimum, the investment manager must evaluate the counter-party's following criteria:

- a) Corporate earnings stream
- b) Corporate asset quality
- c) Capitalization
- d) Corporate liquidity
- e) Moody's and Standard & Poor's debt ratings
- f) Other fundamental investment and risk characteristics

For those counter-parties that are broker/dealers, they must:

- a) Have investment grade (Moody's and S&P rated) debt
- b) Be registered with the SEC
- c) Have significant net capital to protect against potential adverse market circumstances

For those counter-parties that are financial institutions (banks), they must have:

- a) Investment grade (Moody's and S&P rated) debt
- b) Total assets in excess of \$1 billion
- c) Significant net capital to protect against potential adverse market circumstances

The investment manager must monitor individual investment and total portfolio exposure to counter-parties. Individual counter-party exposure must be well diversified and not concentrated in a small number of organizations.

6) Purposes for Derivatives

The acceptable investment purposes for the use of derivatives are as follows:

- a. Appropriate to use futures, options and forward currency contracts to assist investment managers in mitigating portfolio risk.
- b. Useful substitute for an existing, traditional investment. In certain circumstances it may be cheaper, quicker or easier to invest in a derivative instrument or security rather than transacting in the cash or traditional security market.
- c. Provides investment value to the portfolio, while being consistent with SamCERA's overall and specific investment policies.
- d. Obtains investment exposure that is appropriate with the manager's investment strategy and SamCERA's investment guidelines, but could not be made through traditional investment securities.

Given that one or more of these investment purposes are clearly met, it is the responsibility of the investment manager to explain and demonstrate how derivative investments impact portfolio risk and the context of the investment within the overall portfolio.

Any other derivative investment purpose is not allowed. Derivatives may not be introduced into the portfolio to create economic leverage or to create investment exposures that are otherwise excluded by SamCERA's Investment Policy. However, if a manager develops an investment purpose other than those listed above which he/she feels is legitimate and consistent with the spirit of SamCERA's guidelines, this purpose should be proposed in writing to the Board.

7) Investment Restrictions and Derivatives Policy

For the purpose of these guidelines, convertible debt, traditional zero coupon bonds, mortgage pass-through securities and asset-backed securities are not viewed as derivatives. Based upon the factors enumerated in the above Section 4 entitled Approach to Policy, the following guidelines have been established:

Allowable derivative investments

- a. Stable and well-structured mortgage CMO's (Collateralized Mortgage Obligations)
- b. Financial futures (if Exchange Traded)
- c. Currency forward contracts and currency options (Exchange and OTC traded)
- d. Interest rate swaps

Derivative investments with allocation limits

- a. Interest only mortgage CMO's
- b. Principal only mortgage CMO's
- c. Options (if Exchange Traded)
- d. Caps and floors as they apply to the above stated allowable derivative investments
- e. Credit Default Swaps (CDS)

Derivative investments with allocation limits, as listed above, may not represent more than 5% of the individual portfolio manager's assets (based on market value) managed for SamCERA. At the same time, derivative investments with allocation limits in aggregate may not expose the individual manager's portfolio to losses in excess of 5% of the manager's total assets managed for SamCERA. In addition, the use of options, caps and floors, and CDS may be used only for defensive investment purposes.

Managers investing in the above-defined limited allocation derivative instruments should ensure that portfolio exposure is maintained within the stated constraints, and communicate the assumptions and model used to estimate VAR (Value at Risk) and/or other reasonable risk measurement procedures annually to the Boards.

Restricted derivative investments

- a. Inverse floating rate notes and bonds
- b. Structured notes

Restricted derivatives cannot be held in SamCERA's separate account portfolios at any time.

8) Risk Analysis and Monitoring of Derivatives

For those securities that are classified as derivative investments with allocation limits, the investment managers are required to test and measure derivative investment sensitivities to changes in key risk factors. These risk factors include extreme changes in interest rates, volatility, liquidity, credit quality, and cash market prices.

These risk factors will be assessed prior to initial investment and on a quarterly basis. Results of such risk testing on derivative investments with allocation limits will be supplied to SamCERA on an annual basis (December 31). If the investment manager identifies additional risks that should be evaluated, these other risk factors should be added to the list and handled in a manner consistent with the previously stated approach.

9) Derivative Investment Process

Investment managers are expected to cover the following issues before purchasing a derivative instrument or security, whether specifically stated as an allowable derivative investment, a derivative investment with

allocation limits, or a derivative not specifically discussed in the Investment Restrictions and Derivatives Policy section above:

- a. Determine if the purpose for investing in a derivative security is consistent with one or more of the purposes in the previous section entitled Purposes for Derivatives.
- b. Determine where the security fits into the classification system, if at all, stated in the Investment Restrictions and Derivatives Policy.
- c. Evaluate, at a minimum, the counter-party risk and the risks stated in the Risk Analysis and Monitoring section of the derivatives policy.
- d. Evaluate the derivative in a comparably thorough manner as the firm would any other traditional investment opportunity.

10) Reporting Requirements

It is the responsibility of SamCERA's investment managers to certify and demonstrate that their portfolios are in compliance with SamCERA's overall guidelines as well as those that apply to derivative investments. On an annual basis (December 31), SamCERA's investment managers will provide the following minimum monitoring information on all derivative securities:

- a. A general statement from the investment manager that its portfolio is in compliance with this Derivatives Policy.
- b. When stating the market value of the derivative exposure, the manager will specify the security pricing sources. The pricing source must be exchange-listed.
- c. A statement of the risks (credit risk—an evaluation of potential counter-party default on obligations, market risk—percent of portfolio invested in derivatives, and any other relevant risks) associated with the derivative investments.
- d. Potential adverse impact on market values if extreme adverse market movements occur.
- e. A statement regarding the liquidity of the derivative investments.
- f. Summary comments and the firm's list of approved counter-parties, ratings, and a statement regarding any changes to this list.
- g. An overall statement discussing the legal and regulatory risks associated with the portfolio manager's investments in derivatives.

Appendix C

DISCLOSURE OF PLACEMENT AGENT FEES, GIFTS, AND CAMPAIGN CONTRIBUTIONS

This amended policy is effective immediately upon adoption. This policy is intended to supplement any applicable provisions of state or federal law, which shall govern in the event of any inconsistency.

I. PURPOSE

This Policy is adopted pursuant to the requirements set forth in Government Code Section 7513.85 to help ensure that the San Mateo County Employees' Retirement Association (SamCERA) investment decisions are made solely on the merits of the investment opportunity. This Policy requires broad, timely, and updated disclosure of all Placement Agents, as that term is defined by Government Code section 7513.8, their relationships, compensation and fees.

II. APPLICATION

This Policy applies broadly to every type of SamCERA investment managers including general partners, sponsors of hedge funds, private equity funds, real estate funds and infrastructure funds, as well as public market investment managers.

This Policy as amended applies to all agreements with External Managers that are entered into after the date this Policy is adopted and all existing agreements if, after the date this amended Policy is adopted, the agreement is amended to continue, terminate, or extend the term of the agreement or the investment period, increase the commitment of funds by SamCERA or increase or accelerate the fees or compensation payable to the External Manager (Referred to hereafter as "Amendment".) In the case of an Amendment, the disclosure provisions of this Policy shall apply to the Amendment and not to the original agreement.

III. RESPONSIBILITIES

A. The Board is responsible for:

1. Not entering into any agreement with an External Manager that does not agree in writing to comply with this policy.
2. Not entering into any agreement with an External Manager who has violated this policy within the previous five years. However, this prohibition may be reduced by a majority vote of the Board at a public session upon a showing of good cause.

B. Each External Manager is responsible for:

1. Executing an agreement that provides the External Manager will comply with this policy.
2. Providing the following information to SamCERA Investment Staff within 45 days of the time investment discussions are initiated by the External Manager, but in any event, prior to the completion of due diligence. In the case of Amendments, the Placement Agent Information Disclosure is required prior to execution of the Amendment.
 - a. Disclosure of payments or compensation by the External Manager or any of its principals, employees, agents or affiliates, directly or indirectly, to any person or entity to act as a Placement Agent in connection with SamCERA investments.
 - b. A resume for each officer, partner, principal of the Placement Agent detailing the person's education, professional designations, regulatory licenses and investment and work experience. If any such person is a current or former SamCERA Board Member, employee or Consultant or a member of the immediate family of any such person, this fact shall be specifically noted.
 - c. A description of any and all compensation of any kind provided or agreed to be provided to a Placement Agent, including the nature, timing and value thereof. Compensation to Placement Agents shall include, but not be limited to, compensation to third parties as well as employees of the External Manager who solicit or market investments to SamCERA or who are paid based upon investment commitments secured by such employees.
 - d. A description of the services to be performed by the Placement Agent and a statement as to whether the Placement Agent is utilized by the External Manager with all prospective clients or only with a subset of the External Manager's prospective clients.
 - e. A written copy of any and all agreements between the External Manager and the Placement Agent.
 - f. A statement whether the placement agent, or any of its affiliates, are registered with the Securities and Exchange Commission or the Financial Industry Regulatory Association, or any similar regulatory agent in a country other than the United States, and the details of that registration or explanation as to why no registration is required.
 - g. A statement whether the placement agent, or any of its affiliates, is

registered as a lobbyist with any state or national government.

h. The names of any current or former SamCERA Board Members, employees, or Consultants who suggested the retention of the Placement Agent.

3. Providing an update of any changes to any of the information provided pursuant to section B.2 above within 30 calendar days of the date that the External Manager knew or should have known of the change in information.
4. Representing and warranting the accuracy of the information described in section B.2 above.
5. Causing its engaged Placement Agent to disclose, prior to acting as a Placement Agent to SamCERA:
 - a. All campaign contributions made by the Placement Agent to any publicly elected SamCERA Board Member during the prior 24-month period. Additionally, any subsequent campaign contribution made by the Placement Agent to any publicly elected SamCERA Board Member during the time the Placement Agent is receiving compensation in connection with a SamCERA investment shall also be disclosed.
 - b. All gifts, as defined in Government Code Section 82028, given by the Placement Agent to any SamCERA Board Member during the prior 24-month period. Additionally, any subsequent gift made by the Placement Agent to any SamCERA Board Member during the time the Placement Agent is receiving compensation in connection with a SamCERA investment shall also be disclosed.
6. SamCERA reserves the right to deem the failure to disclose the information required by 5(a) and 5(b) as a material breach of the agreement with the External Manager.

C. SamCERA Investment Staff (“Staff”) are responsible for:

1. Providing External Managers with a copy of this Policy at the time that discussions are initiated with respect to a prospective investment or engagement.
2. Confirming that the information in section B above has been received within 45 days of the time the execution of the investment contract or Amendment.
3. For new contracts and amendments to contracts existing as of the date of the initial adoption of this Policy, securing the agreement of the External Manager in the final written agreement between SamCERA and the External Manager to provide in the event that there was or is an intentional material omission or

inaccuracy in the Placement Agent Information Disclosure or any other violation of this Policy, SamCERA reserves the right to reimbursement of any management or advisory fees paid by SamCERA from the date of violation to the date of the imposition of the fees.

4. Prohibiting any External Manager or Placement Agent from soliciting new investments from SamCERA for five years after they have committed a material violation of this Policy; provided, however, that SamCERA's Board, by majority vote at a noticed, public meeting, may reduce this prohibition upon a showing of good cause.
5. Providing the Board with Placement Agent information relating to each investment at the time the investment is brought to the Board for its decision.
6. Maintaining Placement Agent Information Disclosures as a public record and reporting to the Board any a material violation of this Policy.

Adopted December 14, 2010

Amended October 25, 2011

Amended March 28, 2017

DEFINITIONS:

The following definitions are excerpted from California Government Code section 7513.8 and are current as of March 28, 2017. Should the legislature subsequently amend the definitions below, the definition of these terms as amended shall supersede the definitions contained in this policy.

"External Manager" means either of the following: (1) a Person who is seeking to be, or is, retained by a board or an Investment Vehicle to manage a portfolio of securities or other assets for compensation; (2) a Person who manages an Investment Fund and who offers or sells, or has offered or sold, an ownership interest in the Investment Fund to a board or an Investment Vehicle. (All code section references are to the Government Code, unless otherwise noted.)

"Person" means an individual, corporation, partnership, limited partnership, limited liability company, or association, either domestic or foreign.

"Investment Vehicle" means a corporation, partnership, limited partnership, limited liability company, association, or other entity, either domestic or foreign, managed by an External Manager in which a board is the majority investor and that is organized in order to invest with, or retain the investment management services of, other External Managers.

"Investment Fund" means a private equity fund, public equity fund, venture capital fund, hedge fund, fixed income fund, real estate fund, infrastructure fund, or similar pooled investment

entity that is, or holds itself out as being, engaged primarily, or proposes to engage primarily, in the business of investing, reinvesting, owning, holding, or trading securities or other assets. Notwithstanding the preceding sentence, an investment company that is registered with the Securities and Exchange Commission pursuant to the Investment Company Act of 1940 (15 U.S.C. Sec. 8a-1 et seq.) and that makes a public offering of its securities is not an Investment Fund.

“Placement Agent” means any Person directly or indirectly hired, engaged, or retained by, or serving for the benefit of or on behalf of, an External Manager or an Investment Fund managed by an External Manager, and who acts or has acted for compensation as a finder, solicitor, marketer, consultant, broker or other intermediary in connection with the offer or sale to a board or an Investment Vehicle either of the following: in the case of an External Manager as defined in subpart (1) of the definition of an External Manager, the investment management services of the External Manager; in the case of an External Manager as defined in subpart (2) of the definition of an External Manager, an ownership interest in an Investment Fund managed by the External Manager. Notwithstanding the preceding sentence, an individual who is an employee, officer, director, equityholder, partner, member, or trustee of an External Manager and who spends one-third or more of his or her time, during a calendar year, managing the securities or assets owned, controlled, invested, or held by the External Manager is not a Placement Agent.



SamCERA's Investment Policy Statement

Latest Revision March 2019

1.0 ESTABLISHMENT OF INVESTMENT POLICY

The Board of Retirement (the “Board”), having exclusive authority and exclusive fiduciary responsibility for the investment and administration of the Trust Fund (the “Fund”), hereby establishes the following Investment Policy (the “Policy”) for the investment of the San Mateo County Employees’ Retirement Association (“SamCERA”) assets. The Board reserves the right to amend, supplement or rescind this Policy at any time.

The purpose of this Policy is to assist SamCERA in effectively supervising its investments in order to meet the requirements of the California Constitution, the County Employees Retirement Law of 1937 (“the 1937 Act”), the Mission and Goals of SamCERA and other requirements, and to encourage effective communication between SamCERA and its investment managers (the “Manager(s)”) and investment consultants (the “Consultant(s)”).

A. GOVERNING DOCUMENTS FOR THE INVESTMENTS OF THE FUND.

The powers and duties of the Board are set forth in the 1937 Act and in Article XVI of the State Constitution. They are further defined by the Mission and Goals adopted by the Board.

SamCERA was created by San Mateo County Ordinance No. 564 adopted by the Board of Supervisors, effective July 1, 1944. This ordinance established the retirement system in accordance with the provisions of California's County Employees' Retirement Law of 1937.

Constitution of the State of California

Article XVI, Section 17, relates to the administration of the system and investment of the Fund assets. It reads in pertinent part:

“(a)...The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system.

“(b) The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty.

“(c) The members of the retirement board of a public pension or retirement system shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

“(d) The members of the retirement board of a public pension or retirement system shall diversify the investments of the system so as to minimize the risk of loss and to

maximize the rate of return, unless under the circumstances it is clearly not prudent to do so.”

The 1937 Act

The 1937 Act contains language similar to that in the State Constitution regarding the investments of the Fund:

Government Code section 31595.

“The board has exclusive control of the investment of the employees retirement fund. The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system. Except as otherwise expressly restricted by the California Constitution and by law, the board may, in its discretion, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding, or sale of any form or type of investment, financial instrument, or financial transaction when prudent in the informed opinion of the board.

The board and its officers and employees shall discharge their duties with respect to the system: (a) Solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system.

(b) With the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

(c) Shall diversify the investments of the system so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent not to do so.

SamCERA’s Mission and Goals

The Board has adopted a Mission and Goals statement. The Mission summarizes SamCERA’s reason to exist.

“Mission: SamCERA exists to serve as loyal fiduciary for its members and as prudent administrator of the retirement system.”

The Mission is further defined by three goals. One goal speaks to the management of the assets of the Fund. This asset management goal reads:

“Prudently manage the assets in order to appropriately fund the actuarial liabilities of the retirement system, to ensure the ability to pay all earned benefits while minimizing the costs to employers.”

In recognition of the requirements of the California Constitution, the 1937 Act, the SamCERA Mission and Goals and other legal requirements, the SamCERA Board has established this Investment Policy.

2.0 MANAGEMENT OF THE FUND

A. ROLES AND PRINCIPAL DUTIES

The Fund investments shall be prudently planned, implemented, managed, and monitored by the Board. Investment Staff (the “Staff”), Investment Consultant (the “Consultant”), Custodian Bank (the “Custodian”), and Investment Managers (the “Managers”) shall support the Board in this activity. The roles are set forth below:

1. The Board establishes and maintains the investment policy, including: investment philosophy, investment objectives, strategic asset allocation, allocation-level performance benchmarks, and risk philosophy. The Board makes investment and monitoring decisions based upon the recommendations of Staff, Consultants, and other service providers engaged by the Board. The Board reviews and monitors all investments, as well as the policies, guidelines and procedures required to prudently administer the Fund and to effectively mitigate risk to the Fund. From time to time, the Board will utilize its Investment Committee to assist the Board in these activities and related specified tasks.
2. Staff oversees the Fund’s investment program activities, implements the Board’s decisions, makes recommendations to the Board regarding Fund management, including investment-related policies and procedures. Staff makes recommendations regarding the selection of the Consultant, Managers, Custodian as set forth below and monitors the performance and compliance of these and other investment related service providers.
3. The Consultant reviews, analyzes and evaluates the Fund’s effectiveness and efficiency and makes fund management related recommendations. Consultant assists Staff in implementing the Board’s decisions and developing all investment-related policies. Consultant’s responsibilities are detailed in the service agreement between SamCERA and Consultant.
4. The Custodian provides custody of SamCERA’s investment assets. In addition, the Custodian manages the securities lending program. The Custodian’s responsibilities are detailed in the service agreement between SamCERA and Custodian.
5. The Managers manage their mandated allocations in accordance with all applicable laws, Board-established policies, guidelines and procedures, as well as specific investment guidelines. For separately managed accounts, managers’ responsibilities are detailed in the Investment Management Agreements (IMA) between SamCERA and each Manager. For commingled funds, managers’ responsibilities are detailed in the related Fund documents.

B. INVESTMENT PORTFOLIO MANAGEMENT

The Board, with the assistance of Staff and Consultant, select and monitor Managers to manage the assets of the Fund.

1. Hiring New Managers

For public markets manager searches (i.e. non private equity and private real assets), Staff will inform the Board about the search process, including scope of the mandate, and the investment style, benchmark, and the minimum qualifications for candidates. Staff will update the Board on the short list of potential managers. Consultant and Staff will perform due diligence activities deemed applicable by the Chief Investment Officer, which may include analysis of performance records, meetings, due diligence questionnaires, interviews, and on-site visits. Upon completion of such due diligence, Staff and Consultant will bring a finalist to the Board for approval. The recommendation shall provide the Board with a summary description of the conducted due diligence activities.

For private markets (private equity and private real assets), the Consultant, with Staff input, sources managers that can best fit the desired mandate consistent with the annual pacing study and applicable investment policy. Consultant and Staff will bring potential private markets opportunities to the Board for approval. An exception to this policy is when an investment decision for a private market opportunity must be made prior to the date of the next regularly scheduled Board meeting. In these instances, and for investments of \$25 million or less, the Chief Executive Officer is authorized to make the investment decision after consulting with the Board Chair, or if the Chair is not available, the Vice Chair, and one member of the Investment Committee as long as such decision is in the best interest of the fund and consistent with applicable Board policy. Any action under this authorization will be reported to the Board at a subsequent regularly scheduled meeting.

2. Monitoring Existing Managers

The Board monitors the individual investment managers on a continuous basis through information provided by Staff, the Consultant, the Managers, and other investment service providers. Monthly, the Chief Investment Officer will present a preliminary performance report to the Board that is meant to provide a high-level summary of how the fund and each monthly-valued manager is performing. In addition, for SamCERA's separate accounts, Staff receives holdings and attribution reports from each separate account Manager on a monthly basis. For commingled funds, staff receives from the Manager either monthly or quarterly portfolio performance, attribution, exposure, and commentary reports.

Quarterly, the Consultant, with assistance from the Chief Investment Officer, will present an investment performance report to the Board, as specified in Section 14.0 (Quarterly Investment

Performance Reporting) in the Investment Policy. This report provides a more detailed performance attribution for the total plan and individual Managers, and helps to identify any short-term outlier deviations from expectations.

Semi-annually (month-end June and December of each year), every public markets (i.e. not private equity or private real asset) Manager completes a compliance statement identifying any significant firm, regulatory, and portfolio issues. In addition, semi-annually as of June and December of each year, Consultant will present performance reports for both the Private Equity and Private Real Assets programs that summarize each program and shows total program performance and program diversification by strategy, geography, industry, and vintage year.

Annually, Staff and Consultant will convene an investment strategy session, as specified in Section 15.0 (Annual Investment Strategy) in the Investment Policy, to allow a longer-term assessment of the Managers and the total fund performance. Lastly, all public markets Managers are interviewed annually by Staff and Consultant, and must complete a due diligence questionnaire.

During these presentations at SamCERA, Managers will provide an update on the Manager's organization and business plan, any changes to the investment process, and a summary of investment performance. Staff and Consultant report to the Board following these meetings.

3. Terminating Existing Managers

The Board recognizes investments may need to be adjusted or removed from the Fund from time to time for a variety of reasons, including organization changes at the Manager, changes in Manager style, underperformance relative to expectations, and the Managers' strategy is no longer appropriate for the fund. The Board determines if a Manager should be terminated after receiving input and or recommendations from Staff and Consultant.

In situations in which developments give immediate concern that an investment with a Manager is no longer prudent for the investment program and a termination or other related investment decision should be made prior to the next regularly scheduled Board meeting, the Chief Executive Officer is authorized to terminate the Manager and or move Fund assets after consulting with the Board Chair (or Vice Chair or Secretary based on availability, in that order) and one member of the Investment Committee. Situations causing an immediate concern, include, but are not limited to, when: (1) the firm suffers the resignation or other loss of its key portfolio managers on the strategy, (2) the firm dissolves, ceases to exist, or is otherwise incapable of carrying out its activities in the ordinary course of its business, (3) the firm is actually or effectively shut down by a regulatory agency or is accused of theft or fraud or other serious malfeasance by a regulatory agency, or (4) the fund's investment is in jeopardy of material loss. The Board will be promptly notified of the determination by the Chief Executive Officer.

3.0 INVESTMENT OBJECTIVES

The Board shall develop an investment program, consistent with the Investment Beliefs and General Investment Policies as stipulated in Sections 4.0 and 5.0, respectively, in order to meet the following objectives:

- A. Generate risk-adjusted returns that exceed the Asset Allocation Policy Benchmark (as defined in Section 6.0) on a net-of-fee basis over five-year rolling periods.
- B. Achieve a Fund return that meets or exceeds the long-term forecast of capital market returns for the asset allocation portfolio benchmark over multiple economic cycles (e.g. 15-20 years).
- C. Provide a more consistent return stream than a traditional 60% Equity / 40% Fixed Income portfolio as measured by lower portfolio drawdowns over a full market cycle.

4.0 INVESTMENT BELIEFS

The following section summarizes the Board's investment beliefs that have guided it in the development of this Policy document and will guide it in the oversight of the Plan assets.

- Strategic asset allocation is the primary driver of portfolio risk and return.
- SamCERA should have a long-term horizon and not be tempted to deviate from its long-term plan in response to short-term volatility.
- Everything else being equal, simplicity is preferred over complexity.
- For those asset classes evidencing market efficiencies, the manager structure may favor the employment of passive strategies.
- Diversification is fundamental.
- There is no single definition of risk. There are various measures of 'risk' that can be used for various purposes.
- The portfolio should be diversified across many risk dimensions/timeframes.
- SamCERA should not pursue investments that will not adequately compensate it for the risks that those investments bring.
- Costs matter.

5.0 GENERAL INVESTMENT POLICIES

Consistent with the investment beliefs contained in Section 4.0, it is the investment policy of the Board to:

- A. Achieve long-term risk-adjusted returns consistent with its fiduciary duty.
- B. Pursue an investment strategy that reduces the volatility of returns through prudent diversification of the portfolio across a broad selection of distinct asset classes, as provided for in Section 6.0 of this Investment Policy.
- C. Further diversify other risks, including extreme events, liquidity, and leverage by looking beyond traditional asset class definitions by utilizing multiple lenses on portfolio risks.
- D. Adopt an asset allocation target to guide the structure of the investment portfolio, as provided for in Section 6.0, and reevaluate on an annual basis.
- E. Reevaluate the asset-liability study every three to five years.
- F. Delegate full discretion, including whether to include environmental, social, and governance factors, if such factors have a direct relationship to the economic and financial value of an investment, when analyzing the financial merits of competing investment choices on behalf of SamCERA, to each investment manager to the extent authorized in their Investment Management Agreement (IMA).
- G. Adopt objectives that encourage investment managers to maximize their performance, within acceptable risk parameters, relative to their individual investment style benchmark.
- H. Refrain from drastically shifting asset class allocations over short time spans, unless it is in the Fund's best interest to do so.
- I. Rebalance the portfolio in accordance to the Rebalancing Policy set forth in Section 7.0.

6.0 ASSET ALLOCATION & PORTFOLIO STRUCTURE

The target asset class allocation, rebalancing ranges, and the sub-asset class portfolio structure of the Fund shall be allocated as follows:

ASSET CLASS	TARGET ALLOCATION	REBALANCE RANGE
Public Equity	41%	±3%
Fixed Income	21%	±2%
Risk Parity	8%	±2%
Alternative Assets *	12%	±2%
Inflation Hedge *	18%	±2%

* Recognizing the illiquidity of the asset class, rebalancing will be considered over six- to twelve-month periods.

A. Public Equity Assets shall be allocated to managers within the following sub-asset classes:

PUBLIC EQUITY ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Large Capitalization Domestic	20.0%	±2%
Passive Core	11.0%	±2%
Active Core	3.0%	±2%
Active Low-Volatility Core	6.0%	±2%
Small Capitalization Domestic	2.0%	±2%
Active Core	2.0%	±2%
International	19.0%	±2%
Passive Core	5.7%	±2%
Growth	5.7%	±2%
Value	5.7%	±2%
Emerging Market	2.0%	±2%
TOTAL PUBLIC EQUITY	41.0%	

B. Fixed Income Assets shall be allocated to managers within the following sub-asset classes:

FIXED INCOME ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Core	11.0%	±2%
Core Unconstrained	3.0%	±2%
Opportunistic Credit	7.0%	±2%
TOTAL FIXED INCOME	21.0%	

C. Risk Parity Assets shall be allocated as follows:

RISK PARITY ASSET CLASS	TARGET ALLOCATION	REBALANCE RANGE
Risk Parity	8.0%	±2%
TOTAL RISK PARITY	8.0%	

D. Alternative Assets shall be allocated to managers within the following sub-asset classes:

ALTERNATIVE ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Private Equity	6.0%	±2%
Absolute Return	6.0%	±2%
TOTAL ALTERNATIVE ASSETS	12.0%	

E. Inflation Hedge Assets shall be allocated as follows:

INFLATION HEDGE ASSET CLASSES	TARGET ALLOCATION	REBALANCE RANGE
Real Estate	8.0%	±2%
Private Real Assets	2.0%	±2%
Public Real Assets	6.0%	±2%
TIPS	2.0%	±2%
TOTAL INFLATION HEDGE ASSETS	18.0%	

F. Asset Allocation Policy Benchmark

The Asset Allocation Policy Benchmark defined below is derived by assigning a passive benchmark to each of the sub-asset classes referenced in Sections 6.0 (A) through 6.0 (E) and weighting each by the Target Allocation. The performance of the Asset Allocation Policy Benchmark is computed by the Plan's investment consultant.

Benchmark	Asset Allocation Policy Benchmark
Public Equity	41%
Russell 3000 Index	22%
MSCI ACWI x US IMI Index Hedged*	19%
Fixed Income	21%
BC Aggregate Index	14%
BC BA Intermediate High Yield Index	7%
Risk Parity	8%
60% MSCI World / 40% BC Global Aggregate	8%
Alternatives	12%
Russell 3000 +3% (One Quarter Lagged)	6%
LIBOR + 4%	6%
Inflation Hedge	18%
NCREIF ODCE	8%
Custom Public Real Asset Index**	6%
Custom Private Real Asset Index***	2%
BC TIPS Index	2%

*The hedge ratio will increase quarterly as follows: 10% hedge starting 10/1/18, 20% hedge starting 1/1/19, 30% hedge starting 4/1/19, 40% hedge starting 7/1/19, and 50% hedge starting 10/1/19.

**Comprised of 34% Bloomberg Roll Select Commodity Index, 33% S&P Global LargeMidCap Commodity and Resources Index, and 33% S&P Global Infrastructure Index.

***Comprised of 50% S&P Global LargeMidCap Commodity and Resources Index, 50% S&P Global Infrastructure Index + 2% (One Quarter Lagged)

G. Asset Allocation by Performance Driver:

In addition to the current practice of grouping investments into traditional asset classes as shown above, SamCERA has also begun grouping its investments by the underlying performance drivers within each asset class composite. As part of this process, SamCERA classifies its portfolio into three main drivers of performance: 1) Growth, 2) Diversifying, and 3) Inflation Hedge. In addition, Risk Parity is its own category as it contains components of all three drivers of performance.

The Growth category includes assets in which their primary driver of returns is tied to the general strength of economic output. These assets will generally do well when economic conditions are favorable, but generally struggle in times of economic weakness and recession. Examples of assets classified in Growth include U.S. Equity, International Equity, Private Equity in Alternatives, and Opportunistic Credit in Fixed Income.

Diversifying assets provide protection from equity risk and may be characterized as being more defensive (i.e. help provide stability when markets fall) or more absolute-return oriented (i.e. performance is not as dependent on the overall strength of equity markets). Examples of Diversifying assets are our core fixed income assets and absolute return strategies.

Lastly, Inflation Hedge assets provide additional diversification from equity risk and provide a potential hedge against unexpected inflation. Examples of assets in this category include real estate, commodities, TIPS, public real assets, and private real assets.

Asset Allocation Policy: Performance Driver View

Growth	54%
Public Equity	41%
Private Equity	6%
Opportunistic Credit	7%
Diversifying	20%
Core Fixed Income	11%
Core Unconstrained Fixed Income	3%
Absolute Return	6%
Inflation Hedge	18%
Real Estate	8%
Private Real Assets	2%
Public Real Assets	6%
TIPS	2%
Risk Parity	8%

7.0 REBALANCING POLICY

- A. The Chief Investment Officer (CIO) shall rebalance the portfolio as needed in conformance with the asset allocation tactical ranges set forth in Section 6.0.
- B. The potential need to rebalance will be continuously monitored, and will be subject to deviations within the established rebalance ranges specified in Section 6.0.
- C. The CIO will have discretion to rebalance to Target or to some other allocation, as long as it is within policy ranges.
- D. Cash flows will be used first to rebalance, and to the extent possible, exchange-traded derivatives will be used to rebalance in a cost-effective manner.
- E. All rebalancing activity shall be reported to the Board at the next scheduled meeting.

8.0 GENERAL MANAGER INVESTMENT PERFORMANCE POLICIES

The responsibility for securities selection, purchase and sale decisions, and proxy voting (where appropriate) is delegated to the external investment managers. The individual investment guideline parameters (including diversification constraints, concentration limits, asset type exclusions, etc.) and performance objectives for each investment manager will be established within the IMA or other applicable legal agreement(s) with each firm.

The Board expects to measure investment performance quarterly and will generally follow prudent time horizons when evaluating short term, intermediate term, and long term performance of its investment managers. Generally, the Board defines underperformance as: Cumulative annualized performance (net of fees) over a three-year period below a broad market-based benchmark return times 0.9, or five year return (net of fees) below the broad market based benchmark return.

Performance will also be evaluated in light of the manager's stated style and discipline.

9.0 PUBLIC EQUITY INVESTMENT POLICIES

PUBLIC EQUITY OVERVIEW: Public equity assets include funds shares/stock of a company through a public market. SamCERA invests utilizing both passive approaches (meant to track the performance and characteristics of major market indices, like the Russell 1000 Index and MSCI EAFE Index), and via active approaches that are meant to outperform the major market benchmarks. Public Equity is expected to produce returns higher than that provided from Fixed Income but at potentially higher levels of volatility. Exposure to this asset class will provide return streams generally correlated to that of general economic growth. There are two primary components to the Public Equity category: 1) Domestic Equity, and 2) International Equity.

PUBLIC EQUITY MANAGER STRUCTURE:

Domestic Equity: SamCERA further breaks out its U.S. public equity holdings into two sub-composites: 1) U.S. Large Capitalization Domestic, which is comprised of U.S. companies valued generally over \$10 billion, and 2) U.S. Small Capitalization Domestic, which is comprised of U.S. companies valued generally under \$2 billion.

For the domestic equity program, the majority of the tracking error will come from stock selection via active management as the overall manager structure for domestic equities will not possess any significant biases in terms of investment style. The Domestic Equity composite will consist of two sub-composites: 1) Large-Capitalization Equity, and 2) Small-Capitalization Equity. Large Capitalization Equity will consist of four Core strategies: one passive, one low-tracking error active, and two low-volatility active strategies. Small-Capitalization Equity will consist of an actively-managed Core strategy.

International Equity: International Equity is broken out between developed (public companies domiciled in developed market countries such as Germany, France, UK, Japan, etc.) and emerging markets (public companies domiciled in emerging market countries such as China, Brazil, Mexico, Russia, etc.)

International Equity will consist of two sub-composites: 1) Developed Equity, and 2) Emerging Markets Equity. Developed Equity will consist of a passive Core component and active Value and Growth (although both have exposure to emerging markets). Emerging Markets Equity will consist of an active Core mandate.

PUBLIC EQUITY PERFORMANCE OBJECTIVE:

The performance objective of the Public Equity Category is to outperform on a net-of-fee basis a customized index (Customized Benchmark Portfolio) incorporating the weighted average components for both the domestic and international equity parts (which results in the following weights: 54% Russell 3000, and 46% MSCI ACWI ex US IMI Index hedged*), with a maximum tracking error of 3% to this benchmark.

PUBLIC EQUITY RISK EXPOSURES AND RISK MITIGATION:

The primary risk factors for Public Equity are correlation to general economic growth, high volatility in returns, and potential illiquidity in smaller-capitalization and certain emerging market stocks. SamCERA will control for these risk factors by diversifying the plan across assets that exhibit limited correlation to economic growth. In addition, SamCERA’s rebalancing ranges for small-cap and emerging market equities will help ensure adequate diversification within the equity portion of the SamCERA portfolio.

ASSET CLASS	BENCHMARK INDEX
Total Public Equity	Customized Benchmark Portfolio
Domestic Equity	Russell 3000
Large Capitalization Domestic Equity	Russell 1000
Passive Core	Russell 1000
Active Core	Russell 1000
Active Low Volatility Core	Russell 1000

Small Capitalization Domestic Equity	Russell 2000
Active Core	Russell 2000
International Equity	MSCI All Country World ex US IMI hedged*
Developed International	MSCI All Country World ex US hedged*
Developed International Passive Core	MSCI EAFE
Developed International Growth	MSCI ACWI Free ex US Growth
Developed International Value	MSCI ACWI Free ex US Value
Emerging Markets	MSCI Emerging Markets Free

*The hedge ratio will increase quarterly as follows: 10% hedge starting 10/1/18, 20% hedge starting 1/1/19, 30% hedge starting 4/1/19, 40% hedge starting 7/1/19, and 50% hedge starting 10/1/19.

10.0 FIXED INCOME INVESTMENT POLICIES

FIXED INCOME OVERVIEW: Fixed income assets are debt investments that provide a return in periodic payments in debt instruments issued by governments and corporations. Fixed Income is expected to provide a lower but steadier stream of returns than public equity asset classes, but is also expected to reduce the risk of the overall portfolio because bonds have lower risk than most other major asset classes. That said, there are a number of sub-categories within Fixed Income that exhibit very different risk/return trade-offs and hold different tasks in terms of role in the portfolio. Fixed Income is broken out into three subcategories:

- 1) Core, 2) Core Unconstrained, and 3) Opportunistic Credit

Core: Core is generally considered the lowest-risk fixed income category, and one that invests in primarily liquid, investment grade U.S. Dollar denominated bonds. It also generally consists of sectors that comprise the Barclays Aggregate Index. Core's role in the portfolio is to dampen portfolio volatility and protect the portfolio in times of economic duress.

Core Unconstrained: Core Unconstrained is a medium-risk fixed income sub-category, and contains the sectors contained in Core plus high yield (below investment grade bonds), non-U.S. Dollar denominated bonds, and emerging market fixed income securities. Core Unconstrained's role in the portfolio is a combination of total portfolio volatility dampening combined with some moderate return enhancement.

Opportunistic Credit: Opportunistic Credit is expected to be the highest-risk fixed income category, and will be used to enhance return by investing via public and private investments in non-traditional sectors of the fixed income market, including emerging market debt, high yield bonds, direct lending, bank loans, convertible bonds, and CMBS/ABS securities. This sub-category will be exposed to general economic risk factors, similar to public equities.

FIXED INCOME PERFORMANCE OBJECTIVE:

The performance objective of the Fixed Income Composite is to outperform, on a net-of-fee-basis, a customized index incorporating the weighted average components for three sub-

categories highlighted above (which results in the following weights: 67% Barclay’s Capital Aggregate Bond Index and 33% Barclays BA Intermediate High Yield Index), with a maximum tracking error of 2% to this benchmark.

FIXED INCOME RISK EXPOSURES AND RISK MITIGATION:

The fixed income sub-sectors have very different risk factor exposures, with Core being generally the lowest risk, highest liquidity sub-category, while Opportunistic Credit is generally the highest risk, lowest liquidity sub-category. SamCERA will take into account these unique risk factors when constructing the fixed income portfolio to help ensure that the overall risk profile of the total portfolio is consistent with expectations.

Core: The primary risk factors are sensitivity to changes in interest rates, changes in mortgage prepayment speeds, and investment-grade corporate and sovereign credit risk.

Core Unconstrained: Typically includes the risk factors found in Core with additional exposures to high-yield default risks, emerging markets sovereign/corporate default risk, and potential illiquidity. The allocation to these risk exposures will be dynamic over time as the portfolio is not constrained to a benchmark.

Opportunistic Credit: Typically includes the risk factors contained in Core and Core Unconstrained, but, depending on the mandate, with higher emphasis to credit default risks, emerging markets sovereign/corporate default risk, potential leverage, and potential illiquidity. It is expected that strategies within Opportunistic Credit will have a maximum leverage ratio of 2.5x at the fund level (i.e. certain holdings may be levered higher than the 2.5x limit, as long as the fund (or strategy) has a maximum 2.5x leverage). Strategies employing higher leverage will be relegated to the debt/special situations category of Private Equity (see Section 12).

ASSET CLASS	BENCHMARK INDEX
Fixed Income	Customized Benchmark Portfolio
Core/Core Unconstrained	Barclays Capital Aggregate Bond Index
Opportunistic Credit	Barclays Capital BA Intermediate High Yield Index

11.0 INFLATION HEDGE INVESTMENT POLICIES

INFLATION HEDGE OVERVIEW: The Inflation Hedge category combines inflation-sensitive assets under a single asset class to simplify the asset allocation process and enable better performance monitoring of the plan’s overall, direct exposure to assets with inflation-hedging properties. The plan also has indirect exposure to inflation-sensitive assets through other asset classes, such as Public Equity, Fixed Income, Risk Parity, and Alternatives. When determining the appropriate allocation of inflation protection, both direct and indirect exposures to inflation-sensitive assets across the plan are taken into account. The Inflation Hedge category is expected to provide a high degree of inflation beta, attractive risk-adjusted returns and diversification benefits to the overall plan.

Inflation Hedge is broken out into four subcategories:

- 1) Real Estate, 2) Private Real Assets, 3) Public Real Assets, and 4) TIPS

Real Estate: Real Estate is expected to provide a return and risk profile between that provided by fixed income and equities. Real estate will be composed of three sub-categories: 1) Core, 2) Value-Add, and 3) Debt. The majority of exposure will be in Core real estate assets of the highest quality located in the best locations in North America, Europe, and Asia. Value-Add properties are expected to provide somewhat higher return potential along with somewhat higher risk than Core assets. Real Estate Debt strategies range from lower risk senior loans on stable properties to higher risk/return mezzanine and construction loans. SamCERA utilizes Debt strategies for risk mitigation and to enhance the portfolio's yield.

Income will be a large part of the return stream generated from the Real Estate portfolio. The role of this portfolio is to provide diversification benefits, some protection against unanticipated inflation, and a steady income stream. Higher risk Opportunistic/Development real estate strategies will reside in the Private Real Assets composite due to their higher-risk, longer time horizon, and the less liquid nature of the investment set compared to Core, Value-Add, and Debt strategies. The sub-allocation targets and target ranges are summarized below:

Real Estate Strategy	Target Allocation	Range
Core Real Estate	60%	50 -70%
Value-Add Real Estate	20%	0 - 30%
Real Estate Debt	20%	0 - 30%

Private Real Assets: Private Real Assets are expected to provide attractive total and risk-adjusted returns that exhibit low correlations with traditional asset classes but positive correlation with inflation. Private Real Assets will be composed of two sub-categories: 1) Infrastructure (Core and Value-Add, Secondary, Midstream Energy, and Power), and 2) Natural Resources (Energy Exploration & Production, Mining, Farmland, Timber, and Water). These allocations will be implemented via allocation to primary and secondary fund investments and co-investment opportunities. The sub-allocation targets and target ranges are summarized below:

Sub-Category	Target Allocation	Range
Infrastructure	50%	+/- 25%
Natural Resources	50%	+/- 25%

Public Real Assets: Similar to Private Real Assets, Public Real Assets is expected to provide positive correlation to inflation, but with potentially higher beta to public equity markets. Public Real Assets may be used to fund new strategies in Private Real Assets and will be composed of three sub-categories: 1) Commodities, 2) Listed Global Natural Resources, and 3) Listed Global Infrastructure. All three sub-categories are meant to provide some protection from higher levels of unanticipated inflation while providing a diversifying return stream from that of public markets. Listed Global Natural Resources and Listed Global Infrastructure may be implemented through the use of relatively inexpensive, passive indices.

The sub-allocation targets and target ranges are summarized below:

Sub-Category	Target Allocation	Range
Commodities	34%	0 - 50%
Listed Global Natural Resources	33%	0 – 50%
Listed Global Infrastructure	33%	0 – 50%

TIPS: Treasury Inflation-Protected Securities are expected to provide some protection against higher rates of inflation.

INFLATION HEDGE PERFORMANCE OBJECTIVE:

The performance objective of the Inflation Hedge Composite is to outperform, on a net-of-fee basis, a customized index incorporating the weighted average components for four composite sub-asset classes (which results in the following weights: 44% NCREIF ODCE, 34% Custom Public Real Asset Index, 11% Custom Private Real Asset Index, and 11% BC TIPS Index).

INFLATION HEDGE RISK EXPOSURES AND RISK MITIGATION:

Real Estate: Many real estate funds utilize leverage to enhance returns. Lack of liquidity is also a concern, but less so for core real estate and senior debt investments. Value-add, mezzanine debt, and opportunistic strategies also tend to have more exposure to general economic conditions than core properties.

These risks will be mitigated in a number of ways. First, the primary emphasis of SamCERA’s real estate program will be focused on Core properties, with a secondary emphasis to Value-Add properties and Debt strategies. Opportunistic-oriented strategies will reside in our Private Real Assets portfolio due to their higher risk profile. In addition, SamCERA’s core real estate fund has a leverage limit of 35%, and SamCERA also sits on the Fund’s Advisory Committee.

Private Real Assets: By their nature, Private Real Assets are generally illiquid in that the life of these fund investments can be as long as ten to twelve years. SamCERA recognizes that

this illiquidity is a necessary characteristic (and source of return premium) for these asset classes and as such will endeavor to take this illiquidity into account at the total plan level when addressing total plan liquidity needs during strategic planning asset liability studies. Leverage can be employed by alternative managers to enhance the overall risk-adjusted returns. SamCERA will control leverage exposure through partnership selection and portfolio construction and diversification.

TIPS: The primary risk factors are to changes in real interest rates, deflationary environments (although deflation floors could mitigate some of this risk), and potential illiquidity.

ASSET CLASS	BENCHMARK INDEX
INFLATION HEDGE	CUSTOMIZED BENCHMARK PORTFOLIO
REAL ESTATE	NCREIF ODCE
PRIVATE REAL ASSETS	CUSTOM PRIVATE REAL ASSET INDEX
PUBLIC REAL ASSETS	CUSTOM PUBLIC REAL ASSET INDEX
TIPS	BC TIPS INDEX

12.0 ALTERNATIVE ASSETS INVESTMENT POLICIES

ALTERNATIVES OVERVIEW: Alternatives are investments that do not neatly fit into public equities or fixed income. SamCERA’s alternatives program is broken out into the following two sub asset classes:

- 1) Private Equity, and 2) Absolute Return

Private Equity: Private Equity are funds, typically illiquid investments, that directly invest in private companies, or that engage in buyouts of public companies. Private Equity is expected to be one of the highest returning asset classes over the long-term. Its role in the portfolio is to provide high return potential in order to maximize the ability of the Fund to meet its performance objectives. The Private Equity program will contain manager allocations to three primary sub-categories: 1) Buyouts, 2) Venture Capital, and 3) Debt/Special Situations. These allocations will be implemented via allocation to primary and secondary fund investments and co-investment opportunities. The sub-allocation targets and target ranges are summarized below:

Sub-Category	Target Allocation	Range
Buyouts	60%	+/- 20%
Venture Capital	20%	0 – 30%
Debt/Special Situations	20%	+/- 10%

The responsibility for private equity sourcing is delegated to SamCERA’s investment consultant.

The private equity portfolio shall adhere to the following investment guidelines covering diversification and quality:

(a) Diversification: Subject to availability of sufficient attractive opportunities, the portfolio is to be diversified over multiple years by the following:

Vintage Year: It is expected that roughly equal amounts of new funding will be committed in each calendar year, with deviations permitted to accommodate market opportunities and to facilitate initial entry into the asset class.

Investment Manager: No more than twenty (20) percent of the private equity portfolio's target allocation may be committed to any one investment manager (excluding fund of funds).

Geography: Through commitments to funds located and/or investing both in and outside of the United States.

Industry: It is expected that the private equity portfolio will be generally diversified by sector/industry.

(b) Quality: All commitments to private equity by SamCERA must be of institutional quality as evidenced by other tax-exempt institutional investors' commitments to the investment manager's prior or current funds.

Fund managers are expected to comply with SamCERA's private placement disclosure rules.

Absolute Return: The absolute return category will focus on funds that have an absolute return orientation and are not expected to contain significant levels of public market beta over the long term. This category is expected to provide a diversifying return stream to the total plan that is not correlated to the public markets. Suitable investment strategies include multi-strategy funds, GTAA or global macro funds, and CTA/Managed Futures trend following funds. It is expected that this category will be implemented via commingled funds and not in separate accounts so that SamCERA's investment in any single fund would be 'ring-fenced' (i.e. any potential losses would be limited to the investment in the single fund, and not extend to the total plan assets).

ALTERNATIVES PERFORMANCE OBJECTIVE:

The performance objective of the Alternatives Composite is to outperform, on a net-of-fee basis, a customized index incorporating the weighted average components for two sub-asset classes highlighted above (which results in the following weights: 50% Russell 3000+3% (One Quarter Lagged), and 50% LIBOR+4%).

ASSET CLASS	BENCHMARK INDEX
-------------	-----------------

Alternatives	Customized Benchmark Portfolio
Private Equity	Russell 3000 + 3% (One Quarter Lagged)
Absolute Return	LIBOR + 4%

ALTERNATIVES RISK EXPOSURES AND RISK MITIGATION

Alternatives, while expected to provide attractive returns that are less correlated to the returns provided by public asset classes, also have a number of risks. Chief among these are illiquidity risk and leverage. By their nature Private Equity is generally illiquid in that the life of these fund investments can be as long as ten to twelve years. SamCERA recognizes that this illiquidity is a necessary characteristic (and source of return premium) for these asset classes and as such will endeavor to take this illiquidity into account at the total plan level when addressing total plan liquidity needs during strategic planning asset liability studies. Leverage can be employed by alternative managers to enhance the overall risk-adjusted returns. SamCERA will control leverage exposure through partnership selection and portfolio construction and diversification.

13. RISK PARITY INVESTMENT POLICIES

RISK PARITY OVERVIEW: Risk Parity is a risk-diversified balanced portfolio that is expected to provide a more diversified return and risk profile than that of a traditional 60% equity / 40% fixed income portfolio. It is generally designed to be more balanced between equity risk, interest rate risk, credit risk, and inflation risk than a traditional balanced portfolio.

RISK PARITY PERFORMANCE OBJECTIVE:

The performance objective of the Risk Parity Composite is to outperform, on a net-of-fee basis, the 60% MSCI World / 40% BC Global Aggregate over a 5 year rolling period.

RISK PARITY RISK EXPOSURES AND RISK MITIGATION:

Risk parity managers utilize leverage in order to enhance returns. Moderate leverage may be utilized and the portfolio managers should avoid strategies that might place the portfolio outside the expected ranges outlined. Gross exposures are expected to range from 250% to 350%. In addition, the risk parity portfolio shall consist of a portfolio of generally liquid trading instruments.

Counter-parties for Over the Counter (OTC) derivatives must either: (1) have a long-term rating from Standard & Poor's of at least A-, or from Moody's of at least A3; or (2) be approved by the manager's counter-party committee. In the event that the OTC derivative counterparty is an unrated affiliate whose performance is unconditionally guaranteed by the parent company, the parent's credit rating shall apply.

ASSET CLASS	BENCHMARK INDEX
Risk Parity	60% MSCI World / 40% BC Global Aggregate

14.0 QUARTERLY INVESTMENT PERFORMANCE REPORTING

The quarterly investment performance reports will be designed as a risk management tool and will afford the Board the opportunity to timely identify potential risk issues within the portfolio and to assess the relative performance of the investment managers.

The report will provide sufficient information to assess the following:

- A. Total and active risk assessment at total fund, composite and individual manager level.
- B. Performance attribution at total fund, composite and individual manager level.
- C. Adherence to the investment style for which the manager is retained, as measured by the quarterly risk adjusted active return (deviation of the manager's performance from the specified performance benchmark) over the last quarter, six months, one-, three-, and five-year periods, including updates from previous quarterly reports regarding adherence to the style for which the firm was retained;
- D. Ability of the active manager to demonstrate consistently positive information ratios, including updates from previous quarterly reports regarding the firm's information ratios;
- E. Quarterly, annual, three- and five-year total time-weighted returns relative to the specified performance benchmark and manager style peer group.

15.0 ANNUAL INVESTMENT STRATEGY

Annually, the Board/Staff shall convene an investment strategy session (typically as part of the annual retreat) with the objective of addressing strategic investment policy issues and to deliberate any policies that could benefit the performance of the retirement Fund. The agenda for these sessions should include (but is not limited to) the following information:

- (a) Compare the Fund's actual investment performance for the prior fiscal year against the investment objectives set forth in Section 3.0 and evaluate the relative success or failure of the prior year's performance; specific commentary to this objective shall be an integral part of the performance measurement process.
- (b) Compare each investment manager's investment performance for the prior fiscal year against the relevant benchmarks and peer groups and evaluate the relative success or failure of their prior year's performance.
- (c) Evaluate and review the total Fund performance attribution and contribution to return at the composite level to isolate performance drivers.
- (d) Evaluate and review the various risk exposures of the plan versus appropriate policy limits and on-going trends through time.
- (e) Evaluate and review the portfolio rebalancing activity for the year.
- (f) Evaluate the Fund's liquidity requirements for the current and next fiscal years.
- (g) Compare each investment manager's fees to their respective peer universe.

16.0 PROXY VOTING

The Investment Managers are delegated authority for the voting of proxies, subject to the following guidelines:

- A. All proxies shall be voted in the best interest of the shareholders, but in no instance shall the economic interests of the retirement Fund be subordinated to any other interest.
- B. Investment managers shall provide staff with quarterly reports on all proxies cast, in a mutually acceptable format.

17.0 SECURITIES LENDING

- A. Pursuant to Section 2.0 (A), the Custodian shall manage a securities lending program to enhance income in accordance with the terms and conditions set forth in a mutually acceptable securities lending agreement and guaranty.
- B. The Board reserves exclusive authority to approve the securities lending agreement prior to the commencement of securities lending activity.
- C. Unless otherwise specified in the agreement(s):
 - (i) All loans shall be marked-to-market daily.
 - (ii) Collateral on each loan shall be maintained daily at 102% of loan value for domestic securities and 105% of loan value for international securities.
 - (iii) Acceptable collateral shall be in the form of cash or obligations issued or guaranteed by the U.S. Government, or its agencies or instrumentalities.
 - (iv) Borrower must have a long-term credit rating of either "A" from S&P or "A2" from Moody's. For split rated borrowers, the higher rating shall prevail if not the same rating, with the lower rating having a minimum long-term credit rating of either "A-" from S&P or "A3" from Moody's.
 - (v) The maximum allowable amount of assets on loan to any single borrower shall not be greater than \$3 million.
 - (vi) The maximum total amount of program assets on loan shall not be greater than \$10 million.
- D. The Chief Investment Officer shall be responsible for monitoring the securities lending program and recommending changes as appropriate.

APPENDIX A

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Investment Committee Charter as Amended
RESOLUTION 99-00-09

This Resolution, adopted by the Board of Retirement (Board) of the San Mateo County Employees' Retirement Association (SamCERA), sets forth the Charter for the Board's Investment Committee.

WHEREAS, Article XVI, §17 of the Constitution of the State of California as amended in 1992 to read, in pertinent part, as follows:

Notwithstanding any other provisions of law or this Constitution to the contrary, the retirement board of a public pension or retirement system shall have plenary authority and fiduciary responsibility for investment of moneys and administration of the system, subject to all of the following:

(a) The retirement board ... shall have the sole and exclusive fiduciary responsibility over the assets of the ... system. The retirement board shall also have sole and exclusive responsibility to administer the system in a manner that will assure prompt delivery of benefits and related services to the participants and their beneficiaries. The assets ... are trust funds and shall be held for the exclusive purposes of providing benefits to participants ... and their beneficiaries and defraying reasonable expenses of administering the system.

(b) The members of the retirement board ... shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty.

(c) The members of the retirement board ... shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims.

(d) The members of the retirement board...shall diversify the investments of the system so as to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly not prudent to do so.

(e) The retirement board..., consistent with the exclusive fiduciary responsibilities vested in it, shall have the sole and exclusive power to provide for actuarial services in order to assure the competency of the assets of the... system. &

WHEREAS, California Government Code §31595 states, as follows:

The Board has exclusive control of the investment of the employees retirement fund. The assets of a public pension or retirement system are trust funds and shall be held for the exclusive purposes of providing benefits to participants in the pension or retirement system and their beneficiaries and defraying reasonable expenses of administering the system. Except as otherwise expressly

restricted by the California Constitution and by law, the Board may, in its discretion, invest, or delegate the authority to invest, the assets of the fund through the purchase, holding, or sale of any form or type of investment, financial instrument, or financial transaction when prudent in the informed opinion of the Board...; &

WHEREAS, *The Board of Retirement*, wishes to exercise these powers as follows:

EXERCISE OF POWERS: *The Board shall exercise its investment, management and administrative authority and responsibility through the approval of motions recorded in public meeting &*

WHEREAS, the Board has adopted SamCERA's Investment Policy and amendments thereto to direct the investments of the Retirement Fund and now wishes to establish an Investment Committee to guide the future evolution of SamCERA's Investment Policy. Therefore, be it

RESOLVED that the Board hereby establishes a standing Investment Committee to direct the Board in its ongoing evaluation of SamCERA's Investment Policy, including but not limited to

1.0 CONDUCT ASSET ALLOCATION STUDIES

1.1 Determine the characteristics of the Policy's liabilities in regards to the nature of Fund's cash flows

2.0 DEVELOP ASSET MIX ALTERNATIVES TO MEET LIABILITY REQUIREMENTS

- 2.1 Establish allowable asset classes
- 2.2 Determine asset class benchmarks
- 2.3 Develop risk, return & correlation projections

3.0 EVALUATE EFFICIENT FRONTIER ALTERNATIVES

- 3.1 Define risk, return and correlation
- 3.2 Evaluate mean variance optimization
- 3.3 Determine low risk alternatives and high risk alternatives
- 3.4 Scale portfolios between two extremes
- 3.5 Evaluate optimized efficient frontier
- 3.6 Integrate optimized efficient frontier with asset-liability relationships

4.0 ANALYZE BOARD RISK TOLERANCE

- 4.1 Assess risk/reward trade-offs
- 4.2 Assess contribution rate sensitivity & variability
- 4.3 Assess ability to exceed actuarial interest rate
- 4.4 Assess comfort level with characteristics of specific asset mixes

5.0 RECOMMEND PREFERRED ASSET MIX

- 5.1 Evaluate differences from current target
- 5.2 Evaluate Board's willingness to implement new target asset mix
- 5.3 Evaluate appropriateness of variance from peer public fund norms

6.0 RECOMMEND AMENDMENTS TO SAMCERA'S INVESTMENT POLICY

- 6.1 Adjust target asset mix
- 6.2 Introduce new benchmarks
- 6.3 Include required asset class/portfolio modifications

- 7.0 RECOMMEND REVISIONS TO MANAGER STRUCTURE
 - 7.1 Adjust manager/style line-up as necessary
 - 7.2 Introduce new managers/asset classes
 - 7.3 Terminate managers/asset classes as necessary
 - 7.4 Establish active & passive allocation targets as appropriate
- 8.0 IMPLEMENT CHANGES TO MANAGER STRUCTURE
 - 8.1 Recommend time-line & approach to revise structure
 - 8.2 Conduct manager evaluations
 - 8.3 Establish portfolio and asset allocation rebalancing procedures
- 9.0 EVALUATE MANAGER PERFORMANCE
 - 9.1 Monitor results of managers both gross and net of investment management fees
 - 9.2 Assess consistency of portfolio decision making
 - 9.3 Evaluate organizational, ownership, personnel & other firm developments
- 10.0 RECOMMEND AND EVALUATE INVESTMENT CONSULTANT STRUCTURE & PERFORMANCE
 - 10.1 Recommend for Board determination the retention and termination of Investment Consultant(s) as necessary
 - 10.2 Define and assign special projects as warranted
 - 10.3 Monitor performance of Investment Consultant(s)
 - 10.4 Conduct evaluations of Investment Consultant(s)
 - 10.5 Evaluate organizational, ownership, personnel and other firm developments
- 11.0 INITIATE & EVALUATE SPECIAL INVESTMENT STUDIES
- 12.0 UNDERTAKE OTHER WORK ASSIGNED TO IT BY THE BOARD Be it further

RESOLVED that the Chair may appoint the members of the Investment Committee per Regulation 2.5.1. Be it further

RESOLVED that the Chief Executive Officer is hereby instructed to provide the Committee with access to all appropriate and available resources and records, so long as such access is consistent with sound fiduciary practices. Be it further

RESOLVED that the Chief Executive Officer is hereby authorized to provide compensation of \$100 per meeting for not more than two meetings per month to the members of the Committee eligible for such compensation, per GC§31521. Be it further

RESOLVED that the Board hereby reserves to itself sole authority to accept, modify, or reject the recommendations, which the Investment Committee may present from time to time pursuant to the provisions of this Resolution, per Regulation 2.3.

ADOPTED by unanimous vote, January 25, 2000

AMMENDED by unanimous vote, May 22, 2001

AMMENDED by unanimous vote, October 25, 2004

APPENDIX B

Derivatives Investment Policy

1) Introduction

There is a genuine need to allow SamCERA's separate account managers to evaluate new securities and introduce them into their portfolios, given that the investment process followed by the investment managers complies with the subsequent provisions of this policy statement. This policy statement allows SamCERA's separate account Managers to exercise reasonable investment freedom, while minimizing the possibility of adverse implications for the Board.

2) Derivative Definition

A 'derivative' commonly is defined as a financial instrument whose performance is derived, at least in part, from the performance of an underlying asset (such as a security or an index of securities).

3) Types of Securities Included or Excluded

Since the derivative sector of the market is likely to experience considerable change, provisions must be made for the general characteristics of a derivative security, its evaluation and monitoring. Therefore, it is most appropriate to not attempt to definitively list all of the derivative securities that are covered by this policy. Instead, what will be explicitly stated is the investment process that governs derivative investments and the evaluation and monitoring requirements of this policy.

4) Approach to Policy

An approach has been developed which states allowable derivative investments, limited allocation derivative investments and restricted derivative investments.

Derivative securities not specified in the above three groups of securities must be evaluated in accordance with the following section entitled Derivative Investment Process. If the security meets these provisions and the spirit of these policies, the manager may establish a prudent position in the instrument. However, the manager must be able to demonstrate the appropriateness of such an investment in light of SamCERA's guidelines.

5) Counter-Party Evaluation

When entering into a non-exchange traded derivative investment, the investment manager must fully evaluate the other side of the derivative transaction—the counter-parties to the trade. Due to the possibility of counter-party default, SamCERA's investment managers must evaluate the risks associated with the counter-party as if an investment were being made in the traditional securities issued by the counter-party.

At a minimum, the investment manager must evaluate the counter-party's following criteria:

- a) Corporate earnings stream
- b) Corporate asset quality
- c) Capitalization
- d) Corporate liquidity
- e) Moody's and Standard & Poor's debt ratings
- f) Other fundamental investment and risk characteristics

For those counter-parties that are broker/dealers, they must:

- a) Have investment grade (Moody's and S&P rated) debt
- b) Be registered with the SEC
- c) Have significant net capital to protect against potential adverse market circumstances

For those counter-parties that are financial institutions (banks), they must have:

- a) Investment grade (Moody's and S&P rated) debt
- b) Total assets in excess of \$1 billion
- c) Significant net capital to protect against potential adverse market circumstances

The investment manager must monitor individual investment and total portfolio exposure to counter-parties. Individual counter-party exposure must be well diversified and not concentrated in a small number of organizations.

6) Purposes for Derivatives

The acceptable investment purposes for the use of derivatives are as follows:

- a. Appropriate to use futures, options and forward currency contracts to assist investment managers in mitigating portfolio risk.
- b. Useful substitute for an existing, traditional investment. In certain circumstances it may be cheaper, quicker or easier to invest in a derivative instrument or security rather than transacting in the cash or traditional security market.
- c. Provides investment value to the portfolio, while being consistent with SamCERA's overall and specific investment policies.
- d. Obtains investment exposure that is appropriate with the manager's investment strategy and SamCERA's investment guidelines, but could not be made through traditional investment securities.

Given that one or more of these investment purposes are clearly met, it is the responsibility of the investment manager to explain and demonstrate how derivative investments impact portfolio risk and the context of the investment within the overall portfolio.

Any other derivative investment purpose is not allowed. Derivatives may not be introduced into the portfolio to create economic leverage or to create investment exposures that are otherwise excluded by SamCERA's Investment Policy. However, if a manager develops an investment purpose other than those listed above which he/she feels is legitimate and consistent with the spirit of SamCERA's guidelines, this purpose should be proposed in writing to the Board.

7) Investment Restrictions and Derivatives Policy

For the purpose of these guidelines, convertible debt, traditional zero coupon bonds, mortgage pass-through securities and asset-backed securities are not viewed as derivatives. Based upon the factors enumerated in the above Section 4 entitled Approach to Policy, the following guidelines have been established:

Allowable derivative investments

- a. Stable and well-structured mortgage CMO's (Collateralized Mortgage Obligations)
- b. Financial futures (if Exchange Traded)
- c. Currency forward contracts and currency options (Exchange and OTC traded)
- d. Interest rate swaps

Derivative investments with allocation limits

- a. Interest only mortgage CMO's
- b. Principal only mortgage CMO's
- c. Options (if Exchange Traded)
- d. Caps and floors as they apply to the above stated allowable derivative investments
- e. Credit Default Swaps (CDS)

Derivative investments with allocation limits, as listed above, may not represent more than 5% of the individual portfolio manager's assets (based on market value) managed for SamCERA. At the same time, derivative investments with allocation limits in aggregate may not expose the individual manager's portfolio to losses in excess of 5% of the manager's total assets managed for SamCERA. In addition, the use of options, caps and floors, and CDS may be used only for defensive investment purposes.

Managers investing in the above-defined limited allocation derivative instruments should ensure that portfolio exposure is maintained within the stated constraints, and communicate the assumptions and model used to estimate VAR (Value at Risk) and/or other reasonable risk measurement procedures annually to the Boards.

Restricted derivative investments

- a. Inverse floating rate notes and bonds
- b. Structured notes

Restricted derivatives cannot be held in SamCERA's separate account portfolios at any time.

8) Risk Analysis and Monitoring of Derivatives

For those securities that are classified as derivative investments with allocation limits, the investment managers are required to test and measure derivative investment sensitivities to changes in key risk factors. These risk factors include extreme changes in interest rates, volatility, liquidity, credit quality, and cash market prices.

These risk factors will be assessed prior to initial investment and on a quarterly basis. Results of such risk testing on derivative investments with allocation limits will be supplied to SamCERA on an annual basis (December 31). If the investment manager identifies additional risks that should be evaluated, these other risk factors should be added to the list and handled in a manner consistent with the previously stated approach.

9) Derivative Investment Process

Investment managers are expected to cover the following issues before purchasing a derivative instrument or security, whether specifically stated as an allowable derivative investment, a derivative investment with

allocation limits, or a derivative not specifically discussed in the Investment Restrictions and Derivatives Policy section above:

- a. Determine if the purpose for investing in a derivative security is consistent with one or more of the purposes in the previous section entitled Purposes for Derivatives.
- b. Determine where the security fits into the classification system, if at all, stated in the Investment Restrictions and Derivatives Policy.
- c. Evaluate, at a minimum, the counter-party risk and the risks stated in the Risk Analysis and Monitoring section of the derivatives policy.
- d. Evaluate the derivative in a comparably thorough manner as the firm would any other traditional investment opportunity.

10) Reporting Requirements

It is the responsibility of SamCERA's investment managers to certify and demonstrate that their portfolios are in compliance with SamCERA's overall guidelines as well as those that apply to derivative investments. On an annual basis (December 31), SamCERA's investment managers will provide the following minimum monitoring information on all derivative securities:

- a. A general statement from the investment manager that its portfolio is in compliance with this Derivatives Policy.
- b. When stating the market value of the derivative exposure, the manager will specify the security pricing sources. The pricing source must be exchange-listed.
- c. A statement of the risks (credit risk—an evaluation of potential counter-party default on obligations, market risk—percent of portfolio invested in derivatives, and any other relevant risks) associated with the derivative investments.
- d. Potential adverse impact on market values if extreme adverse market movements occur.
- e. A statement regarding the liquidity of the derivative investments.
- f. Summary comments and the firm's list of approved counter-parties, ratings, and a statement regarding any changes to this list.
- g. An overall statement discussing the legal and regulatory risks associated with the portfolio manager's investments in derivatives.

Appendix C

DISCLOSURE OF PLACEMENT AGENT FEES, GIFTS, AND CAMPAIGN CONTRIBUTIONS

This amended policy is effective immediately upon adoption. This policy is intended to supplement any applicable provisions of state or federal law, which shall govern in the event of any inconsistency.

I. PURPOSE

This Policy is adopted pursuant to the requirements set forth in Government Code Section 7513.85 to help ensure that the San Mateo County Employees' Retirement Association (SamCERA) investment decisions are made solely on the merits of the investment opportunity. This Policy requires broad, timely, and updated disclosure of all Placement Agents, as that term is defined by Government Code section 7513.8, their relationships, compensation and fees.

II. APPLICATION

This Policy applies broadly to every type of SamCERA investment managers including general partners, sponsors of hedge funds, private equity funds, real estate funds and infrastructure funds, as well as public market investment managers.

This Policy as amended applies to all agreements with External Managers that are entered into after the date this Policy is adopted and all existing agreements if, after the date this amended Policy is adopted, the agreement is amended to continue, terminate, or extend the term of the agreement or the investment period, increase the commitment of funds by SamCERA or increase or accelerate the fees or compensation payable to the External Manager (Referred to hereafter as "Amendment".) In the case of an Amendment, the disclosure provisions of this Policy shall apply to the Amendment and not to the original agreement.

III. RESPONSIBILITIES

A. The Board is responsible for:

1. Not entering into any agreement with an External Manager that does not agree in writing to comply with this policy.
2. Not entering into any agreement with an External Manager who has violated this policy within the previous five years. However, this prohibition may be reduced by a majority vote of the Board at a public session upon a showing of good cause.

B. Each External Manager is responsible for:

1. Executing an agreement that provides the External Manager will comply with this policy.
2. Providing the following information to SamCERA Investment Staff within 45 days of the time investment discussions are initiated by the External Manager, but in any event, prior to the completion of due diligence. In the case of Amendments, the Placement Agent Information Disclosure is required prior to execution of the Amendment.
 - a. Disclosure of payments or compensation by the External Manager or any of its principals, employees, agents or affiliates, directly or indirectly, to any person or entity to act as a Placement Agent in connection with SamCERA investments.
 - b. A resume for each officer, partner, principal of the Placement Agent detailing the person's education, professional designations, regulatory licenses and investment and work experience. If any such person is a current or former SamCERA Board Member, employee or Consultant or a member of the immediate family of any such person, this fact shall be specifically noted.
 - c. A description of any and all compensation of any kind provided or agreed to be provided to a Placement Agent, including the nature, timing and value thereof. Compensation to Placement Agents shall include, but not be limited to, compensation to third parties as well as employees of the External Manager who solicit or market investments to SamCERA or who are paid based upon investment commitments secured by such employees.
 - d. A description of the services to be performed by the Placement Agent and a statement as to whether the Placement Agent is utilized by the External Manager with all prospective clients or only with a subset of the External Manager's prospective clients.
 - e. A written copy of any and all agreements between the External Manager and the Placement Agent.
 - f. A statement whether the placement agent, or any of its affiliates, are registered with the Securities and Exchange Commission or the Financial Industry Regulatory Association, or any similar regulatory agent in a country other than the United States, and the details of that registration or explanation as to why no registration is required.
 - g. A statement whether the placement agent, or any of its affiliates, is

registered as a lobbyist with any state or national government.

h. The names of any current or former SamCERA Board Members, employees, or Consultants who suggested the retention of the Placement Agent.

3. Providing an update of any changes to any of the information provided pursuant to section B.2 above within 30 calendar days of the date that the External Manager knew or should have known of the change in information.
4. Representing and warranting the accuracy of the information described in section B.2 above.
5. Causing its engaged Placement Agent to disclose, prior to acting as a Placement Agent to SamCERA:
 - a. All campaign contributions made by the Placement Agent to any publicly elected SamCERA Board Member during the prior 24-month period. Additionally, any subsequent campaign contribution made by the Placement Agent to any publicly elected SamCERA Board Member during the time the Placement Agent is receiving compensation in connection with a SamCERA investment shall also be disclosed.
 - b. All gifts, as defined in Government Code Section 82028, given by the Placement Agent to any SamCERA Board Member during the prior 24-month period. Additionally, any subsequent gift made by the Placement Agent to any SamCERA Board Member during the time the Placement Agent is receiving compensation in connection with a SamCERA investment shall also be disclosed.
6. SamCERA reserves the right to deem the failure to disclose the information required by 5(a) and 5(b) as a material breach of the agreement with the External Manager.

C. SamCERA Investment Staff (“Staff”) are responsible for:

1. Providing External Managers with a copy of this Policy at the time that discussions are initiated with respect to a prospective investment or engagement.
2. Confirming that the information in section B above has been received within 45 days of the time the execution of the investment contract or Amendment.
3. For new contracts and amendments to contracts existing as of the date of the initial adoption of this Policy, securing the agreement of the External Manager in the final written agreement between SamCERA and the External Manager to provide in the event that there was or is an intentional material omission or

inaccuracy in the Placement Agent Information Disclosure or any other violation of this Policy, SamCERA reserves the right to reimbursement of any management or advisory fees paid by SamCERA from the date of violation to the date of the imposition of the fees.

4. Prohibiting any External Manager or Placement Agent from soliciting new investments from SamCERA for five years after they have committed a material violation of this Policy; provided, however, that SamCERA's Board, by majority vote at a noticed, public meeting, may reduce this prohibition upon a showing of good cause.
5. Providing the Board with Placement Agent information relating to each investment at the time the investment is brought to the Board for its decision.
6. Maintaining Placement Agent Information Disclosures as a public record and reporting to the Board any a material violation of this Policy.

Adopted December 14, 2010

Amended October 25, 2011

Amended March 28, 2017

DEFINITIONS:

The following definitions are excerpted from California Government Code section 7513.8 and are current as of March 28, 2017. Should the legislature subsequently amend the definitions below, the definition of these terms as amended shall supersede the definitions contained in this policy.

“External Manager” means either of the following: (1) a Person who is seeking to be, or is, retained by a board or an Investment Vehicle to manage a portfolio of securities or other assets for compensation; (2) a Person who manages an Investment Fund and who offers or sells, or has offered or sold, an ownership interest in the Investment Fund to a board or an Investment Vehicle. (All code section references are to the Government Code, unless otherwise noted.)

“Person” means an individual, corporation, partnership, limited partnership, limited liability company, or association, either domestic or foreign.

“Investment Vehicle” means a corporation, partnership, limited partnership, limited liability company, association, or other entity, either domestic or foreign, managed by an External Manager in which a board is the majority investor and that is organized in order to invest with, or retain the investment management services of, other External Managers.

“Investment Fund” means a private equity fund, public equity fund, venture capital fund, hedge fund, fixed income fund, real estate fund, infrastructure fund, or similar pooled investment

entity that is, or holds itself out as being, engaged primarily, or proposes to engage primarily, in the business of investing, reinvesting, owning, holding, or trading securities or other assets. Notwithstanding the preceding sentence, an investment company that is registered with the Securities and Exchange Commission pursuant to the Investment Company Act of 1940 (15 U.S.C. Sec. 8a-1 et seq.) and that makes a public offering of its securities is not an Investment Fund.

“Placement Agent” means any Person directly or indirectly hired, engaged, or retained by, or serving for the benefit of or on behalf of, an External Manager or an Investment Fund managed by an External Manager, and who acts or has acted for compensation as a finder, solicitor, marketer, consultant, broker or other intermediary in connection with the offer or sale to a board or an Investment Vehicle either of the following: in the case of an External Manager as defined in subpart (1) of the definition of an External Manager, the investment management services of the External Manager; in the case of an External Manager as defined in subpart (2) of the definition of an External Manager, an ownership interest in an Investment Fund managed by the External Manager. Notwithstanding the preceding sentence, an individual who is an employee, officer, director, equityholder, partner, member, or trustee of an External Manager and who spends one-third or more of his or her time, during a calendar year, managing the securities or assets owned, controlled, invested, or held by the External Manager is not a Placement Agent.

RESOLUTION __

**RESOLUTION AMENDING SAMCERA'S
INVESTMENT POLICY STATEMENT**

WHEREAS, pursuant to Article XVI, Section 17, of the California Constitution, the Board of Retirement (the "Board"), has the exclusive authority and exclusive fiduciary responsibility for the investment and administration of the assets of the retirement system (the "Fund"), and on September 25, 2018, established an Investment Policy Statement (the "Policy") for the investment of the Fund assets; and

WHEREAS, the purpose of the Policy is to assist SamCERA in effectively supervising its investments in order to meet the requirements of the California Constitution, the County Employees Retirement Law of 1937 ("the 1937 Act"), the Mission and Goals of SamCERA and other requirements, and to encourage effective communication between SamCERA and its investment managers and investment consultants; and

WHEREAS, the Board periodically reviews its Policy and amends it as necessary so as to remain up to date to reflect recent actions of the Board; and

WHEREAS, In May 2018, SamCERA's Board approved a new asset allocation, which slightly modifies the allocation adopted in 2017 following the Plan's asset-liability study. As part of the revised allocation, SamCERA approved a 6% allocation to U.S. Low Volatility Equity. The changes in Section 6.0 (A) "Public Equity Assets" and Section 9.0 "Public Equity Investment Policies" are amended to reflect this change; and

WHEREAS, Over the past two years, SamCERA has been grouping its investments by the underlying performance drivers within each asset class composite. Section 6.0 (G) "Asset Allocation by Performance Driver" is a new section that summarizes these groupings into "Growth", "Diversifying", and "Inflation-Hedge"; and

WHEREAS, Staff is also proposing the following additional changes to the Investment Policy:

1. Adding new delegation of authority on terminating investment managers to Section 2.0 (B) "3. Terminating Existing Managers", which is consistent with the language shared with the Board in the February meeting.
2. Amending Section 3.0 "Investment Objectives" by removing objective B, which contains very specific funding criteria, which would best be served in a potential separate funding policy.
3. Amending Section 9.0 "Public Equity Investment Policies", Section 10.0 "Fixed Income Investment Policies", and Section 12.0 "Alternative Assets Investment Policies" with additional descriptive summaries of the various investment categories.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

4. Amending Section 10.0 "Fixed Income Investment Policies" by adding additional characteristics and risk exposures for Opportunistic Credit.

WHEREAS, the Board and desires to make such amendments; Now, therefore, be it

RESOLVED, that the SamCERA "Investment Policy Statement" be revised to read as set forth in the attached document.

Regularly passed and adopted, by the San Mateo County Employees' Retirement Association, Board of Retirement, on March 26, 2019.

Ayes, Trustees:

Noes, Trustees:

Absent, Trustees:

Abstain, Trustees:


Al David, Board Secretary

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 7.1

TO: Board of Retirement

FROM: Scott Hood, Chief Executive Officer 

SUBJECT: Agreement with Brown Armstrong for Independent Auditing Services

Recommendation

Approve a Resolution Authorizing the Chief Executive Officer to execute an agreement with Brown Armstrong for auditing services.

Background

SamCERA issued a Request for Proposal (RFP) for auditing services on January 7, 2019. The RFP solicited proposals from qualified independent certified public accounting firms with applicable experience to serve as an independent auditor for auditing services including:

- **Auditor's Opinion.** The Auditor shall audit and express an opinion on the fair presentation of the financial statements and other information (the Schedule of Employer Pension Amounts Allocated by Cost Sharing Plan and the Schedule of Cost Sharing Employer Allocations) in conformity with generally accepted accounting principles (GAAP).
- **Review of Compliance to Finance Reporting Standards.** The Auditor shall evaluate SamCERA's compliance with GAAP, Governmental Accounting Standards Board (GASB) and other relevant accounting standards and may be asked to provide implementation guidance on upcoming GASB statements and to provide technical assistance in the preparation of certain footnotes to the financial statements.
- **Review of SamCERA's Comprehensive Annual Financial Reports (CAFR).** The Auditor shall review the CAFR for consistency, reasonableness, and compliance with applicable accounting and financial reporting standards.
- **Review of SamCERA's Internal Controls.** The Auditor shall review the effectiveness of SamCERA's internal controls.

SamCERA received four responses: Brown Armstrong, Crowe LLP, Harshwal & Company LLP, and Macias Gini & O'Connell LLP. An Evaluation Committee comprised of Scott Hood, Chief Executive Officer, Gladys Smith, Assistant Executive Officer and Tat-Ling Chow, Finance Officer reviewed the RFP responses and focused on the following evaluation criteria:

- Experience (both quality and quantity) of the proposing organization and its proposed SamCERA Team of auditors in providing services comparable to SamCERA's needs.
- Expertise in all aspects of auditing services, preferably as it relates to public defined benefit plans, the County Employees Retirement Law, and the Public Employees' Pension Reform Act.
- Ability to serve as an auditor with respect to required services (e.g. time commitments, number of other clients assigned to proposed SamCERA auditing team.)
- Proposal quality, conciseness and completeness.
- Sample reports and educational presentation materials.
- Fees.

Discussion

After thoroughly reviewing the above information, the Evaluation Committee recommends that the Chief Executive Officer enter into contract negotiations with Brown Armstrong, our incumbent auditor, as it best fits SamCERA's needs for the following primary reasons:

- **Reliable Work Product:** Brown Armstrong has provided SamCERA with complete, accurate and timely audits in the face of the ongoing evolution in financial reporting requirements.
- **Strong Client-Service Focus:** Brown Armstrong has developed an effective audit plan to ensure its service to SamCERA is not compromised.
- **Experienced SamCERA Team:** Andrew Paulden (Engagement Partner) and Ashley Casey (Engagement Audit Manager) have worked as a team since 2007. Both have extensive involvement in auditing public defined benefit plans.
- **Reasonable Fees:** Over the five-year term of the agreement the total fees proposed by Brown Armstrong are fair and appropriate.

The proposed agreement will commence on April 1, 2019 for an amount not to exceed \$290,000 for a term of five years, with the standard 30-day termination clause. The maximum cost for the 2019 audit will be \$58,000, about 11% higher than 2018. However, this amount will not increase throughout the term of the agreement. The proposed resolution authorizes the Chief Executive Officer to enter into a contract with Brown Armstrong and allows for minor amendments throughout the term in an amount not to exceed \$50,000 in the aggregate.

Attachment

Resolution Authorizing Chief Executive Officer to Execute an Agreement with Brown Armstrong, for Auditing Services

RESOLUTION __

**RESOLUTION AUTHORIZING THE CHIEF EXECUTIVE OFFICER TO EXECUTE AN AGREEMENT
WITH BROWN ARMSTRONG FOR THE PROVISION OF INDEPENDENT AUDITING SERVICES**

WHEREAS, pursuant to Government Code Section 31593 and other applicable provisions, the Board of Retirement has a duty to engage the services of an independent auditor to conduct an audit of the retirement system and report on its financial condition; and

WHEREAS, SamCERA staff developed and issued a Request for Proposals (RFP) for auditing services and four proposals were received; and

WHEREAS, an Evaluation Committee evaluated proposals and recommended to the Chief Executive Officer that contract negotiations commence with Brown Armstrong; and

WHEREAS, the Chief Executive Officer has accepted that recommendation and believes Brown Armstrong best meets the needs of SamCERA and that an agreement be entered into for such services; and

WHEREAS, this Board has determined that it is in the best interest of SamCERA to enter into an agreement with Brown Armstrong and for the Chief Executive Officer to execute a five-year agreement not to exceed \$290,000 with Brown Armstrong for the provision of independent auditing services.

RESOLVED, that the Chief Executive Officer is hereby authorized to execute an agreement with Brown Armstrong for independent auditing services in an amount not to exceed \$290,000, and be it further

RESOLVED, that the Chief Executive Officer is hereby authorized and directed to execute subsequent amendments and minor modifications in an amount not to exceed \$50,000 in the aggregate throughout the term of the agreement.

Regularly passed and adopted, by the San Mateo County Employees' Retirement Association, Board of Retirement, on March 26, 2019.

Ayes, Trustees:

Noes, Trustees:

Absent, Trustees:


Abstain, Trustees:

Al David, Board Secretary

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 7.2

TO: Board of Retirement
FROM: Scott Hood, Chief Executive Officer 
SUBJECT: 2019 Board-Staff Retreat Topics

Recommendation

Provide direction to staff regarding the topics and schedule for the April 2019 Board-Staff Retreat.

Background

This item is to give the Board a final opportunity to discuss the topics for the upcoming retreat in April. The Board assists with setting the topics to be addressed and provides input regarding the proposed presenters. Following this meeting, staff will finalize scheduling the presenters.

Discussion

Attached is a proposed schedule which reflects input from the Board over the last few meetings. This version condenses the retreat to one day and starts with a shortened regular Board meeting. Our kick-off speaker, Ian Toner, from Verus will provide an overview of the global economic outlook. Mike Coultrip will then lead the Board through a deep dive of the portfolio. During lunch, Brenda Carlson will provide trustee education on ethics. After lunch, Jeff MacLean from Verus will provide a presentation on moving towards a mature plan and our last presenter, also from Verus, Paul Kreiselmaier, will provide a presentation on Absolute Return.

The 2019 SamCERA Board-Staff Retreat is scheduled along the same lines as prior years:

- Days: One day
- Timing: Leaves time between the presentations for discussion
- Location: SamCERA Boardroom
- Speakers: SamCERA's consultants and staff
- Regular Business: The Board's regular monthly business will be the first scheduled event in the morning
- Date: **Tuesday, April 24**
- Start Time: **8:30 a.m.**

Attachment

Draft 2019 Board-Staff Retreat Agenda



Board/Staff Retreat



AGENDA & PRESENTERS

APRIL 23, 2019

BOARD/STAFF RETREAT AGENDA


- 8:00 a.m.** Coffee and Refreshments
- 8:30 a.m.** Beginning of Regular Board Meeting Agenda
- 9:00 a.m.** High Level Look at the Global Economy
PRESENTER: IAN TONER, CHIEF INVESTMENT OFFICER, VERUS
- 10:00 a.m.** Break
- 10:15 a.m.** Deep Dive
PRESENTER: MIKE COULTRIP, SAMCERA CHIEF INVESTMENT OFFICER AND
MARGARET JADALLAH, MANAGING DIRECTOR, VERUS
Led by Mike Coultrip. Assess longer-term drivers of fund returns and risks. Investigate longer-term manager performance and other characteristics vs. indexes and peer groups. Review Risk Dashboard.
- 11:30 a.m.** Lunch
- 11:45 a.m.** Annual Ethics Training
PRESENTER: BRENDA CARLSON
- 12:45 p.m.** When a Plan Matures
PRESENTER: JEFF MACLEAN, CHIEF EXECUTIVE OFFICER, VERUS
- 1:45 p.m.** Break
- 2:00 p.m.** Absolute Return
PRESENTER: PAUL KREISELMAIER, SENIOR ASSOCIATE DIRECTOR HEDGE FUNDS, VERUS
- 3:15 p.m.** End of Retreat

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 7.3

TO: Board of Retirement

FROM: Scott Hood, Chief Executive Officer 

SUBJECT: Approval to Reschedule the July 23, 2019 Board Meeting

Recommendation

Approve a change to the date and time of the regularly scheduled July 23, 2019 meeting.

Background

The Board's regular meetings are scheduled on the fourth Tuesday of each month at 10:00 a.m. The Board is authorized by Article III, Section 3.4 of the Board's Regulations to change its meeting times and dates.

“Regular Meetings: Regular meetings of the Board shall be held on the Fourth Tuesday of each month. Meetings shall begin at 10:00 a.m. Meetings shall be held in SamCERA's offices. The Board may cancel and or approve a change in the date, time and/or location of meetings within the County, if the proposed change is included on the agenda of a regular meeting.”

Discussion

In October 2018, the Board approved the regular meeting schedule for 2019. That schedule provides that the Board would meet on July 23, 2019. Subsequent to the scheduling of the meeting, two of the education providers, enumerated in the Board's Education Policy, have scheduled educational events that would conflict with the scheduled Board Meeting.

IFEBP/Wharton will be offering *International and Emerging Market Investing* July 22-24 in San Francisco and SACRS will be providing their annual *SACRS Public Pension Investment Management Program* July 22-24 at the HAAS School of business in Berkeley.


Staff recommends that Board formally change the date and/or time of the meeting to July 16 or another appropriate date so that staff can publish the meeting notice and reflect the new information on SamCERA's website.

SAN MATEO COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
Board of Retirement

March 26, 2019

Agenda Item 7.4

TO: Board of Retirement

FROM: Scott Hood, Chief Executive Officer 

SUBJECT: Approval of SACRS Voting Delegate and Alternates for the SACRS Spring 2019 Business Meeting and direction to Voting Delegate

Recommendation

Staff recommends the Board designate Susan Lee as the Voting Delegate and Scott Hood, CEO as the First Delegate Alternate to cast SamCERA's votes at the SACRS Spring 2019 Conference.

Staff further recommends that the Board provide direction to the Voting Delegate that is in the best interest of SamCERA.

Background

Prior to each SACRS conference the retirement boards are asked to select the individuals from each county system who are authorized to serve as voting delegate and alternate voting delegates at the conference business meeting.

Discussion

SamCERA normally selects the highest-ranking board officer who will attend the conference as the voting delegate. Delegates can be either trustees or staff. We typically recommend the CEO be the final alternate.

At the time of Board packet mailing, neither the SACRS recommended slate of candidates for SACRS Board of Directors nor the SACRS business meeting packet were available. It is anticipated that this material will be received by the Board meeting. The Board will have the opportunity to discuss the recommended slate of candidates and the business meeting topics and provide direction to the Voting Delegate.

The business meeting will occur on the last morning of the conference, at 10:00 a.m., Friday, May 17, 2019.