

MWRA EMPLOYEES' RETIREMENT BOARD MEETING

AGENDA

Thursday, August 31, 2023 10:00 a.m.
MWRA, 2 Griffin Way
Chelsea, MA 02150

Item 1 10:00 a.m. Meeting called to order

OLD BUSINESS

- Item 2 Standing Committee Reports
- i. By-Laws Committee: Member Kevin McKenna, Member Brian Peña
 - ii. Human Resources Committee: Member Frank Zecha, Member Matthew Horan – Staff Vacation Accruals
 - iii. Special Committee, Stipend: Member James M. Fleming, Member Kevin McKenna
 - iv. Job Review Committee: Member James M. Fleming, Member Frank Zecha

NEW BUSINESS

- Item 3 Approval of July 27, 2023 Minutes – VOTE
- Item 4 Approval of Warrants – VOTE
- a) Warrant 8-2023
 - b) Warrant 8-2023A – Payroll
- Item 5 Approval of Monthly Transfers 8-2023 – VOTE
- Item 6 Acknowledgement of retirement application under G.L. c 32 §5 – VOTE
- a) Joseph Favaloro DOR 6/30/2023
 - b) Robert O’Neill DOR 7/12/2023
 - c) Donna Yeo DOR 7/22/2023
 - d) James Hession DOR 7/26/2023
 - e) Timothy Smith DOR 7/26/2023
 - f) Anthony Pires DOR 8/2/2023
 - g) Patricia Russo DOR 8/5/2023
 - h) Dillon Scott DOR 8/10/2023
- Item 7 Approval of Maureen McAvoy’s buyback of 6 months of Holyoke Community College employment – VOTE
- Item 8 Approval of July 2023 Bank Reconciliations – VOTE
- Item 9 Disability Update
- Item 10 Manager Due Diligence Presentations
- 10:30 a.m. a) RhumbLine – Denise D’Entremont
 - 10:45 a.m. b) Axiom – Megan Strater and Don Elefson
 - 11:00 a.m. c) Kayne Capital – Danny Weingeist
 - 11:15 a.m. d) StepStone – Marc Rivitz

Item 11

NEPC

- a) Flash Report as of 7/31/23
- b) Rebalance Recommendation – VOTE
- c) Liquidity Profile as of July 31, 2023
- d) Private Markets Pacing & Real Estate Pacing
- e) Quarter 2 2023 Investment Report
- f) Quarterly Performance Private Equity Report March 31, 2023
- g) Quarterly Performance Real Estate Report March 31, 2023
- h) Quarterly Performance Private Debt March 31, 2023

.....**FOR YOUR INFORMATION and REVIEW**

- Item 99-1 PERAC MEMO # 17/2023 – Reinstatement to Service under G.L. c. 32 § 105
- Item 99-2 PERAC MEMO #18/2023 – Cost of Living Increase for Supplemental Dependent Allowance Paid to Accidental Disability Retirees and Accidental Death Survivors
- Item 99-3 Update: Retirement Office Access
- Item 99-4 Regional Banks Slide After Moody’s Downgrades
- Item 99-5 Pensions & Investments Cyberattack Article
- Item 99-6 Invesco Memo re. Bill Grubbs Retiring

The Board reserves the right to consider items on the agenda out of order. The listing of items is those reasonably anticipated by the Chair to be discussed received at least forty-eight (48) hours prior to the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law. Items identified for discussion in Executive Session may be conducted in open session, in addition to, or in lieu of discussion in Executive Session.

Date of next scheduled Retirement Board meeting is Thursday, September 28, 2023, 10:00 a.m., Chelsea

**MWRA EMPLOYEES' RETIREMENT BOARD MEETING
JULY 27, 2023**

A meeting of the MWRA Employees' Retirement Board was conducted in-person on Thursday, July 27, 2023. Remote access was provided to the public via Zoom, with call-in information provided on the official Meeting Notice posted to www.mwraretirement.com. Participating in the in-person meeting were Board members Matthew Horan, Kevin McKenna, Brian Peña, and Frank Zecha, staff members Carolyn Russo, Julie McManus and Danielle DiRuzza, and Sebastian Grzejka representing NEPC. Mr. Fleming was absent due to illness. Members of the public also attended via remote access. Mr. Horan called the meeting to order at 10:01 a.m.

- 1) Call the meeting to order-roll call of members: Mr. Horan, Mr. McKenna, Mr. Peña, and Mr. Zecha present.
- 2) Standing Committee Reports
 - i. By-Laws Committee: No report
 - ii. Human Resources Committee: No report
 - iii. Special Committee, Stipend: No report
 - iv. Job Review Committee: No report

3) Approval of Minutes – VOTE

On a motion made by Mr. Zecha and seconded by Mr. Peña:

VOTED

to approve the Minutes of the June 29, 2023 meeting. 4-0, no opposition heard.

4) Approval of Warrants – VOTE

- a) Warrant 6-2023B
- b) Warrant 7-2023
- c) Warrant 7-2023A – Payroll & Sterling Printing

On a motion made by Mr. Zecha and seconded by Mr. Peña:

VOTED

to approve Warrant #6-2202B and Warrant #7-2023. 4-0, no opposition heard.

On a motion made by Mr. Zecha and seconded by Mr. Peña:

VOTED

to approve Warrant #7-2202A (Retiree Payroll and Sterling Printing), provided that the Board members are provided a copy of the Warrant upon completion of the payroll run. 4-0, no opposition heard.

5) Approval of Monthly Transfers 7-2023 – VOTE

On a motion made by Mr. Peña and seconded by Mr. McKenna:

VOTED

to approve the monthly transfers for July. 4-0, no opposition heard.

6) Acknowledgement of retirement applications filed under G.L. c 32 §5 – VOTE

- | | | |
|----|-----------------|---------------|
| a) | John Colbert | DOR 6/30/2023 |
| b) | John Harrington | DOR 7/11/2023 |
| c) | John McCarty | DOR 7/11/2023 |
| d) | Carolyn Fiore | DOR 7/15/2023 |
| e) | Janet Johnson | DOR 7/15/2023 |
| f) | Daniel Parry | DOR 7/15/2023 |

On a motion by Mr. McKenna and seconded by Mr. Zecha

VOTED

to acknowledge the section 5 retirements as listed. 4-0, no opposition heard.

7) Approval of 12(2)(d) survivor benefits for Maureen Olsen, survivor of M. Steven Parrelli DOD 7/11/2023 – VOTE

The Executive Director advised the Board that Mr. Parrelli had filed an application for retirement at the end of June to become effective July 29, 2023, but that he had passed away prior to the effective date. Ms. Olsen had been named as Option D beneficiary upon the member's death prior to retirement.

On a motion by Mr. Zecha and seconded by Mr. McKenna:

VOTED

to approve the section 12 survivor allowance payable to Ms. Maureen Olsen, designated Option D beneficiary of Mr. M. Steven Parrelli, and to extend the condolences of the Board to Mr. Parrelli's family. 4-0, no opposition heard.

8) Approval of 12(2)(d) survivor benefits for Kimberly Vargus, surviving spouse of Dennis Vargus DOD 6/30/2023 – VOTE

On a motion by Mr. McKenna and seconded by Mr. Peña

VOTED

to approve the section 12 survivor allowance payable to Ms. Kimberly Vargus, spouse of Mr. Dennis Vargus, and to extend the condolences of the Board to Mr. Vargus' family. 4-0, no opposition heard.

9) Approval of Bank Reconciliations – VOTE

- a) May 2023
- b) June 2023

Mr. McKenna asked about the list of outstanding checks, and the Executive Director stated that they are predominantly attributable to Mr. Jackson, whose checks have been withheld for consistent non-compliance with both 91A and affidavit requirements. The Executive Director noted that the policy adopted by the Board was that no checks over 6 months old will be reissued and that such payments may be made via direct deposit only. Mr. Jackson has not, to date, provided the Board with valid bank information, or a completed affidavit. His 91A termination hearing for non-compliance is scheduled under Legal.

On a motion made by Mr. McKenna and seconded by Mr. Peña:

VOTED

to approve the bank reconciliations for May and June. 4-0, no opposition heard.

10) Acceptance of Section 7 Retirement Application re. Joseph P. Comeau, Sr.

The Executive Director asked that the Chair either table the matter or defer discussion until the Legal presentation due to the incomplete Physician's Statement as well as missing injury reports. The Board agreed that the matter should be deferred for discussion under legal.

11) Manager Due Diligence Presentations

The following managers underwent an annual investment manager review pursuant to 840 CMR 16.07. The managers presented performance and investment reports detailing the manager's activities, which the Board reviewed.

- a) Morgan Stanley – Meg Golder
- b) Constitution Capital – Dan Clare, Rob Hatch, and Joe Furey
- c) Ascent – Walter Dick and Tom Scanlon
- d) PineBridge – Joy Booker and Olivier Keller

Meg Golder joined the call at 10:11 a.m. representing Morgan Stanley Prime Property. Ms. Golder thanked the Board for being a loyal client since 1995. Mr. Zecha expressed his concern about some of the downtown assets, and asked whether expiring leases are being filled, and whether it is affecting returns. MWRAERS is in the queue for a withdrawal, and Mr. Zecha asked if there has been an increase in outflows. Ms. Golder responded that One Post Office Square is one of Prime's largest redevelopment projects. It began in 2019, and is nearing completion. It is 58% leased currently. It is taking longer than it might have previously to get to fully leased, but it is a top-end rebuild, so it is now seen

as a value-add property. Morgan Stanley is redeveloping some Cambridge property, converting existing buildings for life science use. Overall leasing rates may be a little less, but Morgan Stanley still views the assets as promising. Mr. McKenna asked if Morgan Stanley owns the parking garage at One Post Office Square, because it seems to be profitable. Ms. Golder said that they do own it, that it is an important part of securing leases to allow tenants parking access. The Boston Harbor Hotel has shown a strong second quarter due to tourism. Second half business bookings appear to be down, but the hotel operates well and has seen increased activity. The Board has requested a \$7m redemption within a \$4bn queue. Morgan Stanley expects to make a partial payment in September with the remaining distributed in the last quarter. Mr. McKenna asked about student housing, and what Hugo refers to. Ms. Golder responded that Hugo is a property manager/operator. Mr. McKenna asked if this is common, and Ms. Golder responded affirmatively. She referred the Board to page 13 for a fund overview. Prime has \$33.5bn AUM, with 542 assets in 7 sectors. Prime's leverage is currently at 22.4 %, roughly 300bps below the benchmark's. The properties are prudently managed and well leased. Most of the requested redemptions are partial liquidations and rebalances to targets. Mr. Grzejka asked about the debt waterfall, and in what sectors does Morgan Stanley see opportunities. Ms. Golder stated that they love Industrial right now, and Apartments saw 20% rent growth last year. Self-storage and Life Science sectors are promising as well. There have been 12.5% write-downs on Office, and moving forward, the portfolio will reduce exposure further. Retail has been pared back as well. Mr. McKenna asked what is the building at 828 Winter Street Waltham. Ms. Golder stated she was not sure but could get back to the Board with that answer. Mr. McKenna asked if Medical and Office are commingled. Ms. Golder responded that they are not. It is broken out because Medical is not the same as traditional Office. Mr. McKenna asked whether 150 Cambridge Park Drive is a lab, and Ms. Golder responded affirmatively. Mr. Horan asked whether declining enrollment has been worked into student housing investments, and whether there is a minimum size investment. Ms. Golder responded that they will invest where enrollment continues to grow, e.g. the "Power Five" schools, which tend to be more recession proof. Ms. Golder referred the Board to page 44 for the debt profile of the fund. Prime has a target of 15-25%, and carries low, floating, interest rate risk. Mr. Zecha asked for an outlook of the next 24 months. Ms. Golder stated that she cannot predict the future, but the outlook is positive given the markdowns that have already taken place, including a 20% correction fund-wide. Mr. Zecha asked if the Board can expect it to be a year before the redemption is fully issued. Ms. Golder explain that the requests are first in, first out, and with each sale every eligible investor receives a portion of the proceeds. Mr. Zecha asked if the redemption request may be canceled if there is a turnaround, and Ms. Golder stated that a redemption request may be withdrawn with at least 5-10 days' notice. Ms. Golder thanked the Board and signed off at 10:35 a.m.

Dan Clare, Rob Hatch, and Joe Furey joined the call at 10:36 a.m. representing Constitution Capital Partners. Mr. Grzejka stated that there are members of the public on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Clare thanked Mr. Grzejka. Mr. Hatch described the System's investments in the Ironsides Opportunities Fund and Ironsides Co-Investment VI Fund as fund-of-funds products. Constitution was founded in 2008, and now has \$5bn AUM with headquarters in Andover, and offices in New York and London. Fund VI had its final close recently. VII is expected to launch later this year. Constitution has an investment team of sixty, with many of the firm's interns becoming permanent hires. Fund VI has 32 underlying companies. Page 7 shows the sectors, with Industrials and Consumers the largest allocations. The fund has a 1.2x multiple and a 12.5% net IRR through March. Page 8 shows the investments, with Aurorium and Woodstream partially realized with Net IRR of 69.5% and 35.6% respectively. Amika's returns have been astronomical, with the company progressing from a salon-only haircare line to general market availability. Market Performance Group teaches companies how to market on Amazon, and has a 3.7x multiple and Net IRR of 93%. The System made a \$12m commitment, and \$11.6m has been drawn. Mr. Grzejka asked if any company valuations have been adjusted. Mr. Hatch responded that Constitution does independent valuations on the entire portfolio and double checks them against the company's own valuations. The firms are profitable businesses in well-established markets, so returns have been steady. In regard to Ironsides Opportunities Fund, there are 6 remaining investments out of the original 19, and some of those are in the process of being sold. To date the fund has a 1.3x and a Net IRR of 14.2%. 82% of committed capital has already been returned. Mr. Zecha asked when the Board might expect June numbers, and Mr. Hatch responded August or September. The representatives from Constitution thanked the Board and signed off the call at 10:50 a.m.

At 10:59 a.m., Walter Dick and Tom Scanlon joined the call representing Ascent. Mr. Grzejka stated that there are members of the public on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Dick referred the Board to page 2 of the presentation. The Board committed a total of \$8.8m across the funds, with \$5.5m distributed and \$4.5m in remaining value. Mr. Scanlon noted that inflation and contraction in the economy hit their companies head-on. Since Ascent is managing out the remaining Fund V and Fund VI investments and will be making no new ones, Matt Fates and Geoff Oblak have joined other venture capital firms, but are still overseeing Ascent's remaining investments, managing 2 and 3 companies respectively. Fund IV has one remaining asset, with IV-B reporting a Net IRR of -4.3%. V has called 97% of committed capital, and has exited 5 investments with a gross IRR of 26.6% on those realizations. Nova Scientific and Invaluable have been top contributors. Ascent is currently getting bids but buyers likely will want to see Q4 numbers prior to acquisition. RapidMiner was acquired by Altair in September. The outlook for Fund V remains positive. As reported on page 9,

97% of committed capital has been called for Fund VI. Connectbase, Quartile and Splash have been identified as fund drivers. Mr. McKenna asked about the history of Splash. Mr. Scanlon stated that Splash created large event planning software pre-pandemic that successfully transitioned to virtual events. Since the infrastructure was already in place, they easily transitioned back to in-person events. They've done events for companies as large as Budweiser and Salesforce. The investment cost was \$8.9m and the current value is \$16.9m. Mr. McKenna asked if anyone is looking to buy them, and Mr. Dick answered that they are still growing, so the company will continue to add value. Mr. Scanlon added that their competition grew rapidly during the pandemic, but are now struggling to adapt to in-person, whereas Splash already made a smooth return, so they're still outperforming. Returning to the presentation, Mr. Dick reported that Fund VI is 97% called, and 1-2% calls are expected over the next year. Ascent thanked the Board and signed off at 11:18 a.m.

Mr. McKenna asked if Ascent has essentially closed down, and Mr. Grzejka noted Mr. Dick's statement that they will be making no new investments, and responded affirmatively. Mr. McKenna asked if there are any new venture investments on the horizon, and Mr. Grzejka stated that is the purpose of the Board's pacing plan. The Board consistently adds to the portfolio annually because investments cycle out over time.

Joy Booker and Olivier Keller joined the call at 11:18 a.m. representing Pinebridge. Mr. Grzejka stated that there are members of the public on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Ms. Booker reported that the firm changes are as disclosed in the due diligence questionnaire, and unless the Board had any questions, they'd move on to performance. Mr. Keller stated that the Board committed \$4m across 8 strategies. The Fund has a 1.67x multiple and a Net IRR of 7.4%. There has been a reduction in new investment due to the rising rate environment, but the portfolio has been very stable and very resilient. Page 2 of the presentation shows the returns for each sleeve. US Venture has led performance, followed by Preferred Participation and US Small-Mid LBO. Mr. Grzejka asked what the plan is to manage out the remaining assets, and Mr. Keller responded that Pinebridge will consider all options including secondaries. Ms. Booker thanked the Board and Pinebridge signed off the call at 11:27 a.m.

The Board determined each manager continues to operate in a manner represented when retained and outlined in the agreement between the Board and the manager.

12) NEPC

- a) Flash Report as of 6/31/23
- b) Rebalance Recommendation – VOTE

Mr. Grzejka reported that June was been positive, with the portfolio up about 2.7% for the month and 6% YTD. Polen is up 26% YTD. The S&P is up 16.8% YTD, driven by only a handful of names. Small Growth has rebounded as well, and is up 7.7%. Mesirow is performing to expectations. The International portfolio is up for the year, and is beating the benchmark. At 4.6% YTD the Emerging Markets portfolio is in line with the index. Mr. McKenna commented that companies have been going into Ukraine and buying positions and making money. Mr. Grzejka responded that is a very high-risk proposition, and that such investments would be weeded out by research teams looking into secure and reliable exit strategies. The portfolio has no exposure right now. Fixed Income will be rebalanced in the near term. Hedge Funds provided protection last year, and as expected is lagging some other areas of the portfolio now, at 3.2% YTD. Mr. Zecha asked how TIPS are performing, and Mr. Grzejka stated they are performing consistently with the Bloomberg Aggregate. Real Estate and Private Equity Q1 returns are beginning to come in. Some are showing markdowns. Mr. Zecha stated the reporting tends to lag in those categories and asked which quarter is coming in, and Mr. Grzejka stated mostly Q1 2023, but Harbourvest, Ascent, Hamilton Lane and Pinebridge are reporting December 2022. There have been some distributions in June. Mr. Zecha asked if Consitution is flat YTD or if they just haven't reported, and asked if an as-of date could be added to the Flash Reports. Mr. Grzejka noted that NEPC's return numbers are time weighted, and the managers' are not, so there could be a significant difference in any one reporting period, but the two will converge over time. Next month most should be through 6/30. Mr. Zecha asked whether July is positive to date. Mr. Grzejka stated that so far it looks like the S&P is up 2%, the Russell is up 4%, and EM is up 3%, while Fixed Income is up 2%.

Mr. McKenna asked about the rebalance was for funding Serenitas. Mr. Grzejka deferred to the Executive Director. The Executive Director reported that the Side Letter was deemed acceptable by Board Counsel, but that she had referred significant issues with the Subscription Document to Counsel for review, and funding may not take place until the issues are resolved and the subscription document and side letter are fully executed. Board Counsel will likely address the matter further. The Executive Director explained that each time there is a new investment, there are roughly 150-200 pages of subscription documents (certifications for anti-money laundering, tax status, qualified investor status, etc.) that are usually completed by the Executive Director and signed by the Chair. Mr. Fleming normally executes the side letter on behalf of the Board after review and approval by Board Counsel. There are not generally significant issues with the language, but there are unusual and/or broad non-disclosure, non-disparagement and indemnification clauses in this particular agreement which warranted additional review and potential intervention by Board Counsel prior to execution.

Returning to the rebalance request, Mr. Grzejka stated that the rebalance would result in an approximately 2% cash position to cover payroll and expenses for the new few months, and the Octagon funds will take time to come in once the Board is ready to fund the Opportunistic Credit mandate.

Mr. Horan asked about the portfolio's liquidity profile, and Mr. Grzejka reported that he is working on it but it is not complete. 24% would not be unusual for this type of plan. A lot of the funds involved report on a quarterly basis, so the June numbers will allow for more detail. LMCG is intended to provide diversification and supplant Octagon, so that will affect the liquidity as well. Mr. Grzejka asked whether the Board would want to put in a redemption request for Octagon. Mr. Zecha stated he would like to hear from Board Counsel about LMCG before deciding. Mr. McKenna stated he thought we were using the appropriation to fund LMCG. Mr. Grzejka stated trades were approved by the Board in June and executed early this month to deploy much of the appropriation, with the rest remaining in cash, to meet cash flow needs, capital calls, and for additional opportunities which may arise. Mr. McKenna commented that we have \$10m in extra cash. Mr. Grzejka countered that we do not, roughly \$3.5m will be going out in payments in the next few days, we recently got capital calls from PRIT PE and Harbourvest, and any potential redemptions from Octagon won't be received for about 2 months. Mr. Horan also noted that cash is earning roughly 5% right now, so it's not a bad place to be anyway.

The Chair called for a recess at 11:45 a.m. for a break and to try to reach Attorney Gibson, because he was not scheduled until 12:30 p.m.

On a motion by Mr. Zecha and seconded by Mr. Peña:

VOTED

to declare a recess at 11:45 a.m. 4-0, no opposition heard.

Attorney Gibson signed onto the meeting at 12:31 p.m., and the Chair called the meeting back to order.

13) Legal Update

- a) 91A Hearing(s)
- b) DALA Decision RE: *Daniel Brown v. Massachusetts Port Authority's Employees' Retirement System and Middlesex County Retirement System*, CR-20-0426

Mr. David Jackson joined the meeting via remote access in regard to his 91A hearing. Mr. Zecha informed the member that he was before the Board due to his non-compliance with PERAC's 91A filing requirements. Mr. Jackson stated that the letter had gone to an old P.O. Box. He reported having hand-delivered an IRS extension request to PERAC yesterday (July 26, 2023). Mr. Zecha noted that only buys the member three months and asked whether we would be right

back here in October. Mr. Jackson stated that he hasn't been paid in months. Mr. Zecha noted that Mr. Jackson's checks are being held already due to non-compliance with the Affidavits as well, and that this has been a long-term ongoing issue. He reminded Mr. Jackson that any replacement payments due representing checks outstanding more than 6 months may now be paid only by direct deposit per Board Policy, so he would need to supply the Board with accurate bank information as well as an accurate address. Mr. Jackson then provided his address to the Board. Mr. Zecha stated that he would be willing to meet Mr. Jackson to get his affidavit. Mr. Jackson stated that he doesn't even know what checks he is missing, and Mr. Zecha stated that the Board has a complete list which Staff can provide to him. Mr. Jackson signed off the call at 12:44 p.m.

Mr. Horan asked Attorney Gibson to address the issues with the Accidental Disability Application and with the LMCG documents. The Chair asked the Executive Director to recount what had been discussed earlier regarding the Accidental Disability Application. The Executive Director reported that there appear to be missing injury reports based upon Mr. Comeau's responses on his portion of the application, and that the physician's statement was incomplete, so she had asked the Board to defer a vote on whether to accept the application until Counsel could comment. Attorney Gibson stated that the Executive Director is correct, that the injury reports which were provided do not match with dates or injuries claimed on the application, and noted the doctor had not answered Question 3(Causation) on the Physicians statement, which is a requirement to move forward in processing the application. The member is represented by counsel, and the application should be sent back to counsel for the necessary additional documentation. Mr. Zecha asked if Board Counsel's recommendation is to table pending receipt of the additional information, and Attorney Gibson responded that it is his recommendation that the Board should vote to take no further action on the application until a complete submission is received.

On a motion by Mr. Zecha and seconded by Mr. McKenna:

VOTED

to take no action on the Accidental Disability application filed by Mr. Joseph Comeau Sr. until a complete submission is received. The Retirement Coordinator will contact the member's attorney to request the additional information. 4-0, no opposition heard.

The Chair asked Attorney Gibson to address the concerns with the LMCG documents, because the Board had deferred action on the Rebalance Recommendations. Attorney Gibson reported that the LMCG Serenitas Side Letter is complete and ready for execution, but that the "robust" Subscription Agreement contains some provisions which caused the Executive Director to have some compliance concerns, and he concurs with her that further review is advisable. Counsel will review the documents, and report back to the Board. Some of the matters may be addressed via amendments to the Agreement

and/or to the Side Letter. Mr. Zecha stated that if that's the case, he does not want to move any funds until the matter is resolved. Mr. Horan asked where that leaves the Board if the differences can't be resolved. Attorney Gibson agreed that is certainly a concern, so he will take a look at it.

In regard to the rebalance recommendations, Mr. Horan stated that cash is making money, so it is not a concern. Mr. Grzejka suggested that the Board just execute the transfer from Polen to get back to targets.

Mr. McKenna asked why the Board is seeing this and hearing about the subscription documents when they do not normally. Board Counsel responded that the Side Letter is normally signed by the Chair on behalf of the Board, and the Subscription Agreement is signed by the Chair and the Executive Director (as the person who completed the Agreement). It is generally fairly routine. In this case there were issues with the subscription document which could affect execution and therefore funding, so the matter was brought to the Board's attention.

On a motion by Mr. Zecha and seconded by Mr. Peña:

VOTED

to amend the rebalance recommendation to include only the \$4,500,000 transfer from Polen to Cash. 4-0, no opposition heard.

Mr. McKenna asked that Mr. Grzejka supply the Board with an amended Rebalance document.

Attorney Gibson gave the Board a summary of *Daniel Brown v. Massachusetts Port Authority's Employees' Retirement System and Middlesex County Retirement System*. Prior to his service at Massport, Mr. Brown served as a Reserve Police Officer in North Reading, a member unit of the Middlesex County Retirement System. Massport Retirement System denied Mr. Brown's request to purchase the service, and argued that he was not regularly employed, and that because Massport doesn't have any "on-call" police, they should not have to accept the service. The Magistrate disagreed, stating that the service is allowed under s. 3(5), reversed the Massport Retirement Board's decision, and ordered that Mr. Brown be permitted to purchase the service. Attorney Gibson reported that on the 15th day (the final day of the appeal "window") Massport Retirement Board filed for a review by CRAB.

Mr. Zecha asked Attorney Gibson to provide the Board with an update of the Reading appeal regarding the former MWRA employee. Counsel reported that MWRAERS was not a party to the case, but that the case involved an MWRA retiree, Ms. Janet Walsh, who was reinstated to a position for the Reading Municipal Light Department (RMLD), and repaid her retirement benefit to MWRAERS as permitted under s. 105 in order to re-join the System. The statute provides that the member is reinstated as of the date they enter into a repayment

agreement with the former system (in this case MWRAERS). Reading disputed the agreement the member signed with MWRAERS, and refused to begin the member's retirement contributions. The reinstatement date is significant because a member who is reinstated must complete five years of service in order to be able to retire with the benefit of the post-reinstatement service. The Executive Director for MWRAERS intervened on behalf of the member, securing a directive from the Executive Director at PERAC which stated that the statute clearly provides that her reinstatement is effective as of the date of the repayment agreement, that her contributions should have begun as of her first day of work with RMLD, and that Reading Retirement Board had no standing to contest an agreement to which they were not a party. In spite of the PERAC directive, Counsel for Reading Retirement Board, Attorney Michael Sacco, persisted and continued to deny the member reinstatement as of her first day of work, and the member, who is herself an attorney, filed an appeal appearing pro se. Attorney Gibson reported that the Magistrate ruled, as the (MWRAERS) Executive Director had asserted "from the get-go," that Reading must grant the three months of service they had denied and must now allow the member to purchase the time previously denied to her. Attorney Gibson stated that he has spoken to Ms. Walsh, and that she had high praise for the information and assistance she received from MWRAERS' Executive Director. Ms. Walsh is now arguing a group classification case wherein Reading Retirement Board changed the status of Municipal Light Department employees previously classified as Group 2 to Group 1.

Mr. Zecha asked Attorney Gibson to clear his schedule because rather than having lulls in the meeting, the Board intends to schedule the Legal Updates for 10:15 a.m. moving forward. Attorney Gibson signed off the call at 1:02 p.m., and stated he would get back to the Executive Director in regard to the LMCG agreement.

On a motion by Mr. Zecha and seconded by Mr. McKenna:

VOTED

to adjourn the July 27, 2023 meeting of the MWRA Employees' Retirement Board. 4-0, no opposition heard. The meeting was adjourned at 1:03 p.m.

The following communications were distributed to the Board for review:

PERAC MEMO #15/2023 – 91A PROSPER Tasks

PERAC MEMO #16/2023 – Mandatory Retirement Board Member Training – 3rd Quarter 2023

Direct Deposit Diversion Attempt

Cerberus Senior Leadership Transition

DALA Memo re. Updated Information for Inclusion in Appealable Decisions

The Board reserves the right to consider items on the agenda out of order. The listing of items is those reasonably anticipated by the Chair to be discussed received at least forty-eight (48) hours prior to the meeting. Not all items listed may in fact be discussed and other items not listed may also be brought up for discussion to the extent permitted by law. Items identified for discussion in Executive Session may be conducted in open session, in addition to, or in lieu of discussion in Executive Session.

Date of next scheduled Retirement Board meeting is Thursday, August 31, 2023, 10:00 a.m., Chelsea, MA.

Matthew Horan, Appointed Member/Acting Chair

ABSENT

James M. Fleming, Elected Member

Kevin McKenna, Elected Member

Brian Peña, Ex Officio Member

Frank Zecha, Fifth Member



Firm: RhumbLine Advisers Limited Partnership
Strategy/Product: MA S&P 500 Pooled Index Fund
Client: MWRA Employees Retirement System

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that all materials submitted in relation to MWRA Retirement System may be subject to disclosure consistent with Massachusetts Public Record laws.

Firm/Organization

1. Have there been any changes in ownership or management in the past year?

There were firm ownership changes in 2022 and 2023 due to planned retirements. Wayne Owen, former Chief Executive Officer and General Partner, retired on April 30, 2022. Denise D'Entremont, General Partner, succeeded him as Chief Executive Officer. With more than 25 years at the firm, Denise has served in numerous roles including President, Director of Marketing and Client Service, and Portfolio Manager. In addition, Kim McCant, former CFO and General Partner, retired on January 31, 2023. Denise D'Entremont purchased Kim McCant's ownership and the majority of Wayne Owen's ownership in the firm. RhumbLine continues to be 100% employee owned and is majority women owned. We do not anticipate any additional ownership or organizational changes.

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

Firm AUM (as of 6/30/2023): \$100,263.1MM

During the past 5 years (7/01/2018 to 6/30/2023), we gained 342 accounts totaling \$24,618.5MM in assets. During this same period, we lost 97 accounts totaling \$9,953.8MM in assets. This nets to an increase of 245 accounts with \$14,664.7MM in AUM.



3. Have there been any new or discontinued products in the past year?

RhumbLine's strategic plan is to stay the course and continue to offer plain vanilla, customized and smart beta index products to existing and new institutional clients. RhumbLine has the capacity to manage additional strategies and add client relationships without requiring significant additions to staff due to the efficiencies we have built into our business model. RhumbLine recently opened the following new products during the past year:

- 1.) Russell Custom 3000 80/20 Value (11/2022)
- 2.) S&P North America and Europe Clean Energy (6/2023)
- 3.) S&P Global Water (6/2023)

4. Are any products capacity constrained?

No. We do not have any capacity constraints on any of our products.

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

None.

6. Describe your diversity, equity and inclusion efforts with regard to the firm and its employees.

Please refer to attachment, *Diversity, Equity & Inclusion Policy Summary*.

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?

No.

2. Are there any expected changes to the team in the future (planned additions or departures)?

No.



Process

1. Have there been significant changes in any of the areas below in the past year?

- Identification of investment ideas
- Process for exploring and vetting ideas
- Portfolio trading practices including buy/sell rules
- Approach to portfolio monitoring and risk management

Not Applicable. We have not experienced any changes related to the areas listed above.

Philosophy

1. Describe recent changes in investment philosophy, if any.

Not Applicable. Our investment philosophy has remained the same since the inception of our firm (1990).

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).

Please refer to the following attachments:

Portfolio Holdings_20230630

Characteristics_20230630

GICS Sectors_20230630 (100% US exposure).

List strategy AUM, net flows and accounts gained/lost for the past 5 years.

S&P 500 Index Strategy (as of June 30, 2023): \$33,475.4MM

During the past 5 years (7/1/2018 to 6/30/2023) we gained a total of 64 accounts invested in the S&P 500 Index Strategy totaling \$3,262.9 MM in assets. We lost 19 accounts in the S&P 500 Index Strategy totaling \$441.5 MM in assets.



2. Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

Top 5 Investors in the S&P 500 Index Strategy:

- 1.) 25.6%
- 2.) 9.7%
- 3.) 9.0%
- 4.) 7.6%
- 5.) 6.2%

Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

Please refer to the following attachments:

Quarterly Portfolio Performance 10 Year Trailing_20230630

Yearly Portfolio Performance 10 Year Trailing_20230630

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

Not applicable. As an index manager our performance goal is to match the performance of the appropriate index (S&P 500 Index) regardless of market conditions.

3. Describe your market outlook and how strategy positioning is impacted by your views.

As a passive manager, strategy positioning is not impacted by market outlook.

4. Could you please include a slide in your presentation that shows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

Please refer to the attachment included in the presentation.

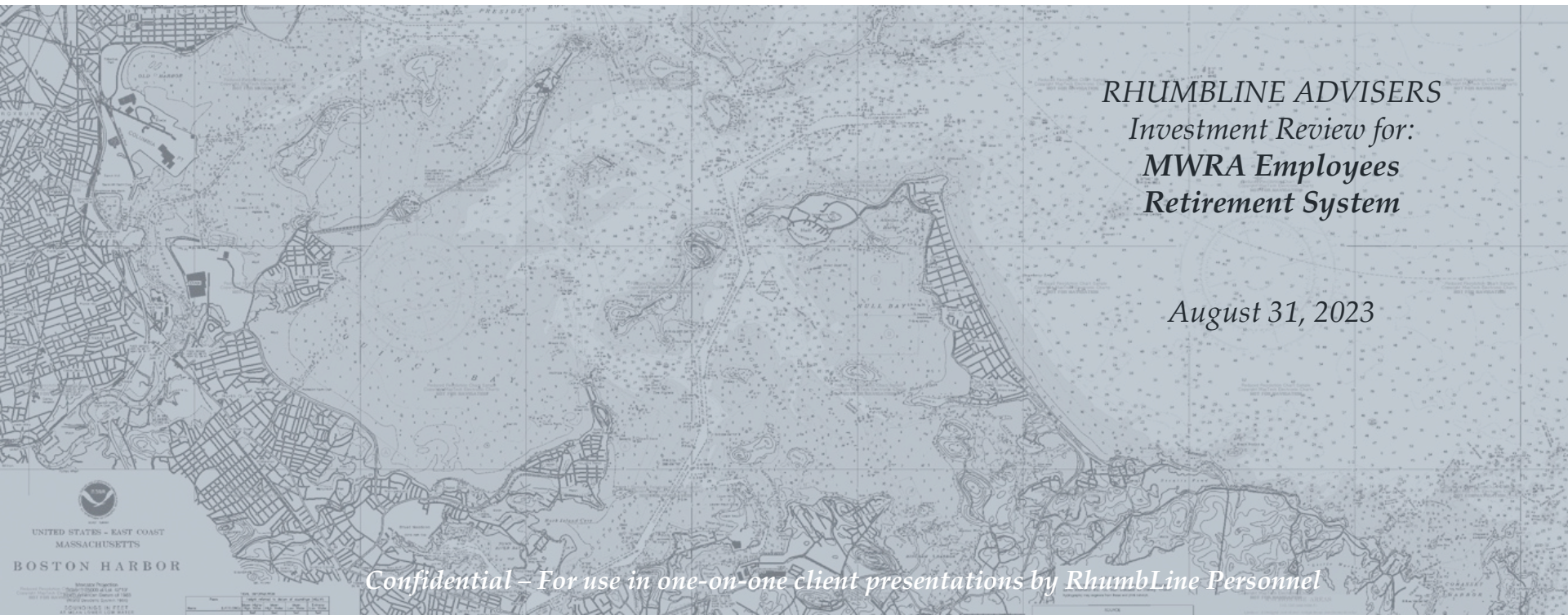


RhumbLine

Institutional Index Management

*RHUMBLINE ADVISERS
Investment Review for:
MWRA Employees
Retirement System*

August 31, 2023



Confidential – For use in one-on-one client presentations by RhumbLine Personnel



UNITED STATES - EAST COAST
MASSACHUSETTS
BOSTON HARBOR

Scale
1:50,000
SOUNDINGS IN FEET
AT MEAN LOW WATER

S&P 500 Pooled Index Fund

Date of Inception: February 28, 1997



PERFORMANCE (Gross of Management Fees thru 7/31/2023)

	<u>PORTFOLIO</u>	<u>S&P 500 INDEX</u>
2023 - YTD thru July	20.61%	20.65%
Trailing 1 Year	13.00%	13.02%
Trailing 3 Year (Annualized)	13.69%	13.72%
Trailing 5 Year (Annualized)	12.17%	12.20%
Trailing 10 Year (Annualized)	12.62%	12.66%
Since Inception (Annualized)	8.94%	8.88%

MARKET VALUE SUMMARY

Initial Contribution (2/28/1997):	\$5,000,000
Additional Contributions:	\$77,031,650
Withdrawals:	<u>\$78,684,842</u>
Net Investment:	\$3,346,808
Market Value (as of July 31, 2023):	<u>\$72,407,030.43</u>

PARTICIPANT SUMMARY

Total Market Value of RhumbLine's S&P 500 Pooled Index Fund as of 7/31/2023:	\$841.1MM
Number of Investors:	14
MWRA Employees Retirement System % of Ownership:	8.61%

COMMISSIONS & TRADING (8/1/2022 thru 7/31/2023)

Brokers Utilized:	Virtu (ITG), Instinet, Jefferies, Liquidnet, Cabrera, Penserra, Dash Financial, Academy Securities, Loop Capital & Siebert Williams Shank
Commissions:	\$5,364
Pro Rata Share:	\$462
Total Shares Traded:	737,669
Average Commission per Share:	0.7 ¢ /share

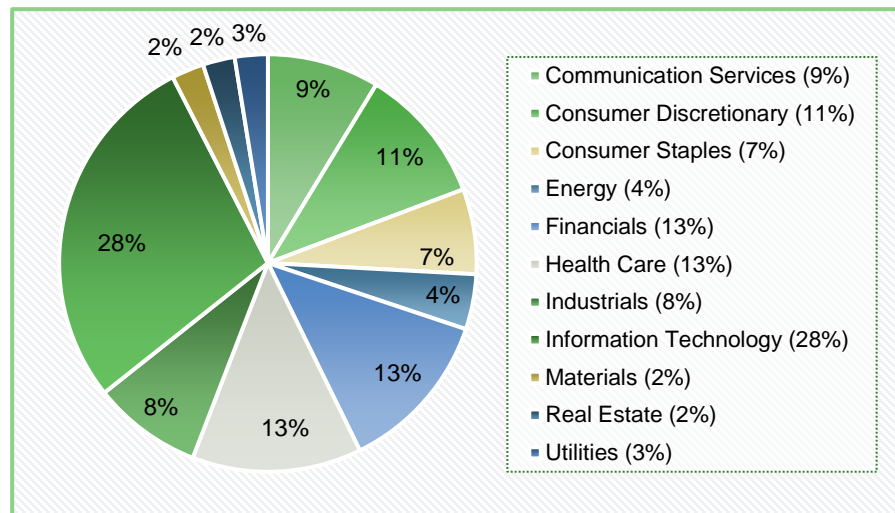
S&P 500 Pooled Index Fund

as of July 31, 2023



SECTOR RETURNS & WEIGHTS

<u>NAME</u>	<u># of STOCKS</u>	<u>2023 (YTD) RETURN</u>
Communication Services	23	45.74
Consumer Discretionary	53	37.25
Consumer Staples	37	3.56
Energy	23	1.47
Financials	72	7.76
Health Care	65	-0.39
Industrials	75	13.42
Information Technology	65	49.59
Materials	29	11.41
Real Estate	31	5.27
Utilities	<u>30</u>	-3.38
TOTALS:	504	



TOP 10 HOLDINGS

<u>NAME</u>	<u>WEIGHT</u>	<u>2023 (YTD) RETURN</u>	<u>MARKET CAP (\$MM)</u>
Apple Inc	7.50	51.64	3,108,221
Microsoft Corp	6.45	40.73	2,500,523
Amazon Com Inc	3.08	59.14	1,369,854
Nvidia Corp	2.99	219.84	1,149,534
Alphabet Inc Cl-A	2.04	50.43	790,480
Tesla Mtrs Inc	1.86	117.11	846,176
Meta Platforms Inc	1.82	164.75	709,128
Alphabet Inc Cl-C	1.76	50.02	794,401
Berkshire Hathaway Inc	1.62	13.94	458,245
UnitedHealth Group	<u>1.22</u>	-3.76	472,366
TOTALS:	30.34		

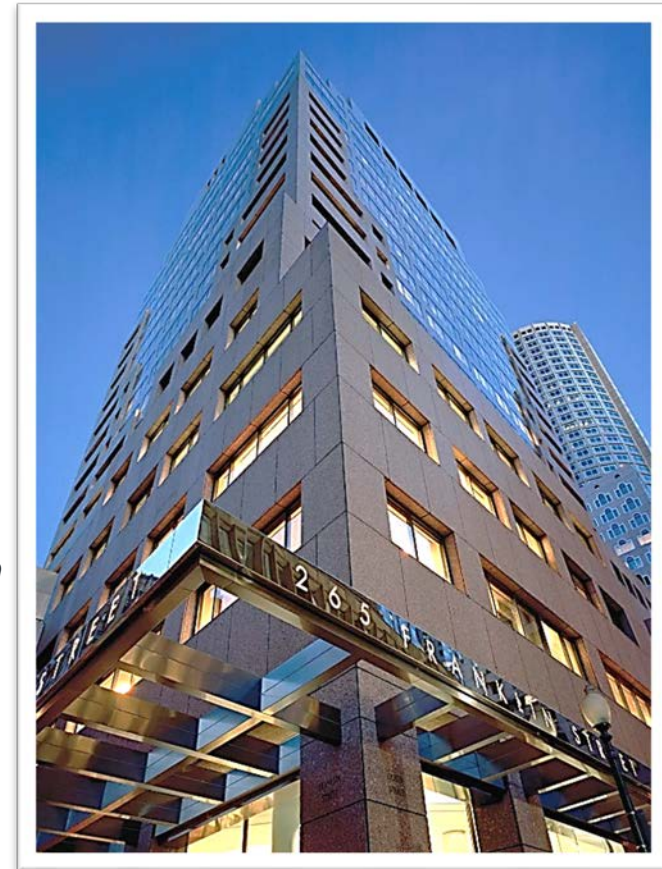
CHARACTERISTICS

	<u>PORTFOLIO</u>	<u>S&P 500 INDEX</u>
Number of Holdings	504	503
Weighted Market Cap (\$MM)	650,856	650,617
P/B Ratio	4.22	4.22
P/E Ratio	26.74	26.74
Dividend Yield (%)	1.51	1.51
5 Year Earnings Growth (%)	15.70	15.70
Return on Equity (%)	52.68	52.66
Beta	1.00	1.00

Current Profile

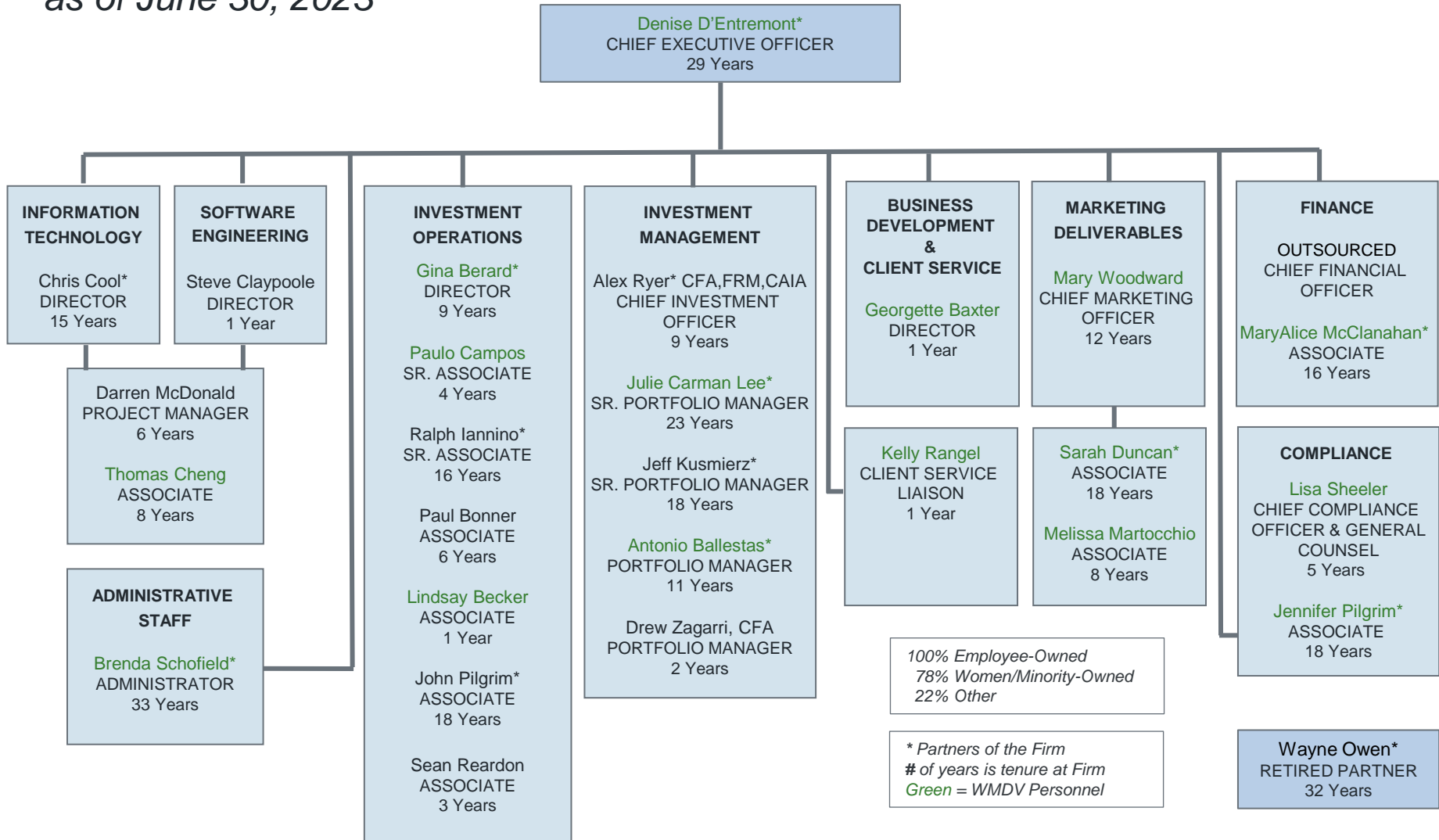
as of June 30, 2023

- Assets under management: \$100.3 Billion
- Asset classes include:
 - Domestic Equity
 - Domestic Fixed Income
 - International Equity
- Diversified client base:
 - 118 Public Funds: 287 Accounts/\$65.1 Billion
 - 95 Endowments/Foundations: 194 Accounts/\$8.2 Billion
 - 64 Corporate/ERISA: 123 Accounts/\$17.8 Billion
 - 42 Taft-Hartley: 72 Accounts/\$5.4 Billion
 - 1 Sub-Advisory: 5 Accounts/\$3.8 Billion



Organization Chart

as of June 30, 2023



RhumbLine Business Update

June 2023



Product Highlights

Launched and funded the following new products:

- Bloomberg Capital US 1-3 Yr. Government Bond
 - Bloomberg US Treasury
 - Bloomberg US Long Term Treasury
 - Bloomberg US Intermediate Treasury Bond
 - S&P 500 ESG
 - S&P 1000 Value
 - S&P North America & Europe Clean Energy
 - S&P Global Water Index
 - MSCI US
 - MSCI World
 - MSCI World ex-US
 - MSCI ACWI ESG Leaders
 - Russell 1000 HEDI Moderate TTE
 - TOBAM MaxDiv USA
 - Bloomberg TIPS (*Available as a Pooled or a SMA*)
 - Short Term Treas. Fund LLC (*Avail. as a Pooled or a SMA*)
 - FTSE Nareit All Equity (*Available as a Pooled or a SMA*)
 - MSCI ACWI Min. Volatility (*Avail. as a Pooled or a SMA*)
-

PUBLIC FUNDS

- Delaware River & Bay Authority (DE)
- Illinois Police Officers Pension (IL)
- LA Fire & Police Pension (CA)

CORPORATE FUNDS

- HC Capital Trust (PA)
- Nuvance Insurance Company
- RF Catalytic Capital, Inc. (NY)

ENDOWMENT/FOUNDATION FUNDS

- Episcopal Diocese of Indianapolis (IN)
- Pine Street Inn, Inc. (MA)
- Missouri Foundation for Health (MO)

TAFT-HARTLEY FUNDS

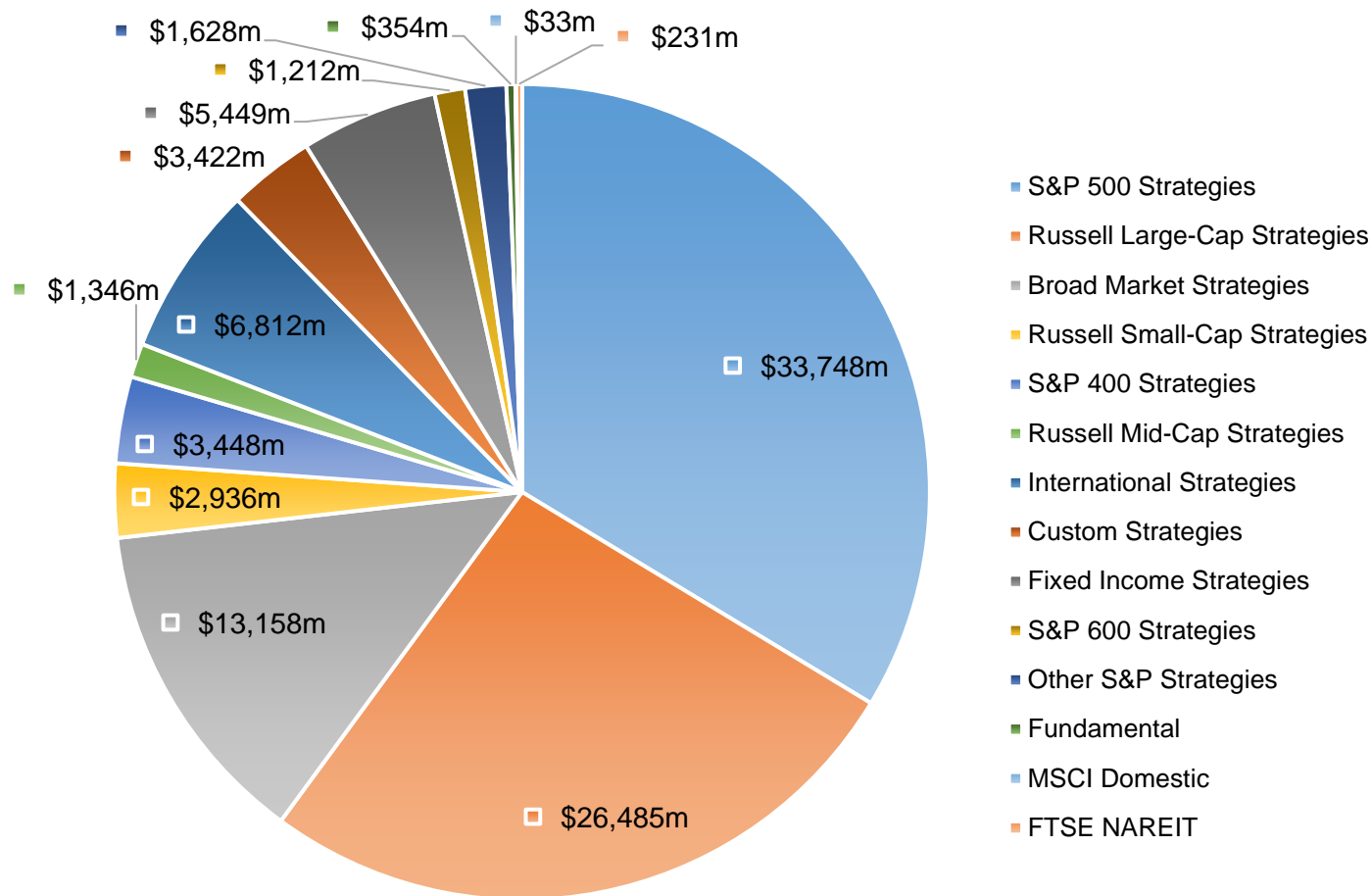
- Fulton Fish Market Pension Fund (NY)
- UBC Healthcare Trust Fund (WV)
- Southern States Millwright Reg. Council (AR)

**Above is a sampling of new client relationships or clients that have funded new products during 2022 and 2023. These clients were highlighted to show the breadth of clients we serve. It is not known whether these clients approve or disapprove of RhumbLine or its services.*

Breakdown of Strategies

\$100,263.1 MILLION

as of June 30, 2023



Please note that of the total assets under management, customized strategies are as follows:
 Socially Screened = \$7,807.4MM, Sudan-Free = \$8,281.7MM, Other Screens = \$19,190.5MM

Products



LARGE CAP INDEX STRATEGIES

- Equal-Weighted Mega Cap
- S&P 100
- S&P 500*
- S&P 500 ESG
- S&P 500 Equal Weighted*
- Russell Top 200
- Russell Top 200 Growth
- Russell 1000*
- Russell 1000 Growth*
- Russell 1000 Value*
- MSCI US

MID CAP INDEX STRATEGIES

- S&P 400*
- S&P 400 Growth
- Russell Mid Cap
- Russell Mid Cap Growth
- Russell Mid Cap Value

SMALL-MID CAP INDEX STRATEGIES

- S&P 1000
- S&P 1000 Value
- Russell 2500
- Russell 2500 Value
- Russell Small Cap Completeness

SMALL CAP INDEX STRATEGIES

- S&P 600*
- Russell 2000
- Russell 2000 Growth
- Russell 2000 Value

FIXED INCOME STRATEGIES

- Core Bond*
- Intermediate Government/Credit
- Bloomberg Capital US 5-7 Yr. Treasury Bond
- Bloomberg Capital US 1-3 Yr. Government
- Bloomberg US TIPS*
- Bloomberg US Government Long
- Bloomberg US Treasury
- Bloomberg US Long Term Treasury
- Bloomberg US Intermediate Treasury Bond
- Short Term Treasury Fund LLC*

INTERNATIONAL INDEX STRATEGIES

- S&P ADR
- MSCI EAFE*
- MSCI ACWI
- MSCI ACWI ex-US
- MSCI ACWI ex-Fossil Fuels
- MSCI ACWI Minimum Volatility*
- MSCI ACWI ESG Leaders
- MSCI Emerging Markets
- MSCI Japan Broad
- MSCI World
- MSCI World ex-Fossil Fuels
- MSCI World ex-US
- DJ Brookfield Global Infrastructure
- S&P Global Natural Resources
- S&P Global Low Volatility
- S&P North America & Europe Clean Energy
- S&P Global Water

BROAD MARKET INDEX STRATEGIES

- S&P 1500
- S&P 1500 ex-Fossil Fuels
- Russell 3000
- Wilshire 5000
- MSCI Global Investible US

ALTERNATIVE STRATEGIES

- Russell RAFI US
- Russell RAFI Global ex-US
- Russell 1000 HEDI Moderate TTE
- RhumbLine Multi-Factor
- Energy Select Sector
- FTSE Nareit All Equity REIT*
- S&P Global Low Volatility
- Multi-Strategy
- TOBAM MaxDiv USA

SPECIALTY STRATEGIES

- Completeness
- Customized Screens
- Customized Tax-Efficient
- Equal Weighted
- Fossil Fuel-Free
- High Quality
- Minimum Volatility
- Sudan-Free
- Tobacco-Free

*Also available through a pooled investment fund to qualified investors with at least \$5 million in assets.

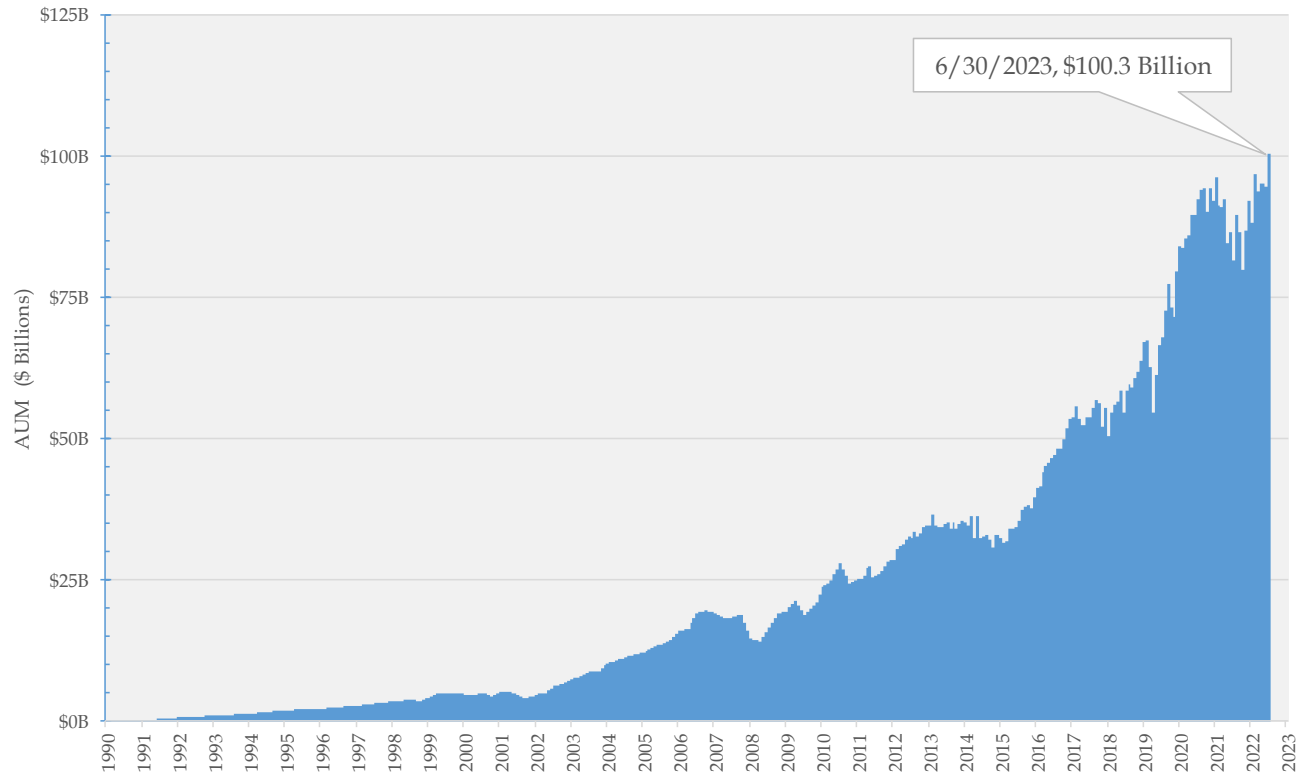
**Please contact us if interested in any index or strategy that is not listed.

Assets Under Management

as of June 30, 2023



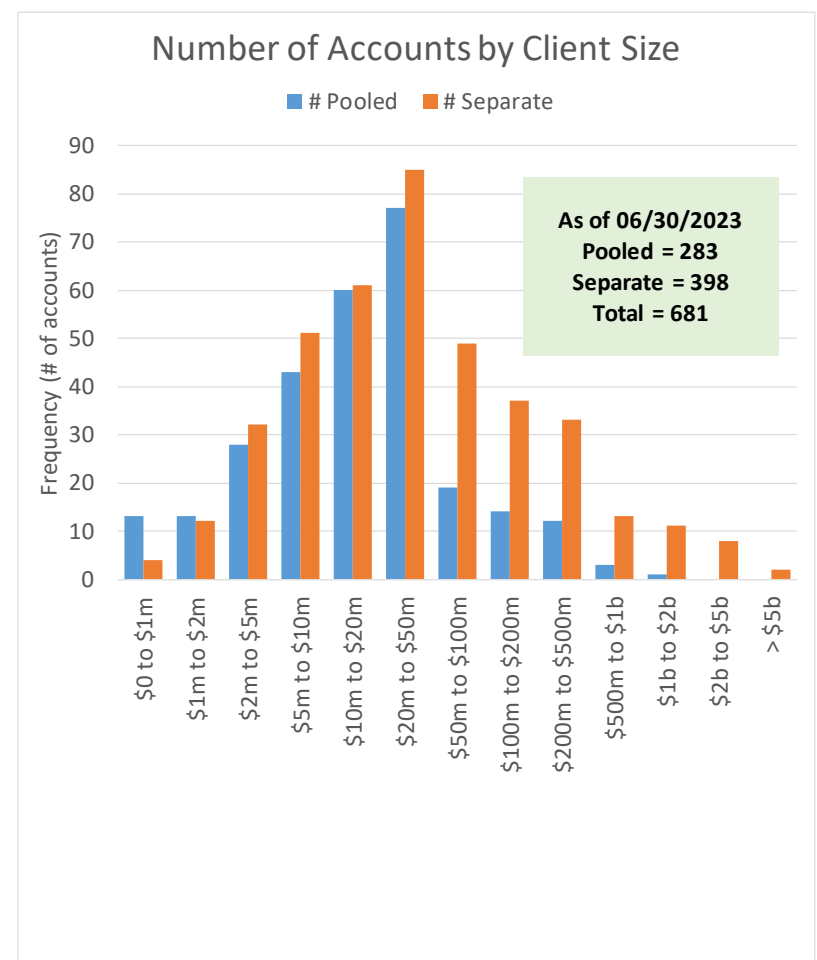
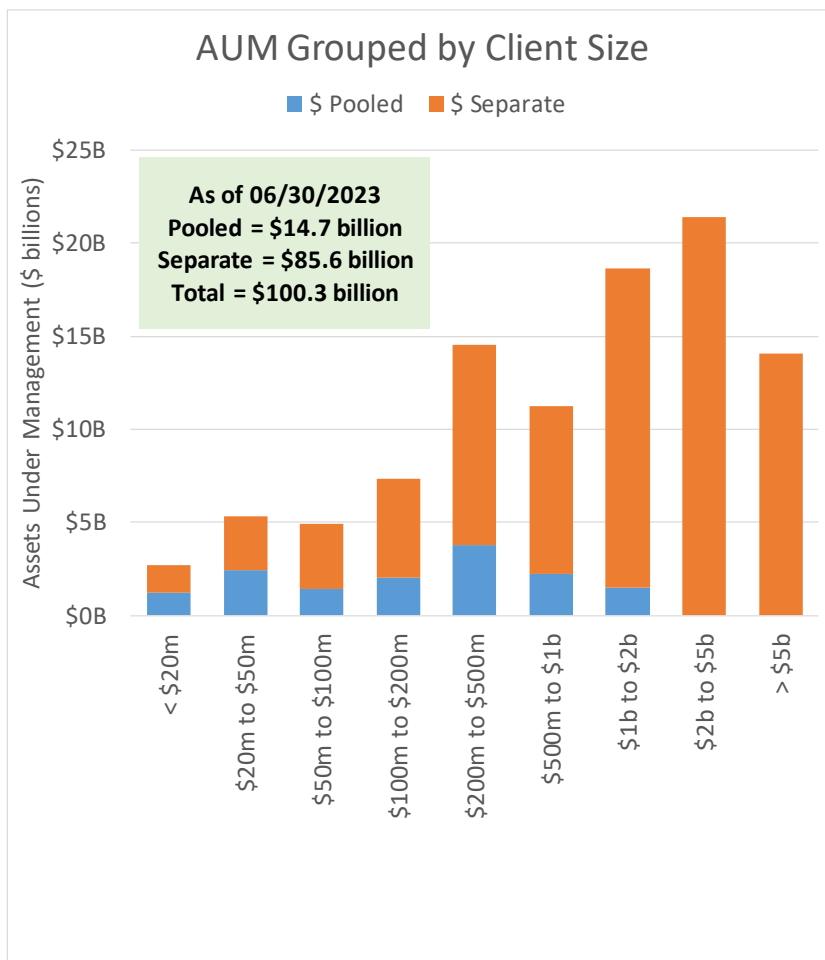
RhumbLine Advisers - Assets Under Management



Distribution of AUM

as of June 30, 2023

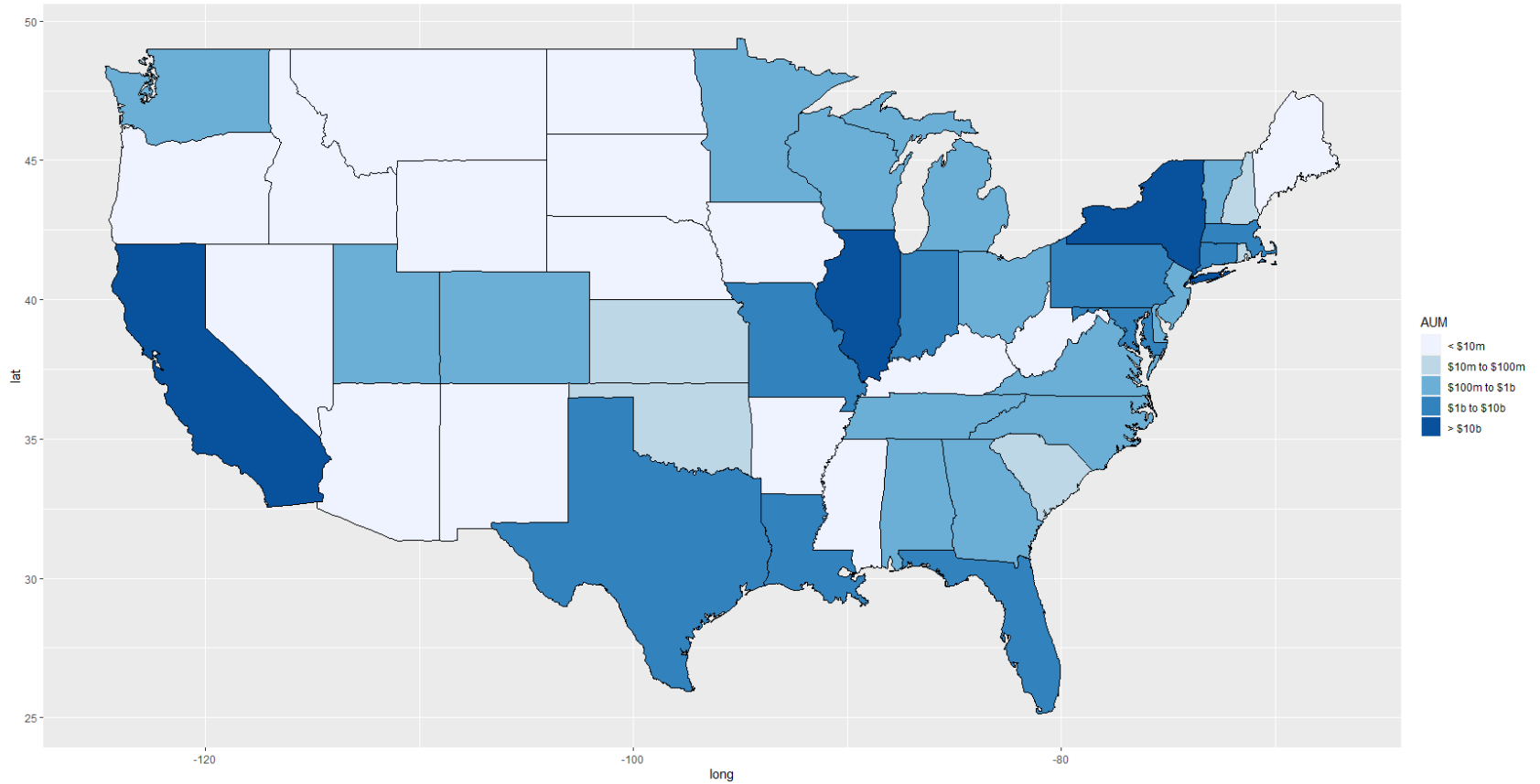
Sum and number of client accounts managed by RhumbLine, grouped into AUM bins.



AUM by State

as of June 30, 2023

RhumbLine Advisers: Assets Under Management, by State (as of 2023-06-30)



Composite Returns *as of March 31, 2023*

(Composite Gross & Net of Management Fees vs. Benchmark)



INDEX STRATEGIES	Inception Date	1st QTR 2023 (%)	1-YR Trailing (%)	5-YR Trailing (%)	Annualized		Strategy Assets as of 3/31/23 (\$M)
					10-YR Trailing (%)	Since Inception (%)	
LARGE CAP							
Equal Weighted Mega Cap Composite	07/11	4.85	-3.33	11.03	11.87	12.45	\$577.0
Equal Weighted Mega Cap Composite (Net-Fees)		4.82	-3.45	10.90	11.73	12.32	
BMK: Equal Weighted Mega Cap Index		4.85	-3.78	10.91	11.83	12.45	
S&P 500 Composite*	12/90	7.50	-7.66	11.17	12.23	10.48	\$31,856.5
S&P 500 Composite (Net-Fees)		7.47	-7.77	11.04	12.09	10.35	
BMK: S&P 500 Index		7.50	-7.73	11.19	12.24	10.34	
S&P 500 Equal Weighted Composite*	07/03	2.93	-6.26	9.95	11.40	10.72	\$201.2
S&P 500 Equal Weighted Composite (Net-Fees)		2.90	-6.37	9.82	11.27	10.58	
BMK: S&P 500 Equal Weighted Index		2.93	-6.31	9.96	11.40	10.67	
S&P 500 ESG Composite	04/22	8.07	-	-	-	8.07	\$69.8
S&P 500 ESG Composite (Net-Fees)		8.04	-	-	-	8.04	
BMK: S&P 500 ESG Index		8.09	-	-	-	8.09	
Russell Top 200 Composite	11/96	8.66	-8.27	11.91	12.75	8.48	\$2,071.0
Russell Top 200 Composite (Net-Fees)		8.63	-8.38	11.77	12.62	8.35	
BMK: Russell Top 200 Index		8.67	-8.27	11.92	12.77	8.43	
Russell 1000 Composite*	12/96	7.46	-8.35	10.85	11.99	8.85	\$15,244.1
Russell 1000 Composite (Net-Fees)		7.43	-8.46	10.72	11.86	8.72	
BMK: Russell 1000 Index		7.46	-8.39	10.87	12.01	8.82	
Russell 1000 Growth Composite*	12/99	14.34	-10.86	13.66	14.59	6.12	\$3,757.4
Russell 1000 Growth Composite (Net-Fees)		14.31	-10.98	13.52	14.45	5.99	
BMK: Russell 1000 Growth Index		14.37	-10.90	13.66	14.59	6.07	
Russell 1000 Value Composite*	05/96	1.01	-5.87	7.50	9.11	8.55	\$2,610.8
Russell 1000 Value Composite (Net-Fees)		0.98	-5.98	7.37	8.98	8.42	
BMK: Russell 1000 Value Index		1.01	-5.91	7.50	9.13	8.49	

* Product also available as a pooled investment fund to qualified investors with at least \$5M in assets.

The above composite returns are supplemental information to the GIPS® compliant performance presentations which are available upon request. Net-of-fees returns are calculated by deducting a model management fee of 12 basis points from the annual gross composite return. Please refer to the disclosure page at the back of this presentation for important disclosures.

Composite Returns *as of March 31, 2023*

(Composite Gross & Net of Management Fees vs. Benchmark)



INDEX STRATEGIES	Inception Date	Annualized						Strategy Assets as of 3/31/23 (\$M)
		1st QTR 2023 (%)	1-YR Trailing (%)	5-YR Trailing (%)	10-YR Trailing (%)	Since Inception (%)		
LARGE CAP <i>(continued)</i>								
Russell 1000 HEDI Moderate TTE Composite	02/20	6.42	-3.75	-	-	12.74	\$421.5	
Russell 1000 HEDI Moderate TTE Composite (Net-Fees)		6.39	-3.87	-	-	12.61		
BMK: Russell 1000 HEDI Moderate TTE Index		6.44	-3.76	-	-	12.78		
MSCI US Composite	10/19	7.71	-8.38	-	-	10.97	\$38.5	
MSCI US Composite (Net-Fees)		7.68	-8.49	-	-	10.84		
BMK: MSCI US Index		7.73	-8.47	-	-	11.00		
TOBAM MaxDiv USA Composite	03/21	1.91	-8.40	-	-	-3.79	\$80.9	
TOBAM MaxDiv USA Composite (Net-Fees)		1.88	-8.51	-	-	-3.90		
BMK: TOBAM MaxDiv USA Index		1.91	-8.48	-	-	-3.87		
MID CAP								
S&P 400 Composite*	07/95	3.81	-5.12	7.63	9.78	11.07	\$3,234.3	
S&P 400 Composite (Net-Fees)		3.78	-5.23	7.50	9.64	10.93		
BMK: S&P 400 Index		3.81	-5.12	7.67	9.80	10.98		
S&P 400 Growth Composite	09/17	5.06	-6.42	6.74	-	7.70	\$66.0	
S&P 400 Growth Composite (Net-Fees)		5.03	-6.54	6.61	-	7.57		
BMK: S&P 400 Growth Index		5.04	-6.41	6.78	-	7.74		
Russell Mid Cap Composite	12/05	4.05	-8.71	8.07	10.07	8.80	\$1,090.5	
Russell Mid Cap Composite (Net-Fees)		4.02	-8.82	7.94	9.93	8.67		
BMK: Russell Mid Cap Index		4.06	-8.78	8.05	10.05	8.78		
Russell Mid Cap Growth Composite	04/99	9.12	-8.53	9.09	11.17	7.85	\$290.1	
Russell Mid Cap Growth Composite (Net-Fees)		9.09	-8.65	8.96	11.04	7.72		
BMK: Russell Mid Cap Growth Index		9.14	-8.52	9.07	11.17	7.89		
Russell Mid Cap Value Composite	08/07	1.36	-9.08	6.60	8.83	7.54	\$3.5	
Russell Mid Cap Value Composite (Net-Fees)		1.33	-9.19	6.47	8.70	7.41		
BMK: Russell Mid Cap Value Index		1.32	-9.22	6.54	8.80	7.49		

* Product also available as a pooled investment fund to qualified investors with at least \$5M in assets.

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Composite Returns *as of March 31, 2023*



(Composite Gross & Net of Management Fees vs. Benchmark)

INDEX STRATEGIES	Inception Date	Annualized					
		1st QTR 2023 (%)	1-YR Trailing (%)	5-YR Trailing (%)	10-YR Trailing (%)	Since Inception (%)	Strategy Assets as of 3/31/23 (\$M)
MID-SMALL CAP							
S&P 1000 Composite	05/19	3.43	-5.66	-	-	7.52	\$710.3
S&P 1000 Composite (Net-Fees)		3.40	-5.78	-	-	7.39	
BMK: S&P 1000 Index		3.43	-6.24	-	-	7.38	
S&P 1000 Value Composite	12/20	2.64	-4.94	-	-	9.68	\$267.4
S&P 1000 Value Composite (Net-Fees)		2.61	-5.05	-	-	9.55	
BMK: S&P 1000 Value Index		2.66	-4.89	-	-	9.73	
Russell Small Cap Completeness Composite	05/07	5.95	-12.60	6.86	9.35	7.57	\$114.8
Russell Small Cap Completeness Composite (Net-Fees)		5.92	-12.73	6.72	9.22	7.44	
BMK: Russell Small Cap Completeness Index		5.88	-13.25	6.50	9.19	7.38	
SMALL CAP							
S&P 600* Composite	05/03	2.57	-8.81	6.28	9.89	10.41	\$1,178.9
S&P 600 Composite (Net-Fees)		2.54	-8.92	6.16	9.76	10.27	
BMK: S&P 600 Index		2.57	-8.82	6.30	9.87	10.34	
Russell 2000 Composite	12/04	2.72	-11.49	4.90	8.13	7.24	\$2,424.0
Russell 2000 Composite (Net-Fees)		2.69	-11.59	4.77	8.00	7.11	
BMK: Russell 2000 Index		2.74	-11.61	4.71	8.04	7.16	
Russell 2000 Growth Composite	03/05	6.06	-10.57	4.27	8.46	8.18	\$42.7
Russell 2000 Growth Composite (Net-Fees)		6.03	-10.68	4.15	8.33	8.05	
BMK: Russell 2000 Growth Index		6.07	-10.60	4.26	8.49	8.18	
Russell 2000 Value Composite	04/04	-0.61	-12.91	4.58	7.21	7.25	\$259.0
Russell 2000 Value Composite (Net-Fees)		-0.64	-13.02	4.45	7.08	7.12	
BMK: Russell 2000 Value Index		-0.66	-12.96	4.55	7.22	7.24	

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Composite Returns *as of March 31, 2023*

(Composite Gross & Net of Management Fees vs. Benchmark)



INDEX STRATEGIES	Inception Date	Annualized					
		1st QTR 2023 (%)	1-YR Trailing (%)	5-YR Trailing (%)	10-YR Trailing (%)	Since Inception (%)	Strategy Assets as of 3/31/23 (\$M)
BROAD MARKET							
S&P 1500 Composite	06/11	7.19	-7.44	-	-	11.58	\$87.5
S&P 1500 Composite (Net-Fees)		7.16	-7.56	-	-	11.45	
BMK: S&P 1500 Index		7.16	-7.61	-	-	11.52	
Russell 3000 Composite	12/09	7.17	-8.52	10.46	11.73	12.30	\$9,536.3
Russell 3000 Composite (Net-Fees)		7.14	-8.63	10.33	11.60	12.17	
BMK: Russell 3000 Index		7.18	-8.58	10.45	11.73	12.27	
Wilshire 5000 Composite	04/07	7.25	-8.50	10.79	11.97	8.82	\$1,819.8
Wilshire 5000 Composite (Net-Fees)		7.21	-8.61	10.66	11.83	8.69	
BMK: Wilshire 5000 Index		7.29	-8.62	10.71	11.91	8.72	
Russell RAFI US Composite	04/14	3.41	-3.95	10.98	-	10.24	\$310.7
Russell RAFI US Composite (Net-Fees)		3.38	-4.07	10.85	-	10.11	
BMK: Russell RAFI US Index		3.40	-3.96	11.07	-	10.30	
INTERNATIONAL							
DJ Brookfield Gbl. Infrastructure Composite	06/15	2.61	-6.45	6.76	-	5.80	\$228.9
DJ Brookfield Gbl. Infrastructure Composite (Net-Fees)		2.58	-6.56	6.63	-	5.67	
BMK: DJ Brookfield Gbl. Infrastructure NTR USD Index		2.49	-7.26	5.96	-	5.05	
MSCI Emerging Markets Composite	01/13	5.39	-7.66	-0.94	2.22	1.83	\$280.4
MSCI Emerging Markets Composite (Net-Fees)		5.36	-7.77	-1.06	2.10	1.71	
BMK: MSCI Emerging Markets NTR USD Index		3.95	-10.70	-0.91	2.00	1.66	
MSCI ACWI ex-US Composite	04/14	6.95	-4.69	2.56	-	3.31	\$2,642.8
MSCI ACWI ex-US Composite (Net-Fees)		6.92	-4.81	2.44	-	3.18	
BMK: MSCI ACWI ex-US NTR USD Index		6.87	-5.07	2.47	-	3.18	
MSCI ACWI Minimum Volatility Composite*	06/21	1.87	-5.24	-	-	-1.68	\$175.4
MSCI ACWI Minimum Volatility Composite (Net-Fees)		1.84	-5.35	-	-	-1.80	
BMK: MSCI ACWI Minimum Volatility NTR USD Index		1.53	-6.10	-	-	-1.80	

* Product also available as a pooled investment fund to qualified investors with at least \$5M in assets.

The above composite returns are supplemental information to the GIPS® compliant performance presentations which are available upon request. Net-of-fees returns are calculated by deducting a model management fee of 12 basis points from the annual gross composite return. Please refer to the disclosure page at the back of this presentation for important disclosures.

Composite Returns *as of March 31, 2023*

(Composite Gross & Net of Management Fees vs. Benchmark)



INDEX STRATEGIES	Inception Date	Annualized					
		1st QTR 2023 (%)	1-YR Trailing (%)	5-YR Trailing (%)	10-YR Trailing (%)	Since Inception (%)	Strategy Assets as of 3/31/23 (\$M)
INTERNATIONAL (continued)							
MSCI EAFE Composite*	05/14	8.48	-1.05	3.80	-	3.65	\$1,029.6
MSCI EAFE Composite (Net-Fees)		8.45	-1.17	3.68	-	3.53	
BMK: MSCI EAFE NTR USD Index		8.47	-1.38	3.52	-	3.40	
Russell RAFI Global ex-US Composite	04/14	6.47	-2.49	3.42	-	3.93	\$26.2
Russell RAFI Global ex-US Composite (Net-Fees)		6.44	-2.61	3.29	-	3.81	
BMK: Russell RAFI Global ex-US NTR USD Index		6.50	-2.27	3.27	-	3.86	
SciBeta Dev. ex-US Val. Div. Multi-Strategy Composite	02/17	6.88	-2.88	2.67	-	5.40	\$1,267.7
SciBeta Dev. ex-US Val. Div. Multi-Strategy Comp. (Net-Fees)		6.84	-2.99	2.55	-	5.27	
BMK: SciBeta Dev. ex-US Val. Div. Multi-Strat. NTR USD Index		6.77	-3.40	2.45	-	5.15	
FIXED INCOME							
Core Bond Composite*	03/05	2.89	-4.74	0.90	1.33	3.16	\$1,560.1
Core Bond Composite (Net-Fees)		2.84	-4.87	0.78	1.21	3.03	
BMK: Bloomberg US Aggregate Bond Index		2.96	-4.78	0.91	1.36	3.17	
Bloomberg US TIPS Composite*	12/12	3.34	-6.00	2.94	1.49	1.41	\$2,164.2
Bloomberg US TIPS Composite (Net-Fees)		3.32	-6.10	2.82	1.37	1.29	
BMK: Bloomberg US TIPS Index		3.34	-6.06	2.94	1.48	1.41	
Bloomberg US Government Long Composite	12/19	6.15	-15.88	-	-	-5.15	\$475.3
Bloomberg US Government Long Composite (Net-Fees)		6.11	-15.98	-	-	-5.26	
BMK: Bloomberg US Government Long Index		6.16	-15.94	-	-	-5.12	
Bloomberg US Intermediate Treasury Bond Composite	05/20	2.23	-1.52	-	-	-2.59	\$142.2
Bloomberg US Inter. Treasury Bond Composite (Net-Fees)		2.20	-1.63	-	-	-2.70	
BMK: Bloomberg US Intermediate Treasury Bond Index		2.27	-1.54	-	-	-2.62	
Bloomberg US Long-Term Treasury Composite	07/21	6.16	-16.26	-	-	-15.91	\$144.3
Bloomberg US Long-Term Treasury Composite (Net-Fees)		6.12	-16.36	-	-	-16.01	
BMK: Bloomberg US Long-Term Treasury Index		6.17	-16.00	-	-	-15.83	

* Product also available as a pooled investment fund to qualified investors with at least \$5M in assets.

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Composite Returns *as of March 31, 2023*

(Composite Gross & Net of Management Fees vs. Benchmark)



INDEX STRATEGIES	Inception Date	1st QTR 2023 (%)	1-YR Trailing (%)	Annualized				Strategy Assets as of 3/31/23 (\$M)
				5-YR Trailing (%)	10-YR Trailing (%)	Since Inception (%)		
FIXED INCOME <i>(continued)</i>								
ICE BofA US 3-Month Treasury Bill Composite*	11/20	-	-	-	-	0.40	\$302.9	
ICE BofA US 3-Month Treasury Bill Composite (Net-Fees)		-	-	-	-	0.39		
BMK: ICE BofA US 3-Month Treasury Bill Index		-	-	-	-	0.43		
SPECIALTY								
Real Estate - FTSE Nareit All Equity REIT Composite*	05/13	1.73	-19.35	6.26	-	6.58	\$227.3	
Real Estate - FTSE Nareit All Equity REIT Comp. (Net-Fees)		1.70	-19.45	6.13	-	6.45		
BMK: Real Estate - FTSE Nareit All Equity REIT Index		1.74	-19.40	6.25	-	6.56		

* Product also available as a pooled investment fund to qualified investors with at least \$5M in assets.

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Performance

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Thank you for your business and continued support
of our firm!*

RhumblLine
Institutional Index Management



THE RHUMBLINE TEAM

UNITED STATES - EAST COAST
MASSACHUSETTS
BOSTON HARBOR

RhumbLine Advisers
PERFORMANCE HISTORY
GROSS OF FEES
MWRA Employees' Retirement System
S&P 500 Pooled Index Fund - L801
RhumbLine Account 1mmwra
From 06-30-2013 to 06-30-2023

			<u>PORTFOLIO</u>	<u>INDEX</u>
6/30/2013	to	6/30/2014	24.472	24.609
6/30/2014	to	6/30/2015	7.404	7.423
6/30/2015	to	6/30/2016	3.958	3.993
6/30/2016	to	6/30/2017	17.866	17.896
6/30/2017	to	6/30/2018	14.339	14.374
6/30/2018	to	6/30/2019	10.365	10.417
6/30/2019	to	6/30/2020	7.514	7.505
6/30/2020	to	6/30/2021	40.744	40.794
6/30/2021	to	6/30/2022	-10.617	-10.616
6/30/2022	to	6/30/2023	19.567	19.594

RhumbLine Advisers
 PERFORMANCE HISTORY
 GROSS OF FEES - QTRLY
MWRA Employees' Retirement System
S&P 500 Pooled Index Fund - L801
 RhumbLine Account 1mmwra
 From 06-30-2013 to 06-30-2023

			<u>PORTFOLIO</u>	<u>INDEX</u>
6/30/2013	to	9/30/2013	5.199	5.245
9/30/2013	to	12/31/2013	10.487	10.513
12/31/2013	to	3/31/2014	1.779	1.807
3/31/2014	to	6/30/2014	5.218	5.234
6/30/2014	to	9/30/2014	1.133	1.128
9/30/2014	to	12/31/2014	4.926	4.933
12/31/2014	to	3/31/2015	0.951	0.951
3/31/2015	to	6/30/2015	0.262	0.278
6/30/2015	to	9/30/2015	-6.425	-6.438
9/30/2015	to	12/31/2015	7.044	7.043
12/31/2015	to	3/31/2016	1.318	1.348
3/31/2016	to	6/30/2016	2.435	2.455
6/30/2016	to	9/30/2016	3.853	3.852
9/30/2016	to	12/31/2016	3.821	3.824
12/31/2016	to	3/31/2017	6.048	6.066
3/31/2017	to	6/30/2017	3.082	3.088
6/30/2017	to	9/30/2017	4.468	4.48
9/30/2017	to	12/31/2017	6.633	6.645
12/31/2017	to	3/31/2018	-0.757	-0.759
3/31/2018	to	6/30/2018	3.424	3.434
6/30/2018	to	9/30/2018	7.696	7.711
9/30/2018	to	12/31/2018	-13.502	-13.52
12/31/2018	to	3/31/2019	13.605	13.648
3/31/2019	to	6/30/2019	4.288	4.304
6/30/2019	to	9/30/2019	1.699	1.698
9/30/2019	to	12/31/2019	9.054	9.07
12/31/2019	to	3/31/2020	-19.54	-19.598
3/31/2020	to	6/30/2020	20.482	20.543
6/30/2020	to	9/30/2020	8.931	8.929
9/30/2020	to	12/31/2020	12.122	12.148
12/31/2020	to	3/31/2021	6.174	6.175
3/31/2021	to	6/30/2021	8.534	8.549
6/30/2021	to	9/30/2021	0.572	0.582

9/30/2021	to	12/31/2021	11.018	11.027
12/31/2021	to	3/31/2022	-4.601	-4.599
3/31/2022	to	6/30/2022	-16.085	-16.101
6/30/2022	to	9/30/2022	-4.873	-4.883
9/30/2022	to	12/31/2022	7.555	7.561
12/31/2022	to	3/31/2023	7.487	7.497
3/31/2023	to	6/30/2023	8.723	8.742

RhumbLine Advisers
PORTFOLIO APPRAISAL

RhumbLine Group Trust - Massachusetts S&P 500 Pooled Trust

State Street Acct# L801

30-Jun-23

<u>Quantity</u>	<u>Security</u>	<u>Security Symbol</u>	<u>Cusip</u>	<u>Price</u>	<u>Market Value</u>
COMMON STOCK					
11851	3M CO COM	mmm	88579Y101	100.09	1186166.59
14677	5TH 3RD BANCORP COM	fitb	316773100	26.21	384684.17
37249	ABBOTT LAB COM	abt	002824100	109.02	4060885.96
37792	ABBVIE INC COM USD0.01	abbv	00287Y109	134.73	5091716.16
13528	ACCENTURE PLC CLASS A ORDINARY SHARES	acn	G1151C101	308.58	4174470.24
15332	ACTIVISION BLIZZARD INC COM STK	atvi	00507V109	84.3	1292487.6
9826	ADOBE INC	adbe	00724F101	488.99	4804815.74
1275	ADVANCE AUTO PTS INC COM	aap	00751Y106	70.3	89632.5
34495	ADVANCED MICRO DEVICES INC	amd	007903107	113.91	3929325.45
14287	AES CORP COM	aes	00130H105	20.73	296169.51
11778	AFLAC INC COM	afl	001055102	69.8	822104.4
6369	AGILENT TECHNOLOGIES INC COM	a	00846U101	120.25	765872.25
4758	AIR PRODS & CHEMS INC COM	apd	009158106	299.53	1425163.74
3260	AKAMAI TECHNOLOGIES	akam	00971t101	89.87	292976.2
2697	ALASKA AIR GROUP INC COM	alk	011659109	53.18	143426.46
2527	ALBEMARLE CORP COM	alb	012653101	223.09	563748.43
3404	ALEXANDRIA REAL ESTATE EQUITIES INC COM	are	015271109	113.49	386319.96
1524	ALIGN TECHNOLOGY INC	algn	016255101	353.64	538947.36
1878	ALLEGION PUB LTD CO ORD SHS	alle	G0176J109	120.02	225397.56
5365	ALLIANT ENERGY CORP COM	lnt	018802108	52.48	281555.2
5661	ALLSTATE CORP COM	all	020002101	109.04	617275.48
127261	ALPHABET INC CAP STK CL A	googl	02079K305	119.7	15233141.7
109469	ALPHABET INC CAP STK CL C	goog	02079K107	120.97	13242464.93

38237	ALTRIA GROUP INC COM	mo	02209S103	45.3	1732136.1
191213	AMAZON.COM INC COM	amzn	023135106	130.36	24926526.68
31519	AMCOR PLC	amcr	G0250X107	9.98	314559.62
11062	AMER ELEC PWR CO INC COM	aep	025537101	84.2	931420.4
5524	AMEREN CORP COM	aee	023608102	81.67	451145.08
13895	AMERICAN AIRLINES INC COM USD1	aal	02376R102	17.94	249276.3
12736	AMERICAN EXPRESS CO	axp	025816109	174.2	2218611.2
15503	AMERICAN INTERNATIONAL GROUP INC COM	aig	026874784	57.54	892042.62
9983	AMERICAN TOWER CORP	amt	03027X100	193.94	1936103.02
4170	AMERICAN WTR WKS CO INC NEW COM	awk	030420103	142.75	595267.5
2232	AMERIPRISE FINL INC COM	amp	03076C106	332.16	741381.12
3487	AMERISOURCEBERGEN CORP COM	abc	03073E105	192.43	671003.41
4939	AMETEK INC NEW COM	ame	031100100	161.88	799525.32
11446	AMGEN INC COM	amgn	031162100	222.02	2541240.92
12774	AMPHENOL CORP NEW CL A	aph	032095101	84.95	1085151.3
10836	ANALOG DEVICES INC COM	adi	032654105	194.81	2110961.16
1861	ANSYS INC	anss	03662q105	330.27	614632.47
4375	AON PLC	aon	G0403H108	345.2	1510250
6610	APA CORP	apa	03743Q108	34.17	225863.7
316708	APPLE INC COM STK	aapl	037833100	193.97	61431850.76
18103	APPLIED MATERIALS INC COM	amat	038222105	144.54	2616607.62
5794	APTIV PLC	aptv	G6095L109	102.09	591509.46
7975	ARCH CAP GROUP LTD F	acgl	g0450a105	74.85	596928.75
11666	ARCHER-DANIELS-MIDLAND CO COM	adm	039483102	75.56	881482.96
7926	ARCONIC CORP	hwm	443201108	49.56	392812.56
5329	ARISTA NETWORKS INC COM	anet	040413106	162.06	863617.74
1157	ASSURANT INC COM	aiz	04621X108	125.72	145458.04
153138	AT&T INC COM	t	00206R102	15.95	2442551.09
3017	ATMOS ENERGY CORP COM	ato	049560105	116.34	350997.78
4587	AUTODESK INC	adsk	052769106	204.61	938546.07
8849	AUTOMATIC DATA PROCESSING INC COM	adp	053015103	219.79	1944921.71
395	AUTOZONE INC COM	azo	053332102	2493.36	984877.2
2991	AVALONBAY CMNTYS REIT	avb	053484101	189.27	566106.57
1748	AVERY DENNISON CORP COM	avy	053611109	171.8	300306.4

1452	AXON ENTERPRISE INC	axon	05464C101	195.12	283314.24
21563	BAKER HUGHES CO	bkr	05722G100	31.61	681606.43
6758	BALL CORP COM	ball	058498106	58.21	393383.18
15382	BANK NEW YORK MELLON CORP COM STK	bk	064058100	44.52	684806.64
148514	BANK OF AMERICA CORP	bac	060505104	28.69	4260866.66
4917	BATH & BODY WORKS INC	bbwi	070830104	37.5	184387.5
10772	BAXTER INTL INC COM	bax	071813109	45.56	490772.32
6084	BECTON DICKINSON & CO COM	bdx	075887109	264.01	1606236.84
4301	BERKLEY W R CORP COM	wrb	084423102	59.56	256167.56
38200	BERKSHIRE HATHAWAY INC DEL CL B NEW	brk.b	084670702	341	13026200
4168	BEST BUY INC COM STK	bby	086516101	81.95	341567.6
463	BIO-RAD LABS INC CLASS A	bio	090572207	379.12	175532.56
3356	BIO-TECHNE CORP COM	tech	09073M104	81.63	273950.28
3101	BIOGEN INC.	biib	09062X103	284.85	883319.85
3208	BLACKROCK INC COM STK	blk	09247X101	691.14	2217177.12
12070	BOEING CO COM	ba	097023105	211.16	2548701.2
792	BOOKING HOLDINGS INC	bkng	09857L108	2700.33	2138661.36
5040	BORG WARNER INC COM	bwa	099724106	48.91	246506.4
30835	BOSTON SCIENTIFIC CORP COM	bsx	101137107	54.09	1667865.15
45002	BRISTOL MYERS SQUIBB CO COM	bmy	110122108	63.95	2877877.9
8931	BROADCOM INC	avgo	11135F101	867.43	7747017.61
2508	BROADRIDGE FINL SOLUTIONS INC COM STK	br	11133T103	165.63	415400.04
3910	BROWN-FORMAN INC CL B NON-VTG COM	bf.b	115637209	66.78	261109.8
5012	BROWN & BROWN INC COM	bro	115236101	68.84	345026.08
3050	BSTN PPTYS INC	bxp	101121101	57.59	175649.5
3237	BUNGE LIMITED	bg	g16962105	94.35	305410.95
2534	C H ROBINSON WORLDWIDE INC COM NEW COM NE	chrw	12541W209	94.35	239082.9
5841	CADENCE DESIGN SYSTEMS INC	cdns	127387108	234.52	1369831.32
4585	CAESARS ENTERTAINMENT INC	czr	12769G100	50.97	233697.45
2278	CAMDEN PPTY TR SH BEN INT	cpt	133131102	108.87	248005.86
4324	CAMPBELL SOUP CO COM	cpb	134429109	45.71	197650.04
8178	CAP 1 FNCL COM	cof	14040H105	109.37	894427.86
5453	CARDINAL HLTH INC	cah	14149Y108	94.57	515690.21
3434	CARMAX INC COM	kmx	143130102	83.7	287425.8

21594	CARNIVAL CORP COM PAIRED	ccl	143658300	18.83	406615.02
17882	CARRIER GLOBAL CORP	carr	14448C104	49.71	888914.22
3833	CATALENT INC	ctlt	148806102	43.36	166198.88
11039	CATERPILLAR INC COM	cat	149123101	246.05	2716145.95
2271	CBOE GLOBAL MARKETS INC	cboe	12503M108	138.01	313420.71
6658	CBRE GROUP INC	cbre	12504L109	80.71	537367.18
2887	CDW CORP COM	cdw	12514G108	183.5	529764.5
2147	CELANESE CORP DEL COM SER A STK	ce	150870103	115.8	248622.6
11755	CENTENE CORP	cnc	15135b101	67.45	792874.75
13465	CENTERPOINT ENERGY INC COM	cnp	15189T107	29.15	392504.75
3309	CERIDIAN HCM HOLDING INC	cday	15677J108	66.97	221603.73
4224	CF INDS HLDGS INC COM	cf	125269100	69.42	293230.08
1087	CHARLES RIV LABORATORIES INTL INC	crl	159864107	210.25	228541.75
2226	CHARTER COMMUNICATIONS INC NEW CL A	chtr	16119P108	367.37	817765.62
37329	CHEVRON CORP COM	cvx	166764100	157.35	5873718.15
591	CHIPOTLE MEXICAN GRILL INC CL A	cmg	169656105	2139	1264149
8872	CHUBB LTD COM	cb	H1467J104	192.56	1708392.32
5258	CHURCH & DWIGHT INC COM	chd	171340102	100.23	527009.34
6338	CIGNA GROUP	ci	125523100	280.6	1778442.8
3389	CIN FNCL CORP COM	cinf	172062101	97.32	329817.48
1852	CINTAS CORP COM	ctas	172908105	497.08	920592.16
87736	CISCO SYSTEMS INC	cscs	17275R102	51.74	4539460.64
41697	CITIGROUP INC COM NEW COM NEW	c	172967424	46.04	1919729.88
10367	CITIZENS FINL GROUP INC COM	cfg	174610105	26.08	270371.36
2633	CLOROX CO COM	clx	189054109	159.04	418752.32
7705	CME GROUP INC COM	cme	12572Q105	185.29	1427659.45
6206	CMS ENERGY CORP COM	cms	125896100	58.75	364602.5
83372	COCA COLA CO COM	ko	191216100	60.22	5020661.84
10870	COGNIZANT TECH SOLUTIONS CRP COM	ctsh	192446102	65.28	709593.6
17770	COLGATE-PALMOLIVE CO COM	cl	194162103	77.04	1369000.8
89097	COMCAST CORP NEW-CL A	cmcsa	20030N101	41.55	3701980.35
2797	COMERICA INC COM	cma	200340107	42.36	118480.92
10266	CONAGRA BRANDS INC	cag	205887102	33.72	346169.52
25920	CONOCOPHILLIPS COM	cop	20825C104	103.61	2685571.2

7423	CONS EDISON INC COM	ed	209115104	90.4	671039.2
3454	CONSTELLATION BRANDS INC CL A	stz	21036P108	246.13	850133.02
6949	CONSTELLATION ENERGY	ceg	21037T109	91.55	636180.95
1055	COOPER COS INC COM NEW COM NEW	coo	216648402	383.43	404518.65
9188	COPART INC	cppt	217204106	91.21	838037.48
16414	CORNING INC COM	glw	219350105	35.04	575146.56
15227	CORTEVA INC	ctva	22052L104	57.3	872507.1
8756	COSTAR GROUP INC COM	csgp	22160N109	89	779284
9500	COSTCO WHOLESALE CORP NEW COM	cost	22160K105	538.38	5114610
16225	COTERRA ENERGY INC	ctra	127097103	25.3	410492.5
9321	CROWN CASTLE INC	cci	22822V101	113.94	1062034.74
43549	CSX CORP COM	csx	126408103	34.1	1485020.9
3041	CUMMINS INC	cmi	231021106	245.16	745531.56
27462	CVS HEALTH CORP COM	cvs	126650100	69.13	1898448.06
6648	D R HORTON INC COM	dhi	23331A109	121.69	808995.12
14111	DANAHER CORP COM	dhr	235851102	240	3386640
2590	DARDEN RESTAURANTS INC COM	dri	237194105	167.08	432737.2
1183	DAVITA HEALTHCARE PT	dva	23918k108	100.47	118856.01
5776	DEERE & CO COM	de	244199105	405.19	2340377.44
13714	DELTA AIR LINES INC DEL COM NEW COM NEW	dal	247361702	47.54	651963.56
4609	DENTSPLY SIRONA INC COM	xray	24906P109	40.02	184452.18
13745	DEVON ENERGY CORP NEW COM	dvn	25179M103	48.34	664433.3
8317	DEXCOM INC COM	dxcn	252131107	128.51	1068817.67
3879	DIAMONDBACK ENERGY	fang	25278x109	131.36	509545.44
6214	DIGITAL RLTY TR INC COM	dlr	253868103	113.87	707588.18
5439	DISCOVER FINL SVCS COM STK	dfs	254709108	116.85	635547.15
4693	DOLLAR GEN CORP NEW COM	dg	256677105	169.78	796777.54
4454	DOLLAR TREE INC COM	dltr	256746108	143.5	639149
17939	DOMINION ENERGY INC	d	25746U109	51.79	929060.81
757	DOMINOS PIZZA INC COM	dpz	25754A201	336.99	255101.43
3022	DOVER CORP COM	dov	260003108	147.65	446198.3
15153	DOW INC	dow	260557103	53.26	807048.78
4144	DTE ENERGY CO COM	dte	233331107	110.02	455922.88
16508	DUKE ENERGY CORP NEW COM NEW COM NEW	duk	26441C204	89.74	1481427.92

9832	DUPONT DE NEMOURS INC		dd	26614N102	71.44	702398.08
4953	DXC TECHNOLOGY CO		dxc	23355L106	26.72	132344.16
2583	EASTMAN CHEM CO COM		emn	277432100	83.72	216248.76
8538	EATON CORP PLC SHS		etn	G29183103	201.1	1716991.8
11454	EBAY INC COM		ebay	278642103	44.69	511879.26
5316	ECOLAB INC COM STK USD1		ecl	278865100	186.69	992444.04
8234	EDISON INTL COM		eix	281020107	69.45	571851.3
12985	EDWARDS LIFESCIENCES CORP COM		ew	28176E108	94.33	1224875.05
5608	ELECTRONIC ARTS INC COM		ea	285512109	129.7	727357.6
5078	ELEVANCE HEALTH INC		elv	036752103	444.29	2256104.62
16878	ELI LILLY & CO COM		lly	532457108	468.98	7915444.44
12242	EMERSON ELECTRIC CO COM		emr	291011104	90.39	1106554.38
2929	ENPHASE ENERGY INC COM		enph	29355A107	167.48	490548.92
4350	ENTERGY CORP NEW COM		etr	29364G103	97.37	423559.5
12528	EOG RESOURCES INC COM		eog	26875P101	114.44	1433704.32
1240	EPAM SYS INC COM		epam	29414B104	224.75	278690
7746	EQT CORP COM		eqt	26884L109	41.13	318592.98
7320	EQTY RESDNTL EFF 5/15/02		eqr	29476L107	65.97	482900.4
2617	EQUIFAX INC COM		efx	294429105	235.3	615780.1
1993	EQUINIX INC COM PAR \$0.001		eqix	29444U700	783.94	1562392.42
1375	ESSEX PPTY TR REIT		ess	297178105	234.3	322162.5
4980	ESTEE LAUDER COMPANIES INC CL A	US	el	518439104	196.38	977972.4
2642	ETSY INC COM		etsy	29786A106	84.61	223539.62
844	EVEREST RE GROUP LTD F		re		341.86	288529.84
4909	EVERGY INC		evrg	30034W106	58.42	286783.78
7499	EVERSOURCE ENERGY COM		es	30040W108	70.92	531829.08
21304	EXELON CORP COM		exc	30161N101	40.74	867924.96
3054	EXPEDIA GROUP INC		expe	30212P303	109.39	334077.06
3272	EXPEDITORS INTL WASH INC COM		expd	302130109	121.13	396337.36
2873	EXTRA SPACE STORAGE INC COM		exr	30225T102	148.85	427646.05
86604	EXXON MOBIL CORP COM		xom	30231G102	107.25	9288279
1293	F5 INC		ffiv	315616102	146.26	189114.18
811	FACTSET RESH SYS INC COM STK		fds	303075105	400.65	324927.15
536	FAIR ISAAC CORPORATION COM		fico	303250104	809.21	433736.56

12231	FASTENAL CO COM	fast	311900104	58.99	721506.69
1576	FEDERAL RLTY INVNT TR SH BEN INT NEW SH BE	frt	313745101	96.77	152509.52
4953	FEDEX CORP COM	fdx	31428X106	247.9	1227848.7
12690	FIDELITY NATL INFORMATION SVCS INC COM ST	fis	31620M106	54.7	694143
2135	FIRST SOLAR INC	fslr	336433107	190.09	405842.15
11695	FIRSTENERGY CORP COM	fe	337932107	38.88	454701.6
13223	FISERV INC COM	fi	337738108	126.15	1668081.45
1588	FLEETCOR TECHNOLOGIES INC COM	flt	339041105	251.08	398715.04
2694	FMC CORP COM (NEW)	fmc	302491303	104.34	281091.96
84482	FORD MTR CO DEL COM PAR \$0.01 COM PAR \$0	f	345370860	15.13	1278212.66
13962	FORTINET INC	ftnt	34959E109	75.59	1055387.58
7597	FORTIVE CORP COMMON STOCK USD. 01	ftv	34959J108	74.77	568027.67
2967	FOX CORP- CLASS B	fox	35137L204	31.89	94617.63
5763	FOX CORP - CLASS A	foxa	35137L105	34	195942
30776	FREEPORT-MCMORAN INC	fcx	35671D857	40	1231040
5989	FRKLN RES INC COM	ben	354613101	26.71	159966.19
4546	GALLAGHER ARTHUR J & CO COM	ajg	363576109	219.57	998165.22
3263	GARMIN LTD	grmn	H2906T109	104.29	340298.27
1702	GARTNER INC COM	it	366651107	350.31	596227.62
7842	GE HEALTHCARE TECHNOLOGY	gehc	36266G107	81.24	637084.08
12245	GEN DIGITAL INC	gen	668771108	18.55	227144.75
29777	GEN MTRS CO COM	gm	37045V100	38.56	1148201.12
1366	GENERAC HLDGS INC COM	gnrc	368736104	149.13	203711.58
4819	GENERAL DYNAMICS CORP COM	gd	369550108	215.15	1036807.85
23326	GENERAL ELECTRIC CO	ge	369604301	109.85	2562361.1
12581	GENERAL MILLS INC COM	gis	370334104	76.7	964962.7
3029	GENUINE PARTS CO COM	gpc	372460105	169.23	512597.67
26719	GILEAD SCIENCES INC	gild	375558103	77.07	2059233.33
5611	GLOBAL PMTS INC COM	gpn	37940X102	98.52	552795.72
1940	GLOBE LIFE INC	gl	37959E102	109.62	212662.8
7121	GOLDMAN SACHS GROUP INC COM	gs	38141G104	322.54	2296807.34
957	GRAINGER W W INC COM	gww	384802104	788.59	754680.63
19325	HALLIBURTON CO COM	hal	406216101	32.99	637531.75
6645	HARTFORD FINL SVCS GROUP INC COM	hig	416515104	72.02	478572.9

2804	HASBRO INC COM	has	418056107	64.77	181615.08
4420	HCA HOLDINGS INC COM	hca	40412C101	303.48	1341381.6
11542	HEALTHPEAK PROPERTIES INC	peak	42250P103	20.1	231994.2
3155	HERSHEY COMPANY COM STK USD1	hsy	427866108	249.7	787803.5
5919	HESS CORP COM STK	hes	42809H107	135.95	804688.05
27813	HEWLETT PACKARD ENTERPRISE CO COM	hpe	42824C109	16.8	467258.4
5668	HILTON WORLDWIDE HLDGS INC	hlt	43300A203	145.55	824977.4
5272	HOLOGIC INC COM	holx	436440101	80.97	426873.84
21692	HOME DEPOT INC COM	hd	437076102	310.64	6738402.97
14254	HONEYWELL INTL INC COM STK	hon	438516106	207.5	2957705
6242	HORMEL FOODS CORP COM	hrl	440452100	40.22	251053.24
15291	HOST HOTELS & RESORTS INC REIT	hst	44107P104	16.83	257347.53
18649	HP INC COM	hpq	40434L105	30.71	572710.79
2677	HUMANA INC COM	hum	444859102	447.13	1196967.01
1793	HUNT J B TRANS SVCS INC COM	jbht	445658107	181.03	324586.79
31118	HUNTINGTON BANCSHARES INC COM	hban	446150104	10.78	335452.04
857	HUNTINGTON INGALLS INDS INC COM	hii	446413106	227.6	195053.2
1626	IDEX CORP COM	iex	45167R104	215.26	350012.76
1783	IDEXX LABORATORIES INC	idxx	45168D104	502.23	895476.09
5924	ILL TOOL WKS INC COM	itw	452308109	250.16	1481947.84
3392	ILLUMINA INC COM	ilmn	452327109	187.49	635966.08
4027	INCYTE CORP COM	incy	45337C102	62.25	250680.75
8684	INGERSOLL-RAND INC	ir	45687V106	65.36	567586.24
1501	INSULET CORP COM	podd	45784P101	288.34	432798.34
88991	INTEL CORP COM	intc	458140100	33.44	2975859.04
11992	INTERCONTINENTAL EXCHANGE INC COM	ice	45866F104	113.08	1356055.36
19468	INTERNATIONAL BUSINESS MACHS CORP COM	ibm	459200101	133.81	2605013.08
8269	INTERPUBLIC GROUP COMPANIES INC COM	ipg	460690100	38.58	319018.02
5497	INTL FLAVORS & FRAGRANCES INC COM	iff	459506101	79.59	437506.23
7434	INTL PAPER CO COM	ip	460146103	31.81	236475.54
6010	INTUIT COM	intu	461202103	458.19	2753721.9
7506	INTUITIVE SURGICAL INC COM NEW	isrg	46120E602	341.94	2566601.64
9836	INVESCO LTD F	ivz	g491bt108	16.81	165343.16
12538	INVITATION HOMES INC	invh	46187W107	34.4	431307.2

3975	IQVIA HOLDINGS INC.	iqv	46266C105	224.77	893460.75
6216	IRON MTN INC NEW COM	irm	46284V101	56.82	353193.12
11421	ISHARES CORE S&P 500 ETF	ivv	464287200	445.71	5090453.91
1559	JACK HENRY & ASSOC INC COM	jkhy	426281101	167.33	260867.47
2751	JACOBS SOLUTIONS INC	j	46982L108	118.89	327066.39
55667	JOHNSON & JOHNSON COM USD1	jnj	478160104	165.52	9214001.84
14696	JOHNSON CONTROLS INTERNATIONAL PLC	jci	G51502105	68.14	1001385.44
62598	JPMORGAN CHASE & CO COM	jpm	46625H100	145.44	9104253.12
6912	JUNIPER NETWORKS INC COM	jnpr	48203R104	31.33	216552.96
5519	KELLOGG CO COM USD0.25	k	487836108	67.4	371980.6
18042	KEURIG DR PEPPER INC	kdp	49271V100	31.27	564173.34
19948	KEYCORP NEW COM	key	493267108	9.24	184319.52
3816	KEYSIGHT TECH INC	keys	49338I103	167.45	638989.2
7227	KIMBERLY-CLARK CORP COM	kmb	494368103	138.06	997759.62
13221	KIMCO RLTY CORP COM	kim	49446R109	19.72	260718.12
42247	KINDER MORGAN INC DEL COM	kmi	49456B101	17.22	727493.34
2939	KLA CORP	klac	482480100	485.02	1425473.78
17087	KRAFT HEINZ CO COM	khc	500754106	35.5	606588.5
14035	KROGER CO COM	kr	501044101	47	659645
4058	L3HARRIS TECHNOLOGIES INC	lhx	502431109	195.77	794434.66
1908	LAB CO OF AMER HLDG	lh	50540r409	241.33	460457.64
2878	LAM RESH CORP COM	lrcx	512807108	642.86	1850151.08
3090	LAMB WESTON HOLDINGS INC	lw	513272104	114.95	355195.5
7075	LAS VEGAS SANDS CORP COM STK	lvs	517834107	58	410350
2923	LEIDOS HLDGS INC COM	ldos	525327102	88.48	258627.04
5466	LENNAR CORP CL A CL A	len	526057104	125.31	684944.46
3457	LINCOLN NATL CORP COM	lnc	534187109	25.76	89052.32
10488	LINDE PLC	lin	G54950103	381.08	3996767.04
3072	LIVE NATION ENTMT	lyv	538034109	91.11	279889.92
5464	LKQ CORP COM	lkq	501889208	58.27	318387.28
4828	LOCKHEED MARTIN CORP COM	lmt	539830109	460.38	2222714.64
4051	LOEWS CORP COM	l	540424108	59.38	240548.38
12774	LOWES COS INC COM	low	548661107	225.7	2883091.8
5467	LYONDELLBASELL INDUSTRIES N V SHS A	lyb	N53745100	91.83	502034.61

3553	M & T BK CORP COM	mtb	55261F104	123.76	439719.28
13229	MARATHON OIL CORP COM	mro	565849106	23.02	304531.58
9088	MARATHON PETE CORP COM	mpc	56585A102	116.6	1059660.8
807	MARKETAXESS HOLDINGS INC	mktx	57060D108	261.42	210965.94
5523	MARRIOTT INTL INC NEW COM STK CL A	mar	571903202	183.69	1014519.87
10597	MARSH & MCLENNAN CO'S INC COM	mmc	571748102	188.08	1993083.76
1334	MARTIN MARIETTA MATLS INC COM	mlm	573284106	461.69	615894.46
4856	MASCO CORP COM	mas	574599106	57.38	278637.28
17924	MASTERCARD INC CL A	ma	57636Q104	393.3	7049509.2
5964	MATCH GROUP INC COM	mtch	57667L107	41.85	249593.4
5353	MC CORMICK & CO INC COM NON-VTG	mkc	579780206	87.23	466942.19
15639	MC DONALDS CORP COM	mcd	580135101	298.41	4666833.99
2905	MCKESSON CORP	mck	58155Q103	427.31	1241335.55
28498	MEDTRONIC PLC SHS	mdt	G5960L103	88.1	2510673.8
54354	MERCK & CO INC NEW COM	mrk	58933Y105	115.39	6271908.06
47386	META PLATFORMS INC	meta	30303M102	286.98	13598834.28
13779	METLIFE INC COM STK USD0.01	met	59156R108	56.53	778926.87
472	METTLER-TOLEDO INTERNATIONAL INC	mtd	592688105	1311.64	619094.08
6468	MGM RESORTS INTERNATIONAL COM	mgm	552953101	43.92	284074.56
11734	MICROCHIP TECHNOLOGY INC COM	mchp	595017104	89.59	1051249.06
23409	MICRON TECHNOLOGY	mu	595112103	63.11	1477341.99
159275	MICROSOFT CORP COM	msft	594918104	340.54	54239508.5
2469	MID-AMER APT CMNTYS INC COM	maa	59522J103	151.86	374942.34
7022	MODERNA INC	mrna	60770K107	121.5	853173
1101	MOHAWK INDUSTRIES	mhk	608190104	103.16	113579.16
1256	MOLINA HEALTHCARE INC	moh	60855R100	301.24	378357.44
4029	MOLSON COORS BEVERAGE CO	tap	60871R209	65.84	265269.36
29172	MONDELEZ INTL INC COM	mdlz	609207105	72.94	2127805.68
962	MONOLITHIC PWR SYS INC COM	mpwr	609839105	540.23	519701.26
16402	MONSTER BEVERAGE CORP NEW COM	mnst	61174X109	57.44	942130.88
3393	MOODYS CORP COM	mco	615369105	347.72	1179813.96
27904	MORGAN STANLEY COM STK USD0.01	ms	617446448	85.4	2383001.6
7114	MOSAIC CO/THE	mos	61945C103	35	248990
3606	MOTOROLA SOLUTIONS INC	msi	620076307	293.28	1057567.68

1715	MSCI INC COMMON		msci	55354G100	469.29	804832.35
7297	NASDAQ INC		ndaq	631103108	49.85	363755.45
4582	NETAPP INC COM STK		ntap	64110D104	76.4	350064.8
9523	NETFLIX INC COM		nflx	64110L106	440.49	4194786.27
7872	NEWELL BRANDS INC COM		nwl	651229106	8.7	68486.4
17115	NEWMONT CORP		nem	651639106	42.66	730125.9
8310	NEWS CORP NEW CL A CL A		nwsa	65249B109	19.5	162045
2574	NEWS CORP NEW CL B CL B		nws	65249B208	19.72	50759.28
43343	NEXTERA ENERGY INC COM		nee	65339F101	74.2	3216050.6
26392	NIKE INC CL B		nke	654106103	110.37	2912885.04
8681	NISOURCE INC COM		ni	65473P105	27.35	237425.35
1153	NORDSON CORP COM		ndsn	655663102	248.18	286151.54
4876	NORFOLK SOUTHN CORP COM		nsc	655844108	226.76	1105681.76
4457	NORTHERN TR CORP COM		ntrs	665859104	74.14	330441.98
3058	NORTHROP GRUMMAN CORP COM		noc	666807102	455.8	1393836.4
8965	NORWEGIAN CRUISE LIN F		nclh	g66721104	21.77	195168.05
4959	NRG ENERGY INC COM NEW		nrg	629377508	37.39	185417.01
5381	NUCOR CORP COM		nue	670346105	163.98	882376.38
52960	NVIDIA CORP COM		nvda	67066G104	423.02	22403139.2
65	NVR INC		nvr	62944T105	6350.62	412790.3
5578	NXP SEMICONDUCTORS NV COM		nxi	N6596X109	204.68	1141705.04
1304	O REILLY AUTOMOTIVE INC NEW COM		orly	67103H107	955.3	1245711.2
15390	OCCIDENTAL PETROLEUM CORP		oxy	674599105	58.8	904932
1926	OLD DOMINION FREIGHT		odfl	679580100	369.75	712138.5
4273	OMNICOM GROUP INC COM		omc	681919106	95.15	406575.95
9295	ON SEMICONDUCTOR CO		on	682189105	94.58	879121.1
9637	ONEOK INC COM STK		oke	682680103	61.72	594795.64
32964	ORACLE CORP COM		orcl	68389X105	119.09	3925682.76
5426	ORGANON & CO		ogn	68622V106	20.81	112915.06
8853	OTIS WORLDWIDE CORP		otis	68902V107	89.01	788005.53
11248	PACCAR INC COM		pcar	693718108	83.65	940895.2
1926	PACKAGING CORP AMER COM ISIN	US	pkg	695156109	132.16	254540.16
6482	PALO ALTO NETWORKS INC COM		panw	697435105	255.51	1656215.82
10919	PARAMOUNT GLOBAL		para	92556H206	15.91	173721.29

2748	PARKER-HANNIFIN CORP COM	ph	701094104	390.04	1071829.92
6872	PAYCHEX INC COM	payx	704326107	111.87	768770.64
1048	PAYCOM SOFTWARE INC COM	payc	70432V102	321.24	336659.52
23899	PAYPAL HLDGS INC COM	pypl	70450Y103	66.73	1594780.27
3538	PENTAIR PLC F	pnr	G7S00T104	64.6	228554.8
29511	PEPSICO INC COM	pep	713448108	185.22	5466027.42
120845	PFIZER INC COM	pfe	717081103	36.68	4432594.6
34800	PG& E CORP COM	pcg	69331C108	17.28	601344
33249	PHILIP MORRIS INTL COM STK NPV	pm	718172109	97.62	3245767.38
9829	PHILLIPS 66 COM	psx	718546104	95.38	937490.02
2417	PINNACLE W. CAP CORP COM	pnw	723484101	81.46	196888.82
5007	PIONEER NAT RES CO COM STK	pxd	723787107	207.18	1037350.26
8549	PNC FINANCIAL SERVICES GROUP COM STK	pnc	693475105	125.95	1076746.55
841	POOL CORP COM STK	pool	73278L105	374.64	315072.24
5053	PPG IND INC COM	ppg	693506107	148.3	749359.9
15743	PPL CORP COM ISIN US69351T1060	ppl	69351T106	26.46	416559.78
4836	PRINCIPAL FINL GROUP INC COM STK	pfg	74251V102	75.84	366762.24
50488	PROCTER & GAMBLE COM NPV	pg	742718109	151.74	7661049.12
12539	PROGRESSIVE CORP OH COM	pgr	743315103	132.37	1659787.43
19781	PROLOGIS INC COM	pld	74340W103	122.63	2425744.03
7818	PRUDENTIAL FINL INC COM	pru	744320102	88.22	689703.96
2252	PTC INC	ptc	69370c100	142.3	320459.6
10688	PUB SERVICE ENTERPRISE GROUP INC COM	peg	744573106	62.61	669175.68
3403	PUB STORAGE COM	psa	74460D109	291.88	993267.64
4781	PULTE GROUP INC	phm	745867101	77.68	371388.08
2139	QORVO INC	qrvo	74736k101	102.03	218242.17
23862	QUALCOMM INC COM	qcom	747525103	119.04	2840532.48
3074	QUANTA SERVICES INC	pwr	74762E102	196.45	603887.3
2393	QUEST DIAGNOSTICS INC COM	dgx	74834L100	140.56	336360.08
884	RALPH LAUREN CORP CL A CL A	rl	751212101	123.3	108997.2
4085	RAYMOND JAMES FNCL INC COM STK	rjf	754730109	103.77	423900.45
3318	REGENCY CTRS CORP COM	reg	758849103	61.77	204952.86
2311	REGENERON PHARMACEUTICALS COM	regn	75886F107	718.54	1660545.94
19991	REGIONS FINL CORP NEW COM	rf	7591EP100	17.82	356239.62

4422	REPUBLIC SVCS INC COM	rsg	760759100	153.17	677317.74
3159	RESMED INC COM	rmd	761152107	218.5	690241.5
2698	REVVITY INC	rvty	714046109	118.79	320495.42
14421	RLTY INC CORP COM	o	756109104	59.79	862231.59
2318	ROBERT HALF INC COM	rhi	770323103	75.22	174359.96
2471	ROCKWELL AUTOMATION	rok	773903109	329.45	814070.95
4991	ROLLINS INC COM	rol	775711104	42.83	213764.53
2283	ROPER TECHNOLOGIES	rop	776696106	480.8	1097666.4
7327	ROSS STORES INC COM	rost	778296103	112.13	821576.51
4725	ROYAL CARIBBEAN CRUI F	rcl	v7780t103	103.74	490171.5
31298	RTX CORP	rtx	75513E101	97.96	3065952.08
7026	S&P GLOBAL INC COM	spgi	78409V104	400.89	2816653.14
12685	S.W. AIRL CO COM	luv	844741108	36.21	459323.85
20971	SALESFORCE INC COM	crm	79466L302	211.26	4430333.46
2328	SBA COMMUNICATIONS CORP CLASS A	sbac	78410G104	231.76	539537.28
2806	SCHEIN HENRY INC COM	hsic	806407102	81.1	227566.6
30584	SCHLUMBERGER LTD COM COM	slb	806857108	49.12	1502286.08
31833	SCHWAB CHARLES CORP COM NEW	schw	808513105	56.68	1804294.44
4140	SEAGATE TECHNOLOGY PLC SHS	stx	G7997R103	61.87	256141.8
3125	SEALED AIR CORP NEW COM STK	see	81211K100	40	125000
6767	SEMPRA ENERGY INC COM STK	sre	816851109	145.59	985207.53
4350	SERVICENOW INC COM	now	81762P102	561.97	2444569.5
5027	SHERWIN-WILLIAMS CO COM	shw	824348106	265.52	1334769.04
7024	SIMON PROPERTY GROUP INC COM	spg	828806109	115.48	811131.52
3442	SKYWORKS SOLUTIONS INC COM	swks	83088M102	110.69	380994.98
2667	SMITH A O CORP COM	aos	831865209	72.78	194104.26
2295	SMUCKER J M CO COM NEW	sjm	832696405	147.67	338902.65
1142	SNAP ON INC	sna	833034101	288.19	329112.98
1205	SOLAREEDGE TECHNOLOGIES INC	sedg	83417M104	269.05	324205.25
23357	SOUTHERN CO COM STK	so	842587107	70.25	1640829.25
3184	STANLEY BLACK & DECKER INC COM	swk	854502101	93.71	298372.64
24556	STARBUCKS CORP COM	sbux	855244109	99.06	2432517.36
7160	STATE STR CORP COM	stt	857477103	73.18	523968.8
3439	STEEL DYNAMICS INC COM	stld	858119100	108.93	374610.27

2142	STERIS PLC	ste	G8473T100	224.98	481907.16
7237	STRYKER CORP	syk	863667101	305.09	2207936.33
9180	SYNCHRONY FINL COM	syf	87165B103	33.92	311385.6
3263	SYNOPSIS INC	snps	871607107	435.41	1420742.83
10899	SYSCO CORP COM	sy	871829107	74.2	808705.8
12337	T MOBILE US INC COM	tmus	872590104	138.9	1713609.3
4828	T ROWE PRICE GROUP INC	trow	74144T108	112.02	540832.56
3382	TAKE-TWO INTERACTIVE SOFTWARE COM	ttwo	874054109	147.16	497695.12
4965	TAPESTRY INC	tpr	876030107	42.8	212502
4873	TARGA RES CORP COM	trgp	87612G101	76.1	370835.3
9910	TARGET CORP COM STK	tgt	87612E106	131.9	1307129
6750	TE CONNECTIVITY LTD REG SHS	tel	H84989104	140.16	946080
1002	TELEDYNE TECHNOLOGIES INC	tdy	879360105	411.11	411932.22
1003	TELEFLEX INC COM	tfx	879369106	242.03	242756.09
3358	TERADYNE INC COM	ter	880770102	111.33	373846.14
57710	TESLA INC	tsla	88160R101	261.77	15106746.7
19443	TEXAS INSTRUMENTS INC COM	txn	882508104	180.02	3500128.86
4320	TEXTRON INC COM	txt	883203101	67.63	292161.6
8263	THERMO FISHER CORP	tmo	883556102	521.75	4311220.25
24666	TJX COS INC COM NEW	tjx	872540109	84.79	2091430.14
2347	TRACTOR SUPPLY CO COM	tsco	892356106	221.1	518921.7
4885	TRANE TECHNOLOGIES PLC	tt	G8994E103	191.26	934305.1
1110	TRANSDIGM GROUP INC COM	tdg	893641100	894.17	992528.7
4947	TRAVELERS COS INC COM STK	trv	89417E109	173.66	859096.02
5351	TRIMBLE INC	trmb	896239100	52.94	283281.94
28609	TRUIST FINANCIAL CORP	tfc	89832Q109	30.35	868283.15
887	TYLER TECHNOLOGIES INC	tyl	902252105	416.47	369408.89
6148	TYSON FOODS INC CL A COM (DELAWARE)	tsn	902494103	51.04	313793.92
6598	UDR INC COM STK	udr	902653104	42.96	283450.08
1073	ULTA BEAUTY INC	ulta	90384S303	470.59	504948.43
13060	UNION PAC CORP COM	unp	907818108	204.62	2672337.2
6989	UNITED AIRLINES HOLDINGS INC	ual	910047109	54.87	383486.43
15525	UNITED PARCEL SVC INC CL B	ups	911312106	179.25	2782856.25
1472	UNITED RENTALS INC	uri	911363109	445.37	655584.64

19944	UNITEDHEALTH GROUP INC COM	unh	91324P102	480.64	9585884.16
1348	UNVL HEALTH SERVICES INC CL B COM	uhs	913903100	157.77	212673.96
29993	US BANCORP	usb	902973304	33.04	990968.72
7121	V F CORP COM	vfc	918204108	19.09	135939.89
7744	VALERO ENERGY CORP COM STK NEW	vlo	91913Y100	117.3	908371.2
8550	VENTAS INC REIT	vtr	92276F100	47.27	404158.5
1940	VERISIGN INC COM	vrns	92343E102	225.97	438381.8
3101	VERISK ANALYTICS INC COM	vrsk	92345Y106	226.03	700919.03
90053	VERIZON COMMUNICATIONS COM	vz	92343V104	37.19	3349071.07
5517	VERTEX PHARMACEUTICALS INC COM	vrtx	92532F100	351.91	1941487.47
25935	VIATRIS INC	vtrs	92556V106	9.98	258831.3
21511	VICI PPTYS INC COM	vici	925652109	31.43	676090.73
34664	VISA INC COM CL A STK	v	92826C839	237.48	8232006.72
2843	VULCAN MATERIALS CO COM	vmc	929160109	225.44	640925.92
3852	WABTEC CORP COM	wab	929740108	109.67	422448.84
15339	WALGREENS BOOTS ALLIANCE INC COM	wba	931427108	28.49	437008.11
30045	WALMART INC	wmt	931142103	157.18	4722473.1
39142	WALT DISNEY CO	dis	254687106	89.28	3494597.76
47664	WARNER BROS DISCOVERY INC	wbd	934423104	12.54	597706.56
7930	WASTE MGMT INC DEL COM STK	wm	94106L109	173.42	1375220.6
1265	WATERS CORP COM	wat	941848103	266.54	337173.1
6801	WEC ENERGY GROUP INC COM	wec	92939U106	88.24	600120.24
80376	WELLS FARGO & CO NEW COM STK	wfc	949746101	42.68	3430447.68
10646	WELLTOWER INC COM	well	95040Q104	80.89	861154.94
1585	WEST PHARMACEUTICAL SVCS INC COM	wst	955306105	382.47	606214.95
6849	WESTN DIGITAL CORP COM	wdc	958102105	37.93	259782.57
5452	WESTROCK CO COM	wrk	96145D105	29.07	158489.64
15775	WEYERHAEUSER CO COM	wy	962166104	33.51	528620.25
1173	WHIRLPOOL CORP COM	whr	963320106	148.79	174530.67
26094	WILLIAMS CO INC COM	wmb	969457100	32.63	851447.22
2279	WILLIS TOWERS WATSON PLC	wtw	G96629103	235.5	536704.5
2219	WYNN RESORTS LTD COM	wynn	983134107	105.61	234348.59
11781	XCEL ENERGY INC COM	xel	98389B100	62.17	732424.77
5125	XYLEM INC COM	xyl	98419M100	112.62	577177.5

5999	YUM BRANDS INC COM	yum	988498101	138.55	831161.45
1112	ZEBRA TECHNOLOGIES CLASS A	zbra	989207105	295.83	328962.96
4467	ZIMMER BIOMET HLDGS INC COM	zbh	98956P102	145.6	650395.2
3238	ZIONS BANCORP COM	zion	989701107	26.86	86972.68
9899	ZOETIS INC COM USD0.01 CL 'A'	zts	98978V103	172.21	1704706.79

801080645.3

RIGHT

975	ABIOMED INC CVR	abmd.cvr	003CVR100	0	0
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CASH AND EQUIVALENTS - US

causcash	cash	0.01
Dividend Accrual Account	divacc	517180.59
short-term account @ State Street Bank	ssbstif	752722.87
Tax Reclaim Account	taxrec	1524.78

1271428.25

TOTAL PORTFOLIO

802352073.5

PORTFOLIO : I801 ON 06/30/2023

MANAGER : JCL

Base Currency : Dollar(\$) - United States

		PERCENT OF PORT MKT VAL	MARKET VALUE (000) (\$)	TOTAL RETURN 20221230 20230630 (%)
<u>SUBTOTALS</u>	<u>COUNT</u>	<u>(%)</u>	<u>(\$)</u>	<u>(%)</u>
Communication Services	23	8.34	66,836.20	36.34
Consumer Discretionary	53	10.59	84,847.27	33.98
Consumer Staples	37	6.63	53,100.19	1.38
Energy	23	4.09	32,733.22	-5.51
Financials	72	12.34	98,849.70	2.73
Health Care	65	13.33	106,792.47	-1.41
Industrials	75	8.44	67,604.52	10.2
Information Technology	65	28.09	224,995.52	45.68
Materials	29	2.49	19,929.66	7.68
Real Estate	31	2.48	19,845.91	4
Utilities	30	2.55	20,455.39	-5.7
Not Classified	1	0.64	5,090.45	16.86
Portfolio Total	504	100	801,080.06	17.16

Base Currency : Dollar(\$) - United States

Portfolio	Date	COUNT	WTD AVG MARKET CAP (MILLIONS) (\$)	UNWTD AVG MARKET CAP (MILLIONS) (\$)	COMPNY PRICE /BOOK	P / E RATIO	CURRENT YIELD (%)	5 YEAR DIV. GROWTH (%)
MA S&P 500 Pooled Index Fund	06/30/2023	504	645,599	154,520	4.102	25.99	1.55	6.19
SAP500 INDEX	06/30/2023	504	645,515	77,260	4.101	25.99	1.55	6.19

5 YEAR EARN'S GROWTH (%)	RETURN ON EQUITY (%)	GR6_USA PREDICTED BETA	HIST BETA	PAYOUT RATIO	DEBT/ EQUITY RATIO	RETURN ON ASSETS (%)
15.81	56.52	1	1	35.58	91.74	11.16
15.81	56.5	1	1	35.58	91.74	11.16

Diversity, Equity & Inclusion Policy Summary

RhumbLine Advisers

January 2023

RhumbLine Advisers was founded as a minority-owned business and its ownership structure has always reflected its tradition of diversity. Cultivating, promoting, supporting, and placing value in diversity is part of our corporate culture. Equality and inclusion are fundamental to our corporate philosophy and evident in our corporate structure as a Massachusetts Limited Partnership. We are 100% owned by employees (and former employees) at all levels of the organization. RhumbLine is approximately 60% women-owned and 18% minority-owned and collectively, it is 78% women/minority-owned.

Our diversity is our business strength. Our differences in race, gender, ethnicity, nationality, religion, sexual identity, physical and mental abilities, age, and familial and socioeconomic status enrich our working environment, provide diversity of thought and foster our firm's growth. Our unique backgrounds, perspectives and experiences together reflect our broad client base and empower us to better serve each client's specific needs.

We promote diversity, equality, and inclusivity through:

- **Our corporate structure** - Every employee - regardless of their position – has the potential to become an owner based on their tenure, job performance and overall contributions to the firm's success.
- **Our work environment** - RhumbLine promotes and supports diversity in all its corporate practices and policies including, but not limited to recruitment, hiring, compensation, benefits, promotions, professional development and training. As an independent female/minority-owned firm, the professionals at RhumbLine make concerted efforts to seek and attract women and minorities as employees of the firm at all levels. This is evidenced by the fact that our ownership is 60% women and 18% minority. We also promote women and minorities as evidenced by our C-level employees being 50% women and 17% minority. Our work environment emphasizes:
 - Respectful and inclusive communication and cooperation among all employees and teams.
 - Work/life balance through flexible work schedules to accommodate employees' varying needs.
 - Employee and firm contributions to the communities we serve to promote a greater understanding and respect for diversity.
- **Ongoing education** - We provide mandatory and ongoing employee education and training around diversity and inclusion, sexual harassment, and other related topics, such as unconscious bias. Employees are expected to demonstrate their understanding of these values in all aspects of their conduct and work activities. Any employee exhibiting inappropriate conduct or behavior against others may be subject to disciplinary action.
- **Diverse service providers** - Our commitment to encouraging equality and inclusivity goes beyond our own employee base. We seek these important values among our firm's vendors and service providers. Our firm has developed and maintained diverse supplier relationships in trading, clearing, legal, accounting, and tax services. In fact, our current approved broker list includes approximately 16 firms, six of which are minority-, women- or disabled veteran-owned companies. In 2022, RhumbLine conducted 46% of its total equity trades and 67% of its total fixed income trades with MWDV brokers.

- **Mentoring & Internships** – Our firm provides mentoring, internship and development opportunities targeted toward diverse talent (e.g., minorities, women, LGBT, etc.)
- **Charitable Giving & Community Outreach** – We provide philanthropic grants and scholarships and make other financial contributions to organizations which promote minorities and/or women. Our firm supports community development and civic infrastructure programs in communities we serve, as well as those in need, both directly and through our employees’ requests and participation. Following are some of the many organizations that RhumbLine Advisers has supported (either directly or through its employees):
 - Robert Toigo Fellowship Program (for minority professionals committed to careers in finance)
 - Nelson Fellowship Program (an educational summer program for public school students in Boston and Springfield, MA)
 - CARE
 - Africa Inland Mission
 - Big Brother Big Sister
 - American Cancer Society
 - Special Olympics
 - Samaritans Hope
 - ARC of Plymouth
 - Minuteman ARC
 - Urban Nutcracker
 - Boston Relief Association
 - Boston Food Bank

Employees or persons who believe they have been subjected to any kind of discrimination that conflicts with our firm’s diversity policy and/or initiatives should seek assistance from Denise D’Entremont, C.E.O., who is responsible for the enforcement of the above policy.

Please note that RhumbLine Advisers also has established a separate Equal Opportunity and Affirmative Action Policy, which prohibits employment discrimination against employees and applicants due to race, color, religion, sex (including sexual harassment), national origin, disability, age (40 years old or more), military status, or veteran status. This policy is also available upon request.

ⁱ All figures referenced above as of 12/31/22.



Firm: Axiom Investors

Strategy/Product: Emerging Markets Equity

Client: Massachusetts Water Resources Authority Retirement System

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that all materials submitted in relation to MWRA Retirement System may be subject to disclosure consistent with Massachusetts Public Record laws.

Firm/Organization

1. Have there been any changes in ownership or management in the past year?

There have been no changes to Axiom’s ownership structure or management in the past year.

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

Year	2023 (YTD)	2022	2021	2020	2019
Firm AUM	\$18,228.96M	\$16,580.90M	\$18,639.70M	\$18,535.88M	\$13,458.05M
Net Flows	(\$757.18M)	\$4,086.60M	(\$997.10M)	\$499.40M	\$685.01M
Accounts Gained*	4	9	8	7	2
Accounts Lost*	5	4	0	3	4

*As a matter of firm policy, Axiom does not disclose underlying accounts gained and lost in pooled vehicles; the number of accounts reflects separate accounts only.

**As of 7/31/23

3. Have there been any new or discontinued products in the past year?



There were no new or discontinued Firmwide products/strategies in the past year. We converted the International Small Cap UCITS Fund to a UCITS Fund under the Global Small Cap Strategy in August of 2022 due to client preference. Additionally, within Axiom's Global Equity Strategy, in the 2nd quarter of 2023, Axiom made a strategic decision to close the Axiom Global Equity Commingled (3c7) Fund due to its small size and resulting operating costs, and also closed the Axiom Global Equity UCITS Fund due to a client redemption resulting from a regulatory issue around UCIT holding concentrations. Should future interest in either of these Funds occur, Axiom can re-open them at any time. Assets within the 3c7 Fund were transferred to the Concentrated Global Growth Equity Strategy Commingled Fund and therefore not lost to the firm.

4. Are any products capacity constrained?

No, Axiom does not currently have any products that are capacity constrained. We continuously review capacity by looking at overall market capitalization and daily trading volumes. We define capacity for the Strategy based on liquidity and the ability to buy and sell securities with minimal market impact and within a minimum number of days. While we do not publish a specific number, we are very conservative and will not hesitate to limit capacity.

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

Axiom has no current or pending regulatory, compliance or litigation issues.

6. Describe your diversity, equity and inclusion efforts with regard to the firm and its employees.

Axiom believes that a culture of diversity and inclusion is critical to the success of our business, and is committed to fostering, cultivating, and preserving a working environment where all employees may draw upon their backgrounds and experience in furtherance of the common goal of providing best in class service to Axiom's clients.

Ours is a business that is premised upon providing top-of-market investment services. To that end, Axiom is committed to attracting and retaining the best talent and providing an environment where everyone can thrive. This inclusive approach not only enriches Axiom's culture, but it provides a competitive advantage in the marketplace by helping us understand and connect more effectively with our clients, communities, and colleagues.

At Axiom, we define diversity and inclusion as celebrating what each of us brings to the table. Our success is a result of our varied backgrounds, perspectives, talents, cultures, and genders. Our concept of diversity is consciously inclusive of and welcoming to members of communities that have been historically underrepresented in the financial services workforce. Inclusion is about creating an environment that celebrates people's differences and, in so doing, inspires innovative ideas, practical solutions, and team building. Axiom seeks to



achieve a work environment in which all individuals are recognized for their unique qualities, skills, and abilities, and are given opportunities to apply them fully to the success of the firm.

Axiom's commitment to diversity and inclusion manifests itself in all aspects of our operations, including our practices and policies on recruitment and selection; compensation and benefits; professional development and training; promotions; transfers; social and recreational programs; layoffs; and terminations.

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?

There have been no changes in the portfolio management team in the past year.

2. Are there any expected changes to the team in the future (planned additions or departures)?

There are no expected changes to the team in the future.

Process

1. Have there been significant changes in any of the areas below in the past year?

- Identification of investment ideas
- Process for exploring and vetting ideas
- Portfolio trading practices including buy/sell rules
- Approach to portfolio monitoring and risk management

Axiom's investment philosophy and process have been consistently applied since inception of the firm. There have been no significant changes in any of these areas in the past year.

Philosophy

1. Describe recent changes in investment philosophy, if any.

There have been no recent changes to Axiom's investment philosophy.

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).

Please see attachment titled "Axiom Emerging Markets Equity Strategy Holdings 7.31.23." The rest of this data is included in our presentation.

2. List strategy AUM, net flows and accounts gained/lost for the past 5 years.



Year	2023 (YTD)	2022	2021	2020	2019
Strategy AUM	\$5,301.67M	\$6,059.74M	\$8,307.86M	\$8,443.06M	\$6,604.97M
Net Flows	(\$1,177.01M)	\$223.82M	\$200.08M	(\$198.07M)	\$268.68M
Accounts Gained*	1	2	1	1	0
Accounts Lost*	3	1	0	1	1

*As a matter of firm policy, Axiom does not disclose underlying accounts gained and lost in pooled vehicles; the number of accounts reflects separate accounts only.

**As of 7/31/23

- Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

Investor concentration in strategy:

Investor Type	Percent of Strategy*
Corporate (ERISA)	20.0%
Corporate (non-ERISA)	9.8%
Foundation & Endowment	4.7%
Health Care	6.1%
High Net Worth	1.7%
Insurance	1.4%
Public Fund	36.5%
Sub-Advised	17.3%
Union/Taft-Hartley	2.5%

*As of 7/31/23



Top five investors in strategy:

Investor	Percent of Strategy*
Public Fund Client	13.37%
Corporate (non-ERISA) Client	6.73%
Public Fund Client	5.51%
Public Fund Client	4.96%
Sub-Advised Client	4.39%

**As of 7/31/23*

Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

For the calendar year returns for the past 10 years, please see the attachment titled, “Axiom Emerging Markets Equity Strategy Returns.”

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

Long awaited signs that US inflation may be peaking transpired in July, which could lead to fewer US interest rate hikes than expected. The potential peaking of US interest rates contributed to a strong benchmark return of 6.23% in July. An improved US interest rate outlook helped the JPM Morgan EMBI Global spread decline from 363.24 basis points to 334.38 basis points, the fourth month of perceived lower risk in emerging market bonds. Once again, it was a month where emerging market value outperformed growth; emerging market value appreciated 6.52% versus growth of 5.95%.

Chinese economic growth is a key issue in emerging markets. 2Q GDP came in below expectations after a strong 1Q growth rate. Anticipation is high that the government will implement concrete policy measures to stimulate the economy. China is not only the largest constituent in the emerging market benchmark, but it is also a key economy for many global products and companies. From an emerging market standpoint, a policy response that spurs an economic growth recovery would be very beneficial.

The optimal market environment for Axiom is one that is trending, and growth led. Typically, within this environment quality growth stocks are experiencing positive changes in their key operational metrics and financial results. Often, there is a particular industry or general investment thesis that is prevalent in the market and that is experiencing robust and/or sustainable growth. Difficult market environments include sudden, sharp value rotations. These environments are marked by moments of reflationary expectations caused by either economic inflections or policy resulting in a rotation to



cyclicals. Market inflections driven by dramatic policy interventions overwhelm earnings drivers, causing a rotation into distressed stocks.

3. Describe your market outlook and how strategy positioning is impacted by your views.

After many quarters of earnings downgrades, emerging market earnings are starting to inflect positively; as of August 2023, estimates for emerging market company profits over the next 12 months have risen 1.3% on a quarterly basis since the end of June. If this trend holds through the end of September, it will mark the first quarter in which estimates have increased since the end of 2021. 3Q 2023 could be the earnings inflection, an event we have been waiting patiently for. If a turnaround in forward looking earnings estimates is combined with an improving Chinese economy, emerging markets could be set up for good performance into the end of 2023.

4. Could you please include a slide in your presentation that shows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

Please see the attached PDF titled "Axiom Investors 2Q23 EM Presentation for MWRA."



MWRA Employee Retirement System

Investing Ahead of the Curve

August 31, 2023

Investing Ahead of the Curve

Table of Contents

3	Firm Overview
11	Emerging Markets Equity
24	Appendix

Axiom Investors – Investing Ahead of the Curve

**Driven by
Fundamentals**

Seasoned investment team collaborating on a common, fundamental investment philosophy and process.

**Supported by
Evidence**

Fundamental investment thesis supported with empirical, fact-based evidence leveraging Axiom's proprietary research database, Axware, and our transparent risk and return framework.

**Rooted in
Collaboration &
Transparency**

Our culture of collaboration facilitates the sharing and integration of information across geographies, global sectors, and market caps.

**Aligned with
Clients in Our
Mission**

Fully independent and 100% active employee-owned allowing us to attract and retain diverse talent and to responsibly invest with a long-term focus in sustainable enterprises.

Axiom Investors – Client Focused and Aligned

Philosophy
Consistent & Transparent

People
Experienced & Committed

Culture
Client Focused & Aligned

Established

1998

Fundamental, Bottom-up

Focus on forward looking trends in operational drivers

Proven

Net of fee outperformance across all strategies since inception relative to applicable benchmark

Centralized

Greenwich, CT

Experienced

25+ years average PM
20+ years average global sector analysts

Stable

10+ years average PM tenure at Axiom

Assets*

\$19.0B

Independent

100% employee-owned partnership
26 equity partners

Investing Alongside Our Clients

Alignment of interests with clients allowing for a long-term perspective

As of 6/30/23

*Assets include Assets Under Management (\$18.3B) & Assets Under Advisement (\$0.6B)

Certain strategies have underperformed the benchmark in more recent time periods.

Partnering with Professional Investors Around the World



400+

Clients

40%+

Non-US assets

50%+

Client relationships 5+ years

Representative Clients:

Public

- City of Charlottesville
- Los Angeles City Employees
- State of Maryland
- City of Detroit
- State of North Dakota
- State of West Virginia
- New Mexico PERA

Sovereign Funds

- NPS (Korea)

Corporate

- Dominion Energy, Inc.
- National Football League

Subadvised

- John Hancock
- Northern Trust
- Pear Tree Funds
- Russell Investments
- SEI

Taft-Hartley

- Oregon Laborers-Employers Pension

Endowments & Foundations

- Florida State University
- Iowa State University
- Richard King Mellon
- University of Cincinnati
- University of Nebraska
- University of Oklahoma

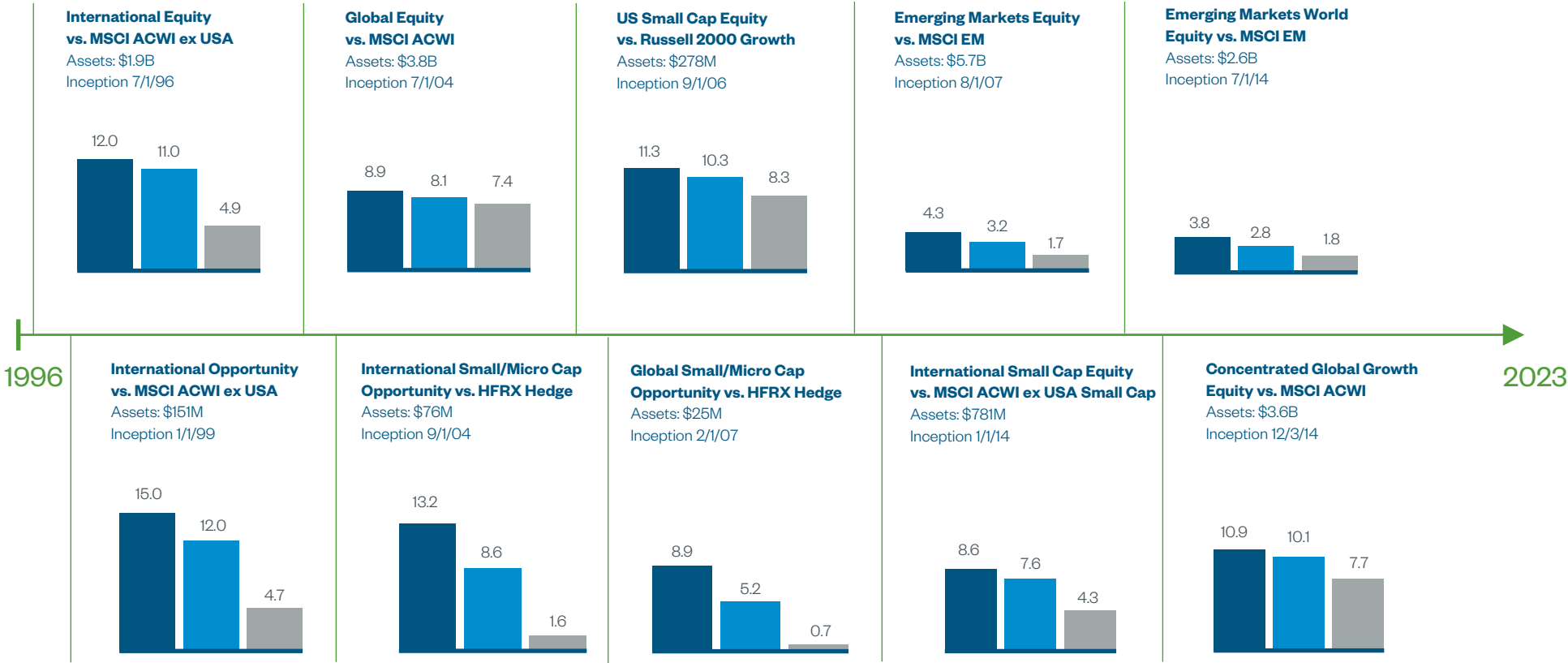
As of 6/30/23

Confidential. Please do not publish for general public.

This list is intended to represent a broad cross section of Axiom clients. None of the clients were selected on the basis of performance criteria and it is not known whether they approve of or disapprove of Axiom or the investment advisory services provided.

Proven Results Across All Strategies

Inception-to-date Percent Returns, Annualized



■ Axiom (Gross) ■ Axiom (Net*) ■ Benchmark

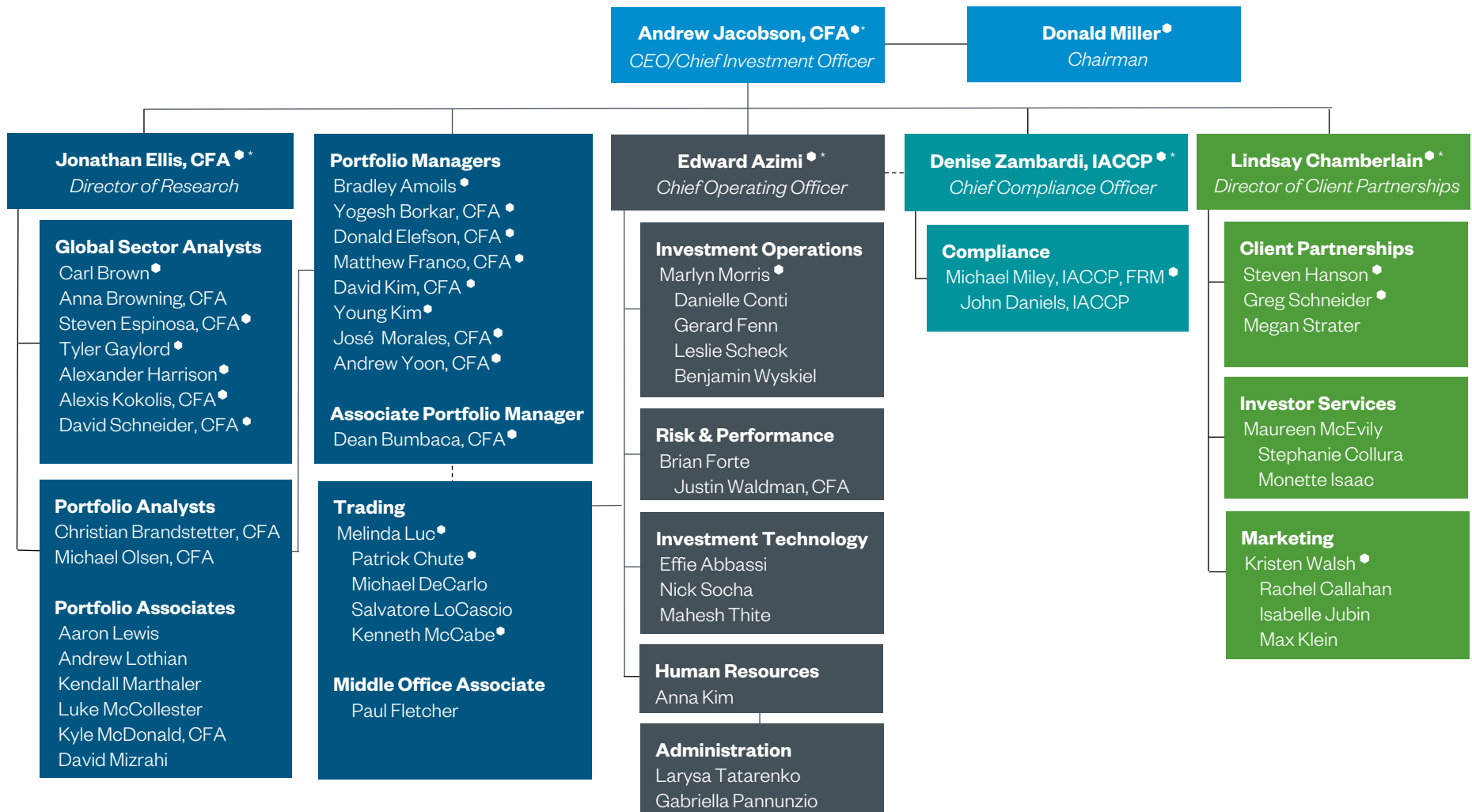
As of 6/30/23

US dollar terms

Assets include Assets Under Management (\$18.3B) & Assets Under Advisement (\$0.6B)

* Net-of-fee calculations are net of highest management fees, and where applicable, performance fees, and do not include individualized client administrative expenses. See disclosures in the back of the presentation for additional information.

A Well-resourced Partnership



◆ Denotes Partner/Principal
* Denotes Management Oversight Committee

Our Alpha Philosophy

Fundamentals drive ideas, evidence drives action

By focusing on three clearly defined alpha drivers, our objective is to compound capital over the long-term and deliver risk-adjusted relative outperformance by fundamentally investing in quality, dynamic growth businesses.



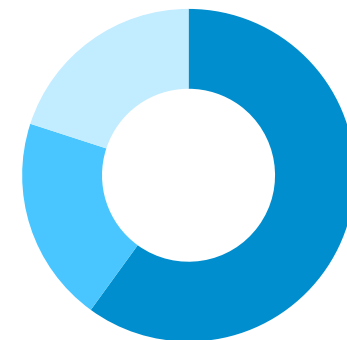
Positive Change

- Forward-looking, fundamental, empirical approach focused on positive operational developments and improving sustainability characteristics
- Consistent integration of information across geographies, global sectors, and market caps



Sustainable Growth

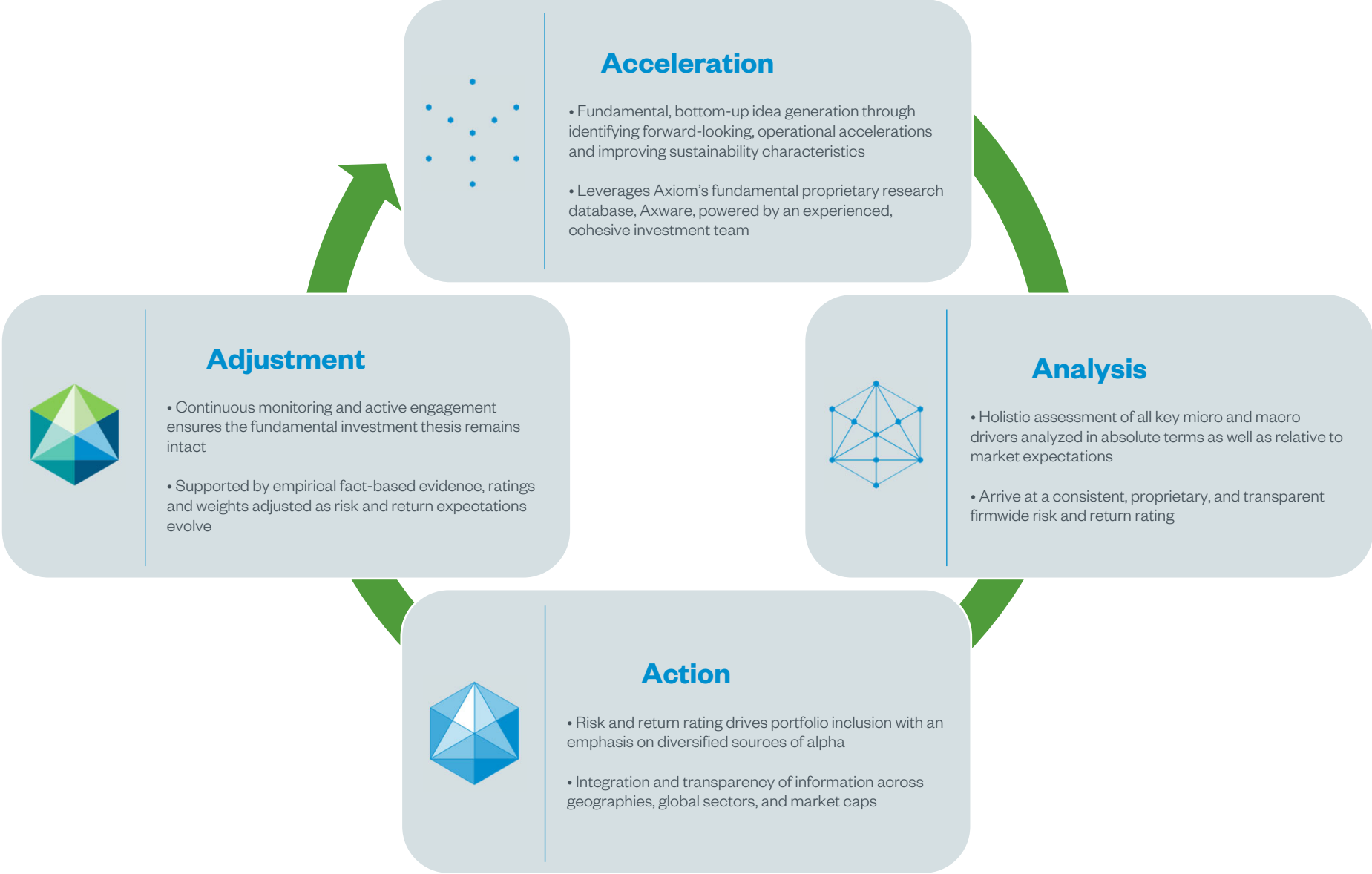
- Performance tailwinds from compounding organic earnings growth and positive sustainability characteristics
- Focus on wide and expanding moats, profitability, returns, cash generation, and balance sheet integrity



Valuation

- Comprehensive assessment of valuation provides insight into the implicit expectations for a company
- Attractive valuation confirms upside potential and provides risk control benefits

Our Investment Process



Disciplined Portfolio Construction



Higher Concentration Lower Concentration Investable Universe

Please note the above percentages are representative allocations across Axiom's all-cap portfolios.

Emerging Markets Equity Strategy



Investment Summary

Objective

The Emerging Markets Equity Strategy seeks long term compounding by focusing its investments in emerging markets.

Why Invest

- Clearly defined, transparent, and consistent process
- Driven by fundamentals, supported by evidence
- Active risk management with disciplined portfolio construction
- Advancing positive change through active engagement

Strategy

Inception

August 1, 2007

Firm Assets

\$19.0B*

Benchmark

MSCI Emerging Markets

Strategy Assets

\$5.7B

Vehicles

Separate account, commingled fund, CIT, and UCITS

Strategy Guidelines

Emerging Markets Equity

Number of holdings

70-85 holdings

Position size

Limited to the greater of 5% or the index weight x 1.5

Sector guidelines

0-40%

Country guidelines

The greater of 30% or the index weight +15%

As of 6/30/23

*Assets include Assets Under Management (\$18.3B) & Assets Under Advisement (\$0.6B)

An Experienced and Collaborative Team

Portfolio Managers

Emerging Markets Equity



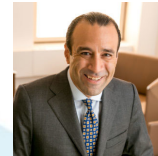
Andrew Jacobson, CFA

CIO, Portfolio Manager
35 years of experience



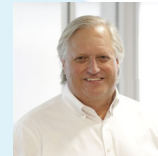
Young Kim

Portfolio Manager
24 years of experience



José Gerardo Morales, CFA

Portfolio Manager
34 years of experience



Donald Elfson, CFA

Portfolio Manager
40 years of experience

Portfolio managers	Global sector research analysts	Portfolio research analysts	Portfolio research associates	Traders
Bradley Amoils Global (32 yrs. exp.)	Carl Brown Health Care (29)	Christian Brandstetter, CFA US generalist (9)	Aaron Lewis EM generalist (7)	Melinda Luc Head trader (29)
Yogesh Borkar, CFA Small/Micro cap (30)	Anna Browning, CFA Industrials & Materials (20)	Michael Olsen, CFA EM generalist (14)	Andrew Lothian International generalist (2)	Patrick Chute Europe (18)
Matthew Franco, CFA Small/Micro cap (27)	Steven Espinosa, CFA IT & Comm. Services (23)		Kendall Marthaler Small/micro generalist (5)	Michael DeCarlo Asia (32)
David Kim, CFA Small/Micro cap/CGG (25)	Tyler Gaylord Financials (21)		Luke McCollester Global generalist (3)	Salvatore LoCascio Asia (16)
Andrew Yoon, CFA Emerging markets (12)	Alexander Harrison Consumer (23)		Kyle McDonald, CFA Small/micro generalist (10)	Kenneth McCabe Europe, Asia, US (26)
Director of Research/PM Jonathan Ellis, CFA Conc. Global Growth (25)	Alexis Kokolis, CFA Consumer (18)		David Mizrahi US generalist (5)	
Associate Portfolio Manager Dean Bumbaca, CFA International (13)	David Schneider, CFA IT & Energy (19)			

Cumulative Returns

Emerging Markets Equity

Inception date: 8/1/07

■ **Axiom - Gross** ■ **Axiom - Net** ■ **Index**



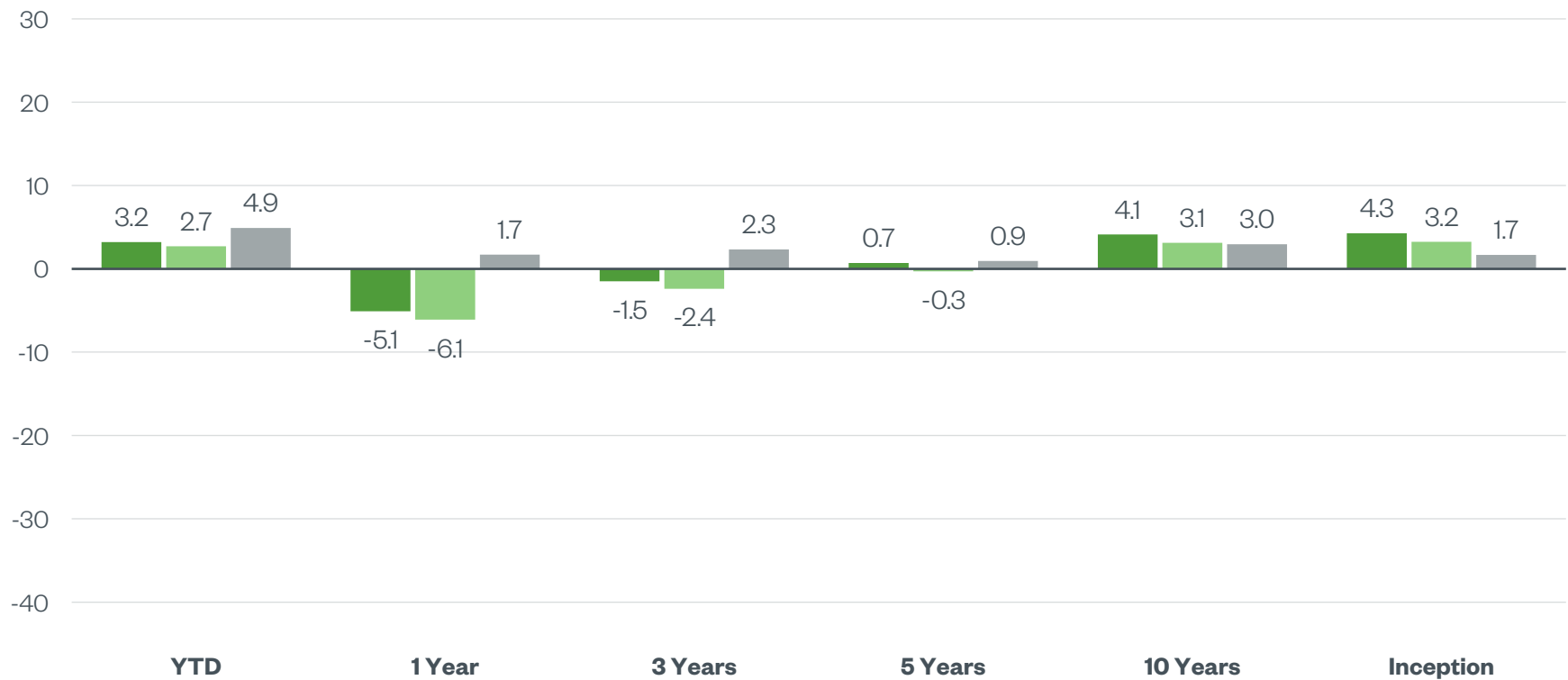
As of 6/30/23
 Index: MSCI Emerging Markets
 Currency: USD
 Please refer to the attached GIPS® compliant composite presentation for complete performance information. Past performance is no guarantee for future results.

Annualized Composite Returns

Emerging Markets Equity

Inception date: 8/1/07

■ Axiom - Gross ■ Axiom - Net ■ Index



Relative Gross

Value Added:

-1.7

-6.8

-3.8

-0.2

+1.2

+2.6

As of 6/30/23

Index: MSCI Emerging Markets

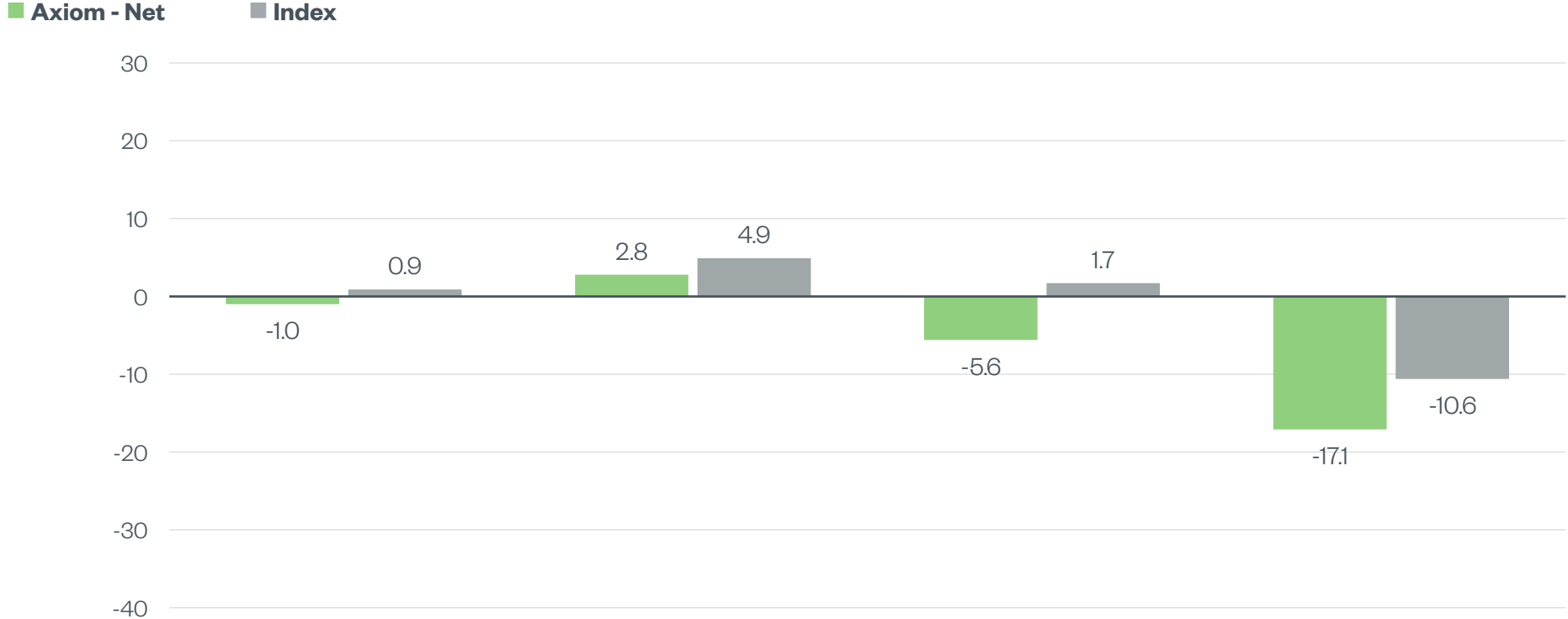
Currency: USD

Please refer to the attached GIPS® compliant composite presentation for complete performance information. Past performance is no guarantee for future results.

Annualized Account Returns

Emerging Markets Equity

Inception date: 2/2/2021
 MWRA Employees Retirement System MV: \$17,998,282



	QTD	YTD	1 Year	ITD
Relative Net Value Added:	-1.9	-2.1	-7.3	-6.5

As of 6/30/23
 Index: MSCI Emerging Markets
 Currency: USD

MWRA Employees Retirement System

Emerging Markets Equity

Portfolio Activity Summary	Since Inception	Date
Initial Contribution	\$20,000,000.00	2/2/2021
Additional Contribution	\$1,000,000.00	8/6/2021
Additional Contribution	\$3,000,000.00	10/7/2021
Additional Contribution	\$1,000,000.00	9/9/2022
Additional Contribution	\$1,000,000.00	5/2/2023
Withdrawals	\$0	-
Ending Market Value	\$17,998,282.32	6/30/2023

eVestment Universe Ranking

Emerging Markets Equity

Inception date of Axiom Emerging Markets Equity Strategy: 8/1/07

	QTD	YTD	1 Year	3 Year	5 Years	10 Years	Since Inception
Universe Percentile Ranking *	82	76	95	87	80	62	14

*eVestment Universe: Global Emerging Markets All Cap Growth Equity

Universe Member Count: 72

Risk/Return Analysis & Portfolio Characteristics

Emerging Markets Equity

10 Year Statistics	Axiom (Gross)	Axiom (Net)	Index
Cumulative Return (%)	49.8	35.9	33.8
Annualized Return (%)	4.1	3.1	3.0
Annualized Excess Return (%)	1.2	0.2	-
Batting Average (% Quarterly)	65.0	57.5	-
Annualized Standard Deviation (%)	16.8	16.8	16.8
Tracking Error (%)	3.8	3.8	-
Information Ratio	0.3	0.0	-
Annualized Sortino Ratio	0.3	0.2	0.2
Upside Capture (% Quarterly)	125.0	116.0	-
Downside Capture (% Quarterly)	102.6	104.0	-

	Axiom	Index
Holdings	85	1,423
% in Axiom Top 10 Holdings	37.7%	17.8%
Weighted Average Market Cap (\$B)	\$132.8	\$107.7
Median Market Cap (\$B)	\$24.0	\$6.4
Liquidity (\$M/Day)	\$212.3	\$172.9
Net Debt/Equity Ratio (%)	-1.3	13.7
Price Earnings Ratio	16.1	11.8
Earnings Growth Rate (%)	23.3	17.7
PEG Ratio (PE/Growth Rate)	0.7	0.7
Weighted Avg. Carbon Intensity	102.1	322.6

As of 6/30/23

Index: MSCI Emerging Markets

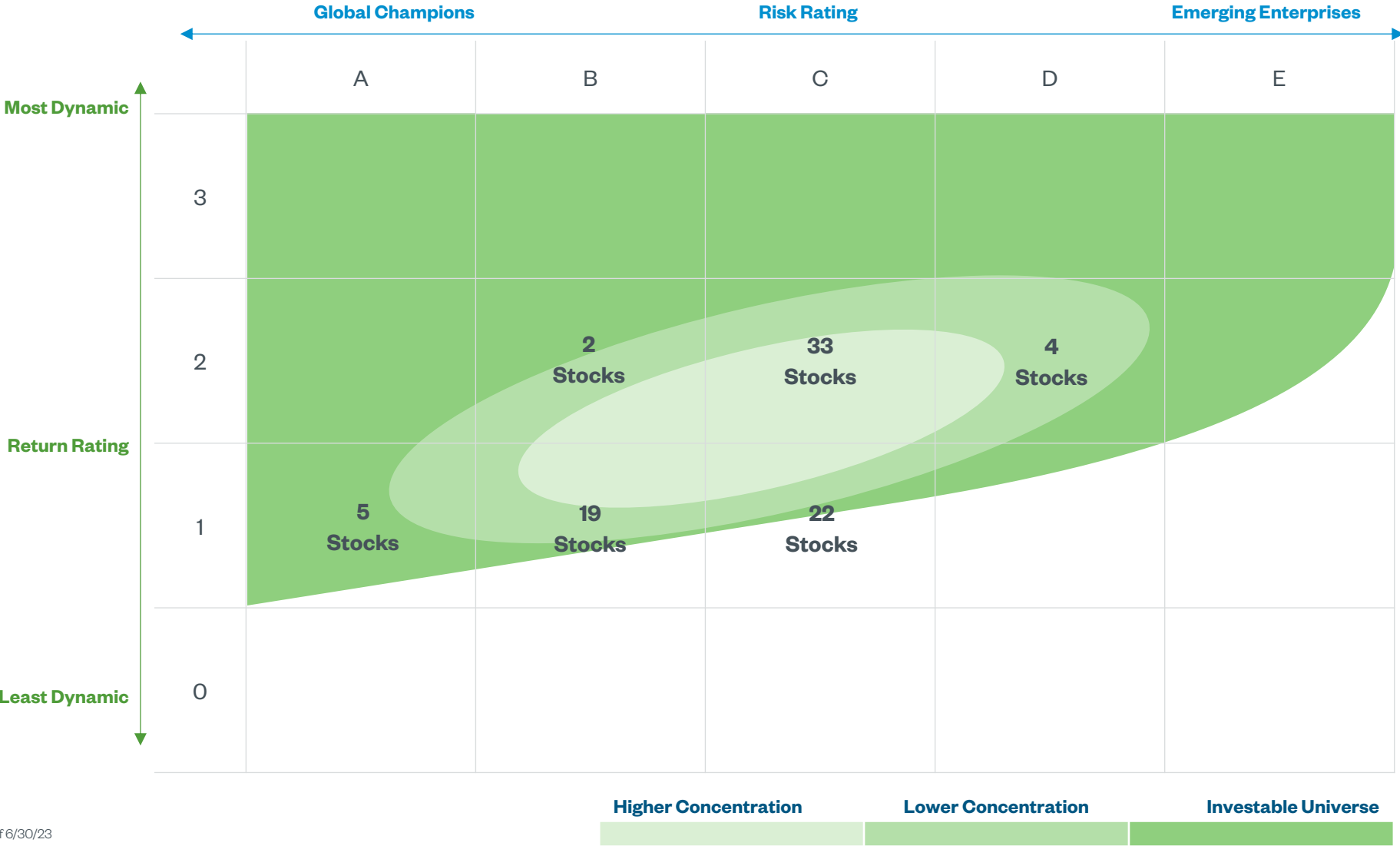
Currency: USD

Source: FactSet; Next twelve months expected earnings and growth, bottom-up forecasts shown above.

This information is supplemental to the Investment Performance Disclosure Statement results.

Current Portfolio Construction (Based on Axiom Ratings)

Emerging Markets Equity



As of 6/30/23
Image above is representative of a typical portfolio construction

Top Holdings & Active Weights

Emerging Markets Equity

Top 5 Holdings	Country	Sector	% of Portfolio	Axware Rating
Taiwan Semiconductor	Taiwan	Information Technology	9.0	A1
Samsung Electronics	Korea	Information Technology	6.1	A1
Tencent	China	Communication Services	5.3	B1
Trip.com	China	Consumer Discretionary	3.0	C2
HDFC Bank	India	Financials	3.0	B1

Top 5 Active Weights	Country	Sector	% Active Weight	Axware Rating
HDFC Bank	India	Financials	3.0	B1
Trip.com	China	Consumer Discretionary	2.8	C2
Taiwan Semiconductor	Taiwan	Information Technology	2.2	A1
Ping An Insurance	China	Financials	2.1	B1
Samsung SDI Co.	Korea	Information Technology	1.9	B2

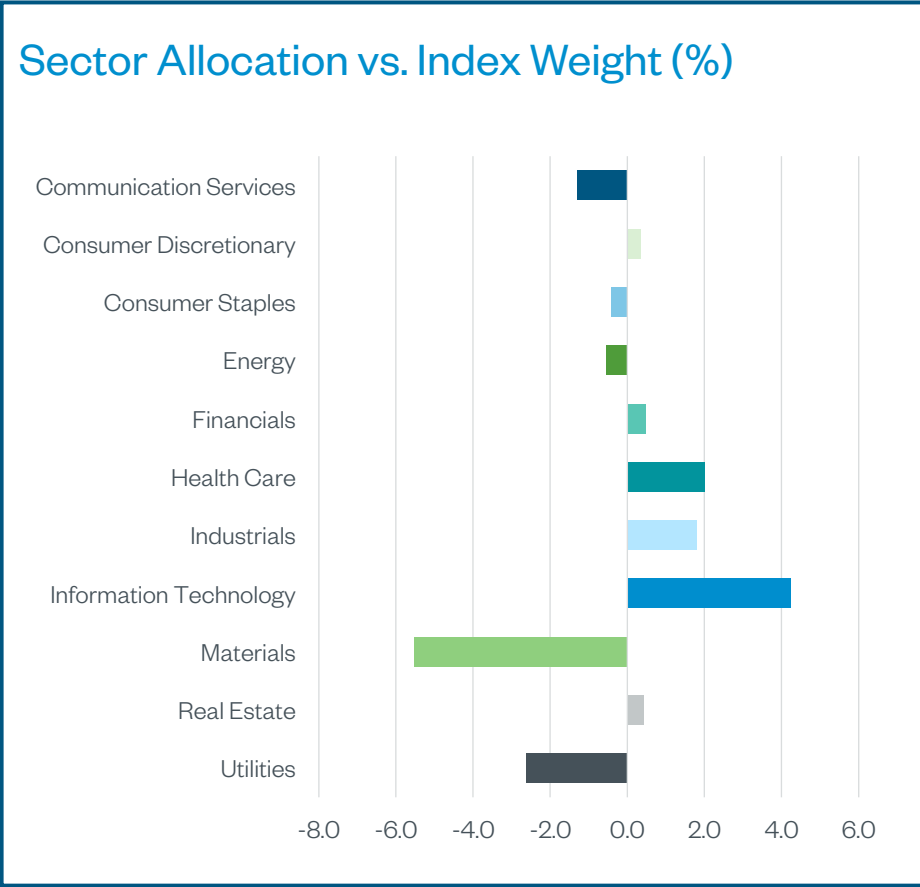
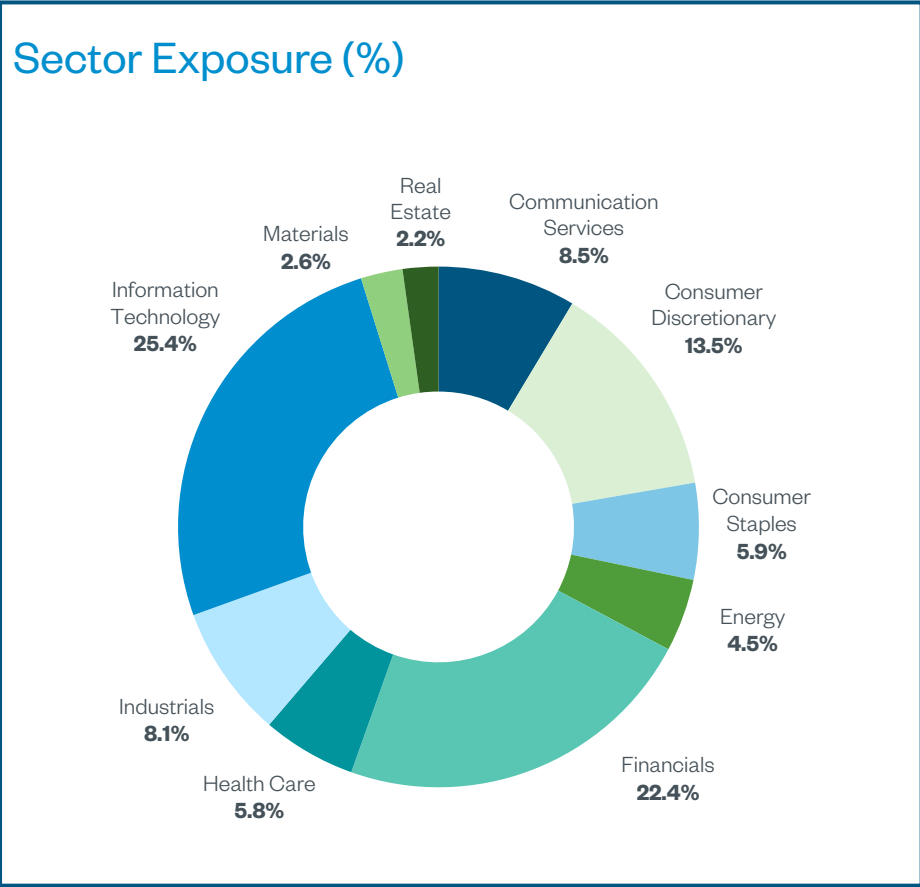
As of 6/30/23

This information is supplemental to the Investment Performance Disclosure Statement results.

It should not be assumed that recommendations made in the future will be profitable or will equal the performance of the securities on this list.

Sector Allocations

Emerging Markets Equity



As of 6/30/23
 Index: MSCI Emerging Markets
 This information is supplemental to the Investment Performance Disclosure Statement results.
 There can be no assurance that the Strategy will continue to hold these positions or that weightings do not change after June 30, 2023.

Country Allocations

Emerging Markets Equity

Country	Port. Weight	Index Weight	Difference
Austria	0.9	0.0	0.9
Brazil	8.4	5.5	2.9
China	25.0	29.5	-4.6
Hong Kong	2.6	0.0	2.6
India	16.6	14.6	2.0
Indonesia	3.4	2.0	1.4
Korea	11.2	12.3	-1.1
Mexico	4.1	2.8	1.3

Country	Port. Weight	Index Weight	Difference
Saudi Arabia	2.0	4.2	-2.2
Singapore	0.2	0.0	0.2
South Africa	0.6	3.2	-2.6
Taiwan	16.4	15.6	0.8
Thailand	2.9	1.9	0.9
United Arab Emirates	1.7	1.3	0.4
United Kingdom	0.9	0.0	0.9
United States*	2.0	0.0	2.0

As of 6/30/23

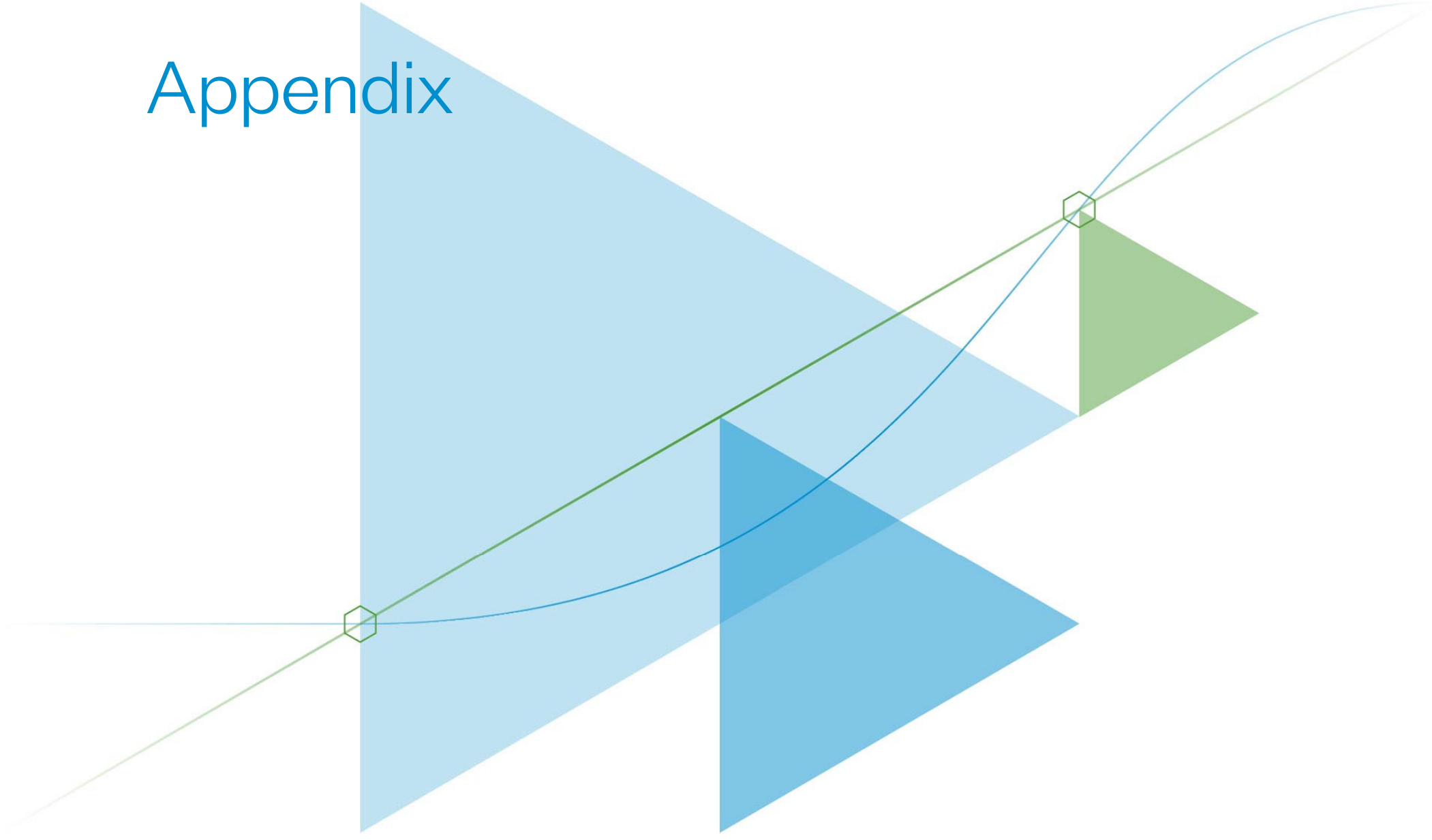
Index: MSCI Emerging Markets

This information is supplemental to the Investment Performance Disclosure Statement results.

There can be no assurance that the Strategy will continue to hold these positions or that weightings do not change after June 30, 2023.

*Axiom's policy is to use the MSCI country for country reporting purposes. There will be instances where the majority of a company's earning and/or assets are located in a country within the strategy guideline while the MSCI country may be located elsewhere.

Appendix



Our Commitment to Responsible Investing

Advancing positive change through active engagement

Axiom’s Approach to Responsible Investing

At Axiom, we holistically integrate environmental, social, and governance considerations into our investment process, organizational structure, and firm culture, believing that ESG factors are material to achieving investment outperformance and managing risk, as well as fostering a sustainable and responsible way of life.

Advancing Positive Change

- Companies should be well governed and take environmental and social factors into account to enable sustainable long-term investment returns
- Investment decisions should consider opportunities and longer-term risks including environmental, social and governance factors to obtain positive outcomes and manage the risk of financial loss
- Effective stewardship and active engagement can have positive outcomes
- Engagement is preferred but there may be times when divestment is appropriate

Active Engagement

We implement ESG into both our alpha generation and risk management, with a differentiated focus on engaging and investing in companies committed to improving their sustainability profile.

Axiom PRI Reporting Scorecard	
Investment & Stewardship Policy	5/5
Listed Equity – Active Fundamental – Incorporation	5/5
Listed Equity – Active Fundamental – Voting	4/5

Visit our website www.axiominvestors.com to view our full report.
[Assessment Report 2021: Axiom Investors](#)
[Transparency Report 2021: Axiom Investors](#)

The term “ESG” is not uniformly defined across the industry. Investment managers may understand and apply ESG factors in different ways, and the role those factors play in investment decisions also varies. Like any aspect of investment analysis, there is no guarantee that an investment strategy that considers ESG factors will result in performance better than or equal to strategies that do not consider such factors. Investing and making buy-and-sell decisions that emphasize ESG factors carries the risk that, under certain market conditions, the strategy may underperform those that do not incorporate such factors explicitly into the decision-making process. The application of ESG criteria may affect exposure to certain sectors or securities and may impact relative investment performance depending on whether such sectors or securities are generally in or out of favor in the market.

Risk Management Integration

Axiom’s holistic approach to risk management is fully integrated into our disciplined investment process incorporating both investment and non-investment related risks including at the individual company, portfolio and firm-wide levels.



- Fundamental risk analysis leveraging a consistent multi-faceted framework
- Bloomberg PORT and FactSet tools to evaluate portfolio risks
- Dedicated Performance Analytics team monitoring exposures



- Eze Compliance system ensuring consistent guideline adherence
- Pre- and post-trade compliance monitoring
- Daily reports on liquidity, ownership, and portfolio exposures



- Experienced, dedicated team overseeing settlement and clearance
- Structured process ensuring consistency and accuracy
- Annual SOC 1 Type 2 audit for testing and reviewing of internal operational controls

Strategy Performance

Strategy	Performance							Strategy Information		
	QTD	Cumulative YTD	1 Year	3 Years	Annualized		ITD	AUM	AUA	Inception
Long Only¹										
International Equity (gross)	3.7	15.4	14.7	7.5	7.8	8.5	12.0	\$1.9B	-	7/1/1996
International Equity (net)	3.5	14.9	13.8	6.6	6.9	7.6	11.0			
Benchmark (MSCI ACWI ex USA)	2.4	9.5	12.7	7.2	3.5	4.7	4.9			
Global Equity (gross)	7.8	21.9	19.2	7.1	8.5	10.3	8.9	\$3.8B	-	7/1/2004
Global Equity (net)	7.6	21.4	18.2	6.2	7.6	9.4	8.1			
Benchmark (MSCI ACWI)	6.2	13.9	16.5	11.0	8.1	8.8	7.4			
US Small Cap (gross)	3.6	6.7	6.4	7.7	9.5	10.9	11.3	\$199M	\$79M	9/1/2006
US Small Cap (net)	3.4	6.3	5.5	6.8	8.6	10.0	10.3			
Benchmark (Russell 2000 Growth)	7.1	13.6	18.5	6.1	4.2	8.8	8.3			
Emerging Markets (gross)	-1.0	3.2	-5.1	-1.5	0.7	4.1	4.3	\$5.7B	-	8/1/2007
Emerging Markets (net)	-1.2	2.7	-6.1	-2.4	-0.3	3.1	3.2			
Benchmark (MSCI EM)	0.9	4.9	1.7	2.3	0.9	3.0	1.7			
International Small Cap (gross)	-0.7	6.8	8.4	2.2	3.5		8.6	\$781M	-	1/1/2014
International Small Cap (net)	-0.9	6.3	7.3	1.2	2.5		7.6			
Benchmark (MSCI ACWI ex USA Small Cap)	2.0	6.8	10.9	8.1	2.6		4.3			
Emerging Markets World (gross)	0.0	6.2	-1.3	0.6	1.8		3.8	\$2.0B	\$541M	7/1/2014
Emerging Markets World (net)	-0.2	5.7	-2.3	-0.4	0.9		2.8			
Benchmark (MSCI EM)	0.9	4.9	1.7	2.3	0.9		1.8			
Concentrated Global Growth (gross)	9.4	19.9	18.8	7.8	10.4		10.9	\$3.6B	-	12/3/2014
Concentrated Global Growth (net)	9.1	19.4	17.9	6.9	9.5		10.1			
Benchmark (MSCI ACWI)	6.2	13.9	16.5	11.0	8.1		7.7			
Global Small Cap (gross)	0.9	7.2	6.7				-18.9	\$115M	-	12/1/2021
Global Small Cap (net)	0.7	6.7	5.7				-19.7			
Benchmark (MSCI ACWI Small Cap)	3.6	8.0	13.0				-5.7			
Long/Short²										
International Opportunity Fund (net)	4.0	15.7	13.2	6.6	5.8	8.0	12.0	\$151M	-	1/1/1999
Benchmark (MSCI ACWI ex USA)	2.4	9.5	12.7	7.2	3.5	4.7	4.7			
International Small/Micro Cap Opportunity Fund (net)	-2.0	1.9	0.1	-2.0	-0.5	5.3	8.6	\$76M	-	9/1/2004
Benchmark (HFRX Equity Hedge)	2.2	3.0	4.6	7.7	3.2	3.1	1.6			
Global Small/Micro Cap Opportunity Fund (net)	-2.0	2.2	0.5	-1.6	-0.2	5.6	5.2	\$25M	-	2/1/2007
Benchmark (HFRX Equity Hedge)	2.2	3.0	4.6	7.7	3.2	3.1	0.7			

As of 6/30/23

¹Strategies are available via separate account, commingled fund, collective investment trust and UCIT. ²Strategies are available via separate account and commingled fund.

Investment Team Bios: Portfolio Managers

Bradley Amoils

Managing Director/Portfolio Manager, Axiom Investors, 2002-Present
VP, Portfolio Manager, American Century, 1997-2002
Equity Research Analyst, OppenheimerFunds, 1995-1997
M.B.A., Columbia Business School, Columbia University
B.Sc., M.D. equivalent, University of the Witwatersrand Johannesburg

Yogesh Borkar, CFA

Senior Vice President/Portfolio Manager, Axiom Investors, 2021-Present
Vice President/Portfolio Manager, Axiom Investors, 2013-2021
Associate Portfolio Manager, Fidelity Investments, 2005-2012
Senior Research Analyst, DuPont Capital Management, 2001-2005
Portfolio Manager/Senior Research Analyst, ValueQuest/TA, 1996-2001
Vice President, Global Research, CIFAR Princeton, 1989-1994
Author, Rising Stars in Emerging Markets, Published November 2013
M.B.A., Yale University
B.Com., Business Management, University of Bombay
Certificate in ESG Investing, CFA Institute USA

Dean Bumbaca, CFA

Associate Portfolio Manager, Axiom Investors, 2022-Present
Research Analyst, Axiom Investors, 2017-2022
Research Associate, Axiom Investors, 2012-2017
Trading Assistant, Axiom Investors, 2012
Operations Associate, Axiom Investors, 2010-2012
M.B.A., The Wharton School, University of Pennsylvania
B.B.A., School of Business, University of Wisconsin-Madison

Donald Elefson, CFA

Senior Vice President/Portfolio Manager, Axiom Investors, 2012-Present
Portfolio Manager, Harding Loevner, 2008-2012
Portfolio Manager, US Trust, 1999-2007
Portfolio Manager, Smith Barney Asset Management, 1994-1998
Analyst, Merrill Lynch Asset Management, 1989-1994
B.A., Economics, University of Washington

Jonathan Ellis, CFA

Director of Research/Portfolio Manager, Axiom Investors, 2019-Present
Vice President/Research Analyst, Axiom Investors, 2011-2019
Director, Senior Equity Analyst, Bank of America Merrill Lynch, 1999-2011
Associate, Pershing LLC, 1998-1999
M.B.A., Columbia Business School, Columbia University
B.A., Economics, with honors, Lafayette College

Matthew Franco, CFA

Managing Director/Portfolio Manager, Axiom Investors, 1998-Present
Research Analyst, Columbus Circle Investors, 1997-1998
Research Analyst, R.L. Renck & Co., 1996-1997
B.S., Finance, summa cum laude, Saint John's University

Andrew Jacobson, CFA

CEO/Chief Investment Officer, Axiom Investors, 1998-Present
Executive VP, Portfolio Manager, Columbus Circle Investors, 1993-1998
Business Analyst, Booz Allen Hamilton, 1989-1991
Analyst, Apax Associates, 1988-1989
M.B.A., with distinction, The Wharton School, University of Pennsylvania
A.B., Molecular Biology, cum laude, Princeton University

Investment Team Bios: Portfolio Managers

David Kim, CFA

Senior Vice President/Portfolio Manager, Axiom Investors, 2005-Present
Analyst, Pinnacle Associates, 2002-2005
Associate, Morgan Stanley, 2000-2002
Associate, DLJ International-London/Pershing, 1998-2000
B.S., Finance & International Business, Georgetown University

Young Kim

Senior Vice President/Portfolio Manager, Axiom Investors, 2021-Present
Senior Portfolio Manager, Global EM, Columbia Threadneedle Investments, 2011-2021
Senior Vice President, Asia Equity, Marathon Asset Management, 2010-2011
Vice President, Investments/Advisor, 360IP, Inc., 2009-2011
Vice President, Senior Analyst, Galleon Asia Investments, 2006-2009
Senior Engineer and Director of Business Development, Asia, Wavemarket, 2002-2004
Lead Software Engineer/Consultant, Bluefire Systems, 2000-2002
M.B.A., Harvard Business School
M.S., Electrical Engineering & Computer Science, Massachusetts Institute of Technology
S.B., Computer Science, Massachusetts Institute of Technology

José Gerardo Morales, CFA

Senior Vice President/Portfolio Manager, Axiom Investors, 2017-Present
Portfolio Manager/CIO, Mirae Asset Global Investment (USA), 2010-2016
Head of EM/Deputy CIO, LatAm & EMEA, Mirae Asset Global Invest. (UK), 2007-2010
Head of Emerging European Equities, Pictet Asset Management, 2006-2007
Director, Head of EMEA Emerging Markets, WestLB Mellon Asset Mgmt, 2002-2006
Head of EMEA Emerging Markets, HSBC Asset Management Ltd., 1999-2002
M.B.A., Georgetown University
B.Sc., Finance, George Mason University

Andrew Yoon, CFA

Vice President/Portfolio Manager, Axiom Investors, 2021-Present
Portfolio Manager/Analyst, Putnam Investments, 2017-2021
Equity Analyst, Putnam Investments, 2014-2017
Equity Associate, Putnam Investments, 2012-2014
Investment Associate, Putnam Investments, 2011-2012
S.B., Economics & Management Science, Massachusetts Institute of Technology

Investment Team Bios: Research Analysts

Christian Brandstetter, CFA

Analyst, Axiom Investors, 2022-Present
Research Associate, Axiom Investors, 2016-2022
Operations Associate, Axiom Investors, 2014-2016
Credit Rating Analyst, The Bank of New York Mellon, 2013-2014
B.A., Economics, magna cum laude, Bucknell University

Carl D. Brown

Vice President/Research Analyst, Axiom Investors, 2016-Present
Assistant Portfolio Manager/Analyst, Royce & Associates, 2012-2016
Co-Portfolio Manager/Analyst, Royce & Associates, 2009-2012
Founding Partner/Portfolio Manager, Rebus Partners, 2008-2009
Portfolio Manager/Senior Analyst, Cramer Rosenthal McGlynn, LLC, 1999-2008
Analyst, KPMG Peat Marwick, 1994-1999
M.B.A., The Stern School of Business, New York University
B.A., International Relations, University of Pennsylvania

Anna K. Browning, CFA

Research Analyst, Axiom Investors, 2019-Present
Director, Senior Equity Analyst, Bank of America Merrill Lynch, 2005-2019
Analyst, Investment Banking, Citigroup, 2003-2005
B.A., Economics, cum laude, The Wharton School, University of Pennsylvania

Steven Espinosa, CFA

Research Analyst, Axiom Investors, 2013-Present
Equity Research Analyst, Neuberger Berman, 2007-2013
Financial Advisor, Merrill Lynch, 2003-2005
Senior Banking Analyst, JPMorgan, 2000-2003
M.B.A., The Stern School of Business, New York University
B.S., Business Administration, University of California, Berkeley

Tyler Gaylord

Vice President/Research Analyst, Axiom Investors, 2012-Present
Equity Research Analyst, Fidelity Management and Research, 2006-2012
Fund Accountant, Bank of New York, 2002-2004
M.B.A., The Stern School of Business, New York University
B.S., Business Administration, cum laude, University of Colorado

Alexander Harrison

Research Analyst, Axiom Investors, 2014-Present
Vice President, Sector Analyst, Blackrock Inc., 2010-2014
Vice President, Sector Analyst, Nomura Asset Management, 2006-2009
Associate, Financial Analyst, Goldman, Sachs & Co., 2000-2005
M.B.A., Finance & Economics, Columbia Business School, Columbia University
B.S., Industrial & Labor Relations, Cornell University

Alexis Kokolis, CFA

Research Analyst, Axiom Investors, 2015-Present
Equity Research Analyst, Alpine Woods Capital Investors, 2012-2015
Analyst, Fayez Sarofim & Co., 2008-2010
Senior Associate, Alvarez & Marsal, 2005-2008
M.B.A., Columbia Business School, Columbia University
B.B.A., Finance and B.A., Plan II Honors, University of Texas at Austin

Investment Team Bios: Research Analysts

Michael Olsen, CFA

Research Analyst, Axiom Investors, 2017-Present
Research Associate, Axiom Investors, 2010-2017
Operations Associate, Axiom Investors, 2009-2010
B.S., Finance, magna cum laude, Fairfield University

David Schneider, CFA

Vice President/Research Analyst, Axiom Investors, 2007-Present
Senior Associate, PricewaterhouseCoopers LLC, 2004-2006
B.S., Finance & International Business, with honors, Penn State University

Client Partnership Bios

Lindsay Chamberlain

Managing Director/Client Partnerships, Axiom Investors, 2021-Present
Senior VP/Client Service and Marketing, Axiom Investors, 2013-2021
Director, Institutional Investments, Artio Global Investors, 2008-2013
Investor Relations, JPMorgan, 2007-2008
Sales Assistant, Bank of America, 2006-2007
Project Manager, General Electric, 2004-2006
B.S., Business Information Technology, magna cum laude, Virginia Tech

Steve Hanson

Director of Client Partnerships, Axiom Investors, 2015-Present
Vice President, Institutional Consultant Relations, American Century, 2013-2015
Director, Public Fund Services, Lord Abbett & Company, 2004-2012
M.B.A., Raymond A. Mason School of Business, College of William & Mary
B.S.B.A., Economics, University of Central Florida

Greg Schneider

Director of Client Partnerships, Axiom Investors, 2021-Present
Managing Director of Consultant Relations, GQG Partners, 2019-2021
Director of Business Development, GQG Partners, 2017-2019
Director of Business Development, Pacific Current Group, 2016-2017
Senior Consultant Relations Manager, Aberdeen Asset Management, 2009-2016
Analyst, BlackRock, 2006-2008
B.B.A., Finance & Accounting, University of Michigan

Megan Strater

Director of Client Partnerships, Axiom Investors, 2021-Present
Consultant Relations Lead, Bridgewater Associates, 2018-2021
Marketing Associate, Bridgewater Associates, 2016-2018
Client Service Coordinator, Bridgewater Associates, 2011-2016
Chief of Staff, White Deer Energy, 2007-2011
B.A., English & Spanish, Highest Honors, Rutgers University

Axiom International Equity Strategy: GIPS composite report

International Equity Composite (Inception 07/01/96)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	15.36%	14.89%	9.47%	≤5	1,909.3	18,344.6	10.41	N/A	19.04	16.81
2022	-31.35%	-31.94%	-16.00%	≤5	1,611.8	16,580.9	9.72	N/A	21.01	19.26
2021	20.20%	19.21%	7.82%	6	2,251.0	18,639.7	12.08	0.54	15.82	16.79
2020	37.97%	36.84%	10.65%	6	2,202.5	18,535.9	11.88	N/A	17.83	17.93
2019	33.76%	32.66%	21.51%	7	1,715.6	13,458.1	12.75	N/A	12.99	11.34
2018	-16.34%	-17.05%	-14.20%	6	989.4	9,729.2	10.17	N/A	13.02	11.38
2017	35.25%	34.15%	27.19%	6	1,123.6	12,116.0	9.27	N/A	10.91	11.87
2016	-3.56%	-4.38%	4.50%	7	1,124.2	9,671.6	11.62	0.11	11.17	12.51
2015	1.21%	0.35%	-5.66%	7	1,402.2	8,704.3	16.11	0.20	11.25	12.13
2014	-2.76%	-3.58%	-3.87%	8	2,035.0	9,482.3	21.46	0.07	13.04	12.81
2013	32.03%	30.94%	15.29%	8	2,307.9	9,949.8	23.20	0.42	16.91	16.23

Fee schedule: First \$25 million: 0.85%; Balance: 0.75%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom International Equity Composite has had a performance examination for the periods September 1, 1998 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The International Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of international equities. Portfolios are invested in the full range of developed markets and may also invest in selected emerging markets. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all Institutional international style fee-paying, discretionary equity accounts, regardless of asset size and comingled fund(s). The Composite was initiated and created in September 1998. For the periods from July 1, 1996 to August 31, 1998 (the "Prior Composite") was managed by Andrew Jacobson and current Axiom team members at Columbus Circle Investors ("Columbus"). A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the MSCI All Country World ex U.S. index, which is designed to measure the equity market performance of developed and emerging markets excluding the United States. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholding taxes and is free float-adjusted market cap weighted and unmanaged. Prior to January 1, 2001, the benchmark was calculated on a total return basis not including tax credits. FX is based off London 4 P.M. close.

As of 6/30/23

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom International Equity Fund II, which is included in the International Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 0.05%. The Axiom International Equity CIT, which is also included in the composite has an all-in fee (management fees & expenses) of 0.85%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom Global Equity Strategy: GIPS composite report

Global Equity Composite (Inception 07/01/04)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	21.92%	21.42%	13.93%	≤5	3,557.9	18,344.6	19.39	N/A	21.30	17.03
2022	-33.72%	-34.29%	-18.36%	≤5	2,903.9	16,580.9	17.51	N/A	23.24	19.86
2021	20.20%	19.21%	18.54%	≤5	3,672.3	18,639.7	19.70	N/A	17.95	16.84
2020	36.03%	34.92%	16.25%	≤5	3,554.8	18,535.9	19.18	N/A	19.40	18.13
2019	32.43%	31.35%	26.60%	≤5	2,575.4	13,458.1	19.14	N/A	13.80	11.22
2018	-10.76%	-11.51%	-9.42%	≤5	1,535.5	9,729.2	15.78	N/A	12.88	10.48
2017	35.03%	33.97%	23.97%	≤5	1,853.3	12,116.0	15.30	N/A	10.96	10.36
2016	-0.82%	-1.61%	7.86%	9	2,829.8	9,671.6	29.26	0.24	11.26	11.06
2015	4.78%	3.95%	-2.36%	10	3,072.8	8,704.3	35.30	0.16	11.19	10.79
2014	1.67%	0.86%	4.16%	11	3,269.7	9,482.3	34.48	0.19	12.08	10.50
2013	27.86%	26.86%	22.80%	13	4,072.2	9,949.8	40.93	0.25	16.30	13.94

Fee schedule: First \$25 million: 0.80%; next \$50 million: 0.70%; next \$150 million: 0.60%; next \$250 million: 0.50%; Balance: 0.30%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom Global Equity composite has had a performance examination for the periods July 1, 2004 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The Global Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of international equities. Portfolios are invested in companies located both in the United States and throughout the world. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all institutional global style fee-paying, discretionary equity accounts, regardless of asset size and comingled fund(s). The Composite was initiated and created in July 2004. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the MSCI All Country World index, which is designed to measure the equity market performance of developed and emerging markets. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholdings taxes and is free float-adjusted market cap weighted and unmanaged. FX is based off London 4 P.M. close.

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom Global Equity Fund, which is included in the Global Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 1.26%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom US Small Cap Equity Strategy: GIPS composite report

US Small Cap Equity Composite (Inception 09/01/06)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	6.69%	6.25%	13.55%	≤5	199.0	18,344.6	1.08	N/A	19.28	22.20
2022	-29.72%	-30.33%	-26.36%	≤5	182.2	16,580.9	1.10	N/A	21.87	26.20
2021	25.61%	24.58%	2.83%	≤5	249.9	18,639.7	1.34	N/A	17.06	23.07
2020	48.98%	47.77%	34.63%	≤5	242.7	18,535.9	1.31	N/A	20.74	25.10
2019	30.87%	29.80%	28.48%	≤5	204.3	13,458.1	1.52	N/A	15.67	16.37
2018	-2.70%	-3.51%	-9.31%	≤5	208.0	9,729.2	2.14	N/A	15.73	16.46
2017	21.02%	20.04%	22.17%	≤5	363.1	12,116.0	3.00	N/A	12.56	14.59
2016	5.52%	4.68%	11.32%	≤5	282.4	9,671.6	2.92	N/A	14.23	16.67
2015	-2.73%	-3.50%	-1.38%	≤5	44.2	8,704.3	0.51	N/A	14.37	14.95
2014	1.11%	0.31%	5.60%	≤5	101.7	9,482.3	1.07	N/A	13.14	13.82
2013	54.36%	53.17%	43.30%	≤5	103.7	9,949.8	1.04	N/A	14.65	17.27

Fee schedule: First \$10 million: 0.80%; next \$15 million: 0.75%; Balance: 0.70%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom US Small Cap Equity composite has had a performance examination for the periods September 1, 2006 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The US Small Cap Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of small cap equities. Portfolios are invested in smaller capitalization equity and equity-related securities in companies located within the United States. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all Institutional small cap style fee-paying, discretionary equity accounts, regardless of asset size and comingled fund(s). The Composite was initiated and created in September 2006. As of January 1, 2022 the composite name changed from US Small Cap Equity Composite - IPO Eligible to US Small Cap Equity Composite. Prior to January 1, 2022 the composite only included accounts that were eligible to invest in Initial Public Offerings. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the Russell 2000 Growth index, which is designed to measure the performance of the small cap growth segment of the U.S. equity universe. The benchmark is calculated on a total return basis and is free float-adjusted market cap weighted and unmanaged.

As of 6/30/23

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. The fee schedule for the Axiom US Small Cap Equity Portfolio, which is included in the US Small Cap Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 0.40%. The Axiom US Small Cap Equity Trust CIT, which is also included in the composite has an all-in fee (management fees & expenses) of 0.70%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom Emerging Markets Equity Strategy: GIPS composite report

Emerging Markets Equity Composite (Inception 08/01/07)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	3.22%	2.72%	4.89%	19	5,558.5	18,344.6	30.30	N/A	17.62	17.65
2022	-29.96%	-30.65%	-20.09%	19	5,691.5	16,580.9	34.33	0.23	20.17	20.26
2021	-3.22%	-4.15%	-2.54%	17	7,526.5	18,639.7	40.38	0.26	18.49	18.33
2020	31.22%	29.99%	18.31%	17	7,342.6	18,535.9	39.61	0.53	19.80	19.60
2019	25.98%	24.79%	18.42%	18	6,180.6	13,458.1	45.93	0.31	14.46	14.17
2018	-15.76%	-16.59%	-14.58%	18	4,541.1	9,729.2	46.67	0.50	14.76	14.60
2017	42.57%	41.21%	37.28%	21	6,210.6	12,116.0	51.26	0.71	15.07	15.35
2016	9.30%	8.21%	11.19%	16	3,170.0	9,671.6	32.78	0.17	15.55	16.07
2015	-11.29%	-12.19%	-14.92%	16	2,571.7	8,704.3	29.54	0.29	13.96	14.06
2014	-0.26%	-1.26%	-2.19%	14	2,349.1	9,482.3	24.77	0.35	15.07	15.00
2013	4.30%	3.26%	-2.60%	8	1,444.2	9,949.8	14.52	0.30	19.37	19.04

Fee schedule: First \$25 million: 1.00%; next \$75 million: 0.90%; next \$25 million: 0.80%; next \$50 million: 0.70%; Balance: 0.60%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom Emerging Markets Equity composite has had a performance examination for the periods August 1, 2007 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The Emerging Markets Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of emerging market equities. Portfolios are invested in the full range of global emerging markets. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all institutional emerging markets style fee-paying, discretionary equity accounts, regardless of asset size and comingled fund(s). The Composite was initiated and created in August 2007. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the MSCI Emerging Markets index, which is designed to measure the equity market performance in the global emerging markets. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholding taxes and is free float-adjusted market cap weighted and unmanaged. FX is based off London 4 P.M. close.

As of 6/30/23

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom Emerging Markets Equity Fund, which is included in the Emerging Markets Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 0.21%. The Axiom Emerging Markets Trust CIT, which is also included in the composite has an all-in fee (management fees & expenses) of 0.74%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom International Small Cap Equity Strategy: GIPS composite report

International Small Cap Equity Composite (Inception 01/01/14)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	6.81%	6.31%	6.84%	7	781.2	18,344.6	4.26	N/A	18.97	17.79
2022	-32.40%	-33.07%	-19.97%	7	784.1	16,580.9	4.73	0.05	23.59	22.73
2021	11.18%	10.12%	12.93%	7	1,095.4	18,639.7	5.88	N/A	18.58	19.86
2020	38.87%	37.57%	14.24%	7	1,076.8	18,535.9	5.81	N/A	20.93	20.98
2019	34.82%	33.57%	22.42%	6	672.9	13,458.1	5.00	N/A	13.60	11.61
2018	-18.59%	-19.39%	-18.20%	≤5	389.8	9,729.2	4.01	N/A	14.77	12.34
2017	41.39%	40.09%	31.65%	≤5	334.7	12,116.0	2.76	N/A	12.11	11.53
2016	-0.67%	-1.65%	3.91%	≤5	227.0	9,671.6	2.35	N/A	12.53	12.31
2015	29.59%	28.35%	2.60%	≤5	19.8	8,704.3	0.23	N/A	N/A	N/A
2014	-1.48%	-2.47%	-4.03%	≤5	7.9	9,482.3	0.08	N/A	N/A	N/A

Fee schedule: First \$25 million: 0.95%; next \$75 million: 0.85%; Balance: 0.75%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has pre-pared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom International Small Cap Equity composite has had a performance examination for the periods January 1, 2014 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The International Small Cap Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of International small cap equities. Portfolios are invested in smaller capitalization international equity and international equity-related securities. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all institutional international small cap style fee-paying, discretionary equity accounts, regardless of asset size and comingled fund(s). The Composite was initiated and created in January 2014. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the MSCI All Country World ex U.S. Small Cap index, which is designed to measure the small cap equity market performance of developed and emerging markets excluding the United States. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholding taxes and is free float-adjusted market cap weighted and unmanaged. FX is calculated using London 4 P.M. close.

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month effective September 30, 2017.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom International Small Cap Equity Fund, which is included in the International Small Cap Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 0.17%. The Axiom International Small Cap CIT, which is also included in the composite has an all-in fee (management fees & expenses) of 0.78%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom Emerging Markets World Equity Strategy: GIPS composite report

Emerging Markets World Equity Composite (Inception 07/01/14)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	6.24%	5.74%	4.89%	10	2,038.6	18,344.6	11.11	N/A	17.65	17.65
2022	-30.21%	-30.90%	-20.09%	10	1,924.3	16,580.9	11.61	0.33	19.95	20.26
2021	-0.71%	-1.66%	-2.54%	8	1,634.8	18,639.7	8.77	0.48	18.10	18.33
2020	34.07%	32.81%	18.31%	8	1,876.2	18,535.9	10.12	N/A	19.65	19.60
2019	25.67%	24.49%	18.42%	6	1,268.6	13,458.1	9.43	0.09	14.33	14.17
2018	-16.00%	-16.82%	-14.58%	≤5	1,118.5	9,729.2	11.50	N/A	14.42	14.60
2017	44.13%	42.76%	37.28%	≤5	221.6	12,116.0	1.83	N/A	13.87	15.35
2016	7.09%	6.07%	11.19%	≤5	87.1	9,671.6	0.90	N/A	N/A	N/A
2015	-7.83%	-8.73%	-14.92%	≤5	2.2	8,704.3	0.02	N/A	N/A	N/A
2014*	-5.89%	-6.37%	-7.84%	≤5	2.4	9,482.3	0.02	N/A	N/A	N/A

*Non-annualized partial period performance beginning 7/01/2014

Fee schedule: First \$25 million: 1.00%; next \$75 million: 0.90%; next \$25 million: 0.80%; next \$50 million: 0.70%; Balance: 0.60%

Firm compliance statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom Emerging Markets World Equity composite has had a performance examination for the periods July 1, 2014 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The Emerging Markets World Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of emerging market equities. Portfolios are invested in the full range of global emerging markets within all capitalization sizes. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all institutional emerging markets world style fee-paying, discretionary equity accounts, regardless of asset size. The Composite was initiated and created in July 2014. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request. As of September 30, 2016, the Emerging Markets All Cap strategy (the "Composite") has been renamed the Emerging Markets World Equity composite.

Benchmark Description: The benchmark is the MSCI Emerging Markets index, which is designed to measure the equity market performance in the global emerging markets. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholding taxes and is free float-adjusted market cap weighted and unmanaged. FX is based off London 4 P.M. close.

As of 6/30/23

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month effective July 31, 2018.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom Emerging Markets World Equity Fund, which is included in the Emerging Markets World Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 1.32%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom Concentrated Global Growth Equity Strategy: GIPS composite report

Concentrated Global Growth Equity Composite (Inception 12/03/14)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	19.91%	19.42%	13.93%	8	3,548.0	18,344.6	19.34	N/A	20.02	17.03
2022	-31.22%	-31.82%	-18.36%	6	2,478.8	16,580.9	14.95	N/A	22.33	19.86
2021	22.32%	21.31%	18.54%	≤5	384.6	18,639.7	2.06	N/A	17.89	16.84
2020	38.02%	36.89%	16.25%	≤5	781.1	18,535.9	4.21	N/A	19.28	18.13
2019	38.49%	37.36%	26.60%	≤5	105.1	13,458.1	0.78	N/A	14.21	11.22
2018	-9.59%	-10.34%	-9.42%	≤5	135.1	9,729.2	1.39	N/A	13.33	10.48
2017	36.29%	35.43%	23.97%	≤5	153.4	12,116.0	1.27	N/A	11.11	10.36
2016	-3.09%	-3.46%	7.86%	≤5	43.1	9,671.6	0.45	N/A	N/A	N/A
2015	6.71%	6.27%	-2.36%	≤5	64.0	8,704.3	0.74	N/A	N/A	N/A
2014*	-1.23%	-1.26%	-1.55%	≤5	74.1	9,482.3	0.78	N/A	N/A	N/A

*Non-annualized partial period performance beginning 12/03/2014

Fee schedule: First \$25 million: 0.80%; next \$50 million: 0.70%; next \$150 million: 0.60%; next \$250 million: 0.50%; Balance: 0.30%

Firm Compliance Statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The Axiom Concentrated Global Growth Equity composite has had a performance examination for the periods December 3, 2014 to March 31, 2023. The verification and performance examination reports are available upon request.

Definition of the Firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite Description: The Concentrated Global Growth Equity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of international equities. Portfolios are invested in companies within the United States and throughout the world. Currencies may be actively managed to reduce portfolio volatility. The Composite represents the performance of all institutional concentrated global growth style fee-paying, discretionary equity accounts, regardless of asset size. The Composite was initiated and created in December 2014. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request.

Benchmark Description: The benchmark is the MSCI All Country World index, which is designed to measure the equity market performance of developed and emerging markets. The benchmark is calculated on a total return basis with net dividends reinvested, after the deduction of withholdings taxes and is free float-adjusted market cap weighted and unmanaged. FX is based off London 4 P.M. close.

As of 6/30/23

Significant Cash Flow Policy: Accounts with a cash flow greater than 20% of the portfolio market value are excluded for the month.

Reporting Currency: Valuations are computed and performance is reported in U.S. dollars. FX is based off NY 4 P.M. close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule. Prior to May 2017, actual fees were used to calculate net of fee performance. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom Concentrated Global Growth Equity Fund, which is included in the Concentrated Global Growth Equity Composite is listed above. The total expense ratio as of December 31, 2022 was 0.16%.

Internal Dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized Standard Deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom International Opportunity Strategy: GIPS composite report

International Opportunity Long/Short Composite (Inception 01/01/99)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	16.23%	15.67%	9.47%	≤5	151.3	18,344.6	0.82	N/A	22.06	16.81
2022	-34.44%	-35.11%	-16.00%	≤5	127.4	16,580.9	0.77	N/A	24.00	19.26
2021	22.15%	18.79%	7.82%	≤5	212.9	18,639.7	1.14	N/A	18.72	16.79
2020	46.38%	40.07%	10.65%	≤5	193.8	18,535.9	1.05	N/A	21.56	17.93
2019	37.50%	35.44%	21.51%	≤5	161.0	13,458.1	1.20	N/A	16.49	11.34
2018	-20.05%	-20.97%	-14.20%	≤5	126.3	9,729.2	1.30	N/A	16.43	11.38
2017	43.90%	40.79%	27.19%	≤5	164.7	12,116.0	1.36	N/A	14.02	11.87
2016	-7.04%	-7.94%	4.50%	≤5	130.4	9,671.6	1.35	N/A	14.85	12.51
2015	4.24%	3.23%	-5.66%	≤5	156.2	8,704.3	1.79	N/A	16.65	12.13
2014	-4.03%	-5.22%	-3.87%	≤5	157.5	9,482.3	1.66	N/A	16.77	12.81
2013	47.57%	45.87%	15.29%	≤5	182.1	9,949.8	1.83	N/A	19.06	16.23

Fee schedule: 1.00% Management Fee and 10% Incentive Fee

Firm compliance statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. The verification reports are available upon request. A firm that claims compliance with the GIPS standards must establish policies and procedure for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. Verification does not provide assurance on the accuracy of any specific performance report.

Definition of the firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite description: The International Opportunity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of international equities both long and short. Portfolios are invested in the full range of developed markets and may also invest in selected emerging markets. Currencies may be actively managed to reduce portfolio volatility. Modest levels of leverage may be used when deemed appropriate in declining markets. The Composite represents the performance of all institutional global style fee-paying, discretionary equity accounts, regardless of asset size and commingled fund(s). The Composite was initiated and created in January 1999. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request. As of September 1, 2016, the Composite includes both the International Opportunity and International Offshore Funds. Previously, only International Opportunity was included in the Composite.

Benchmark Description: The benchmark is the MSCI All Country World ex US Index, which is designed to measure the equity market performance of developed and emerging markets excluding the United States. The benchmark is calculated on a total return basis with Net Dividends reinvested, after the deduction of withholding taxes and is free float-adjusted market cap weighted and unmanaged. Prior to January 1, 2001, the benchmark was calculated on a total return basis not including tax credits.

As of 6/30/23

Reporting currency: Valuations are computed and performance is reported in US dollars. FX is based off NY 4 P.M. Close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule along with incentive fees. Incentive Fees are applied when the fund reaches its High Water Mark and are calculated quarterly over the period its realized. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom International Opportunity Fund, L.P. and Axiom Offshore Opportunity LP, which are included in the International Opportunity Long/Short Composite is listed above. The total expense ratio including incentive fees as of December 31, 2022 were 1.01% and 2.05%. The performance fee is earned when the fund's total return, reduced by the management fee, exceeds the benchmark return (the excess return) and the fund's net asset value is above the high watermark, which is the fund's net asset value as of the last quarter end when the performance fee crystallized. The performance fee is 10% of the excess return, which is calculated arithmetically, accrued quarterly, and crystallizes quarterly. Further details of the performance fee calculation are available upon request.

Internal dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized standard deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom International Small/Micro Cap Opportunity Strategy: GIPS composite report

International Small/Micro Cap Opportunity Long/Short Composite (Inception 09/01/04)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	2.83%	1.94%	2.97%	≤5	76.3	18,344.6	0.42	N/A	12.45	5.40
2022	-24.44%	-25.78%	-3.20%	≤5	78.2	16,580.9	0.47	N/A	16.44	8.65
2021	10.85%	7.09%	12.14%	≤5	108.0	18,639.7	0.58	N/A	13.87	8.47
2020	24.21%	17.45%	4.58%	≤5	109.5	18,535.9	0.59	N/A	14.98	9.22
2019	22.45%	19.60%	10.71%	≤5	103.5	13,458.1	0.77	N/A	9.86	5.43
2018	-7.99%	-10.60%	-9.42%	≤5	97.2	9,729.2	1.00	N/A	10.78	5.89
2017	30.51%	23.36%	9.98%	≤5	101.2	12,116.0	0.84	N/A	9.26	5.06
2016	0.56%	-2.19%	0.10%	≤5	88.7	9,671.6	0.92	N/A	9.72	5.37
2015	23.12%	17.64%	-2.33%	≤5	94.5	8,704.3	1.09	N/A	11.27	5.02
2014	3.83%	0.75%	1.42%	≤5	83.2	9,482.3	0.88	N/A	11.80	4.54
2013	22.47%	16.90%	11.14%	≤5	111.2	9,949.8	1.12	N/A	12.72	6.67

Fee schedule: 1.75% Management Fee and 20% Incentive Fee

Firm compliance statement: Axiom Investors LLC (the "Firm") claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Axiom has been independently verified for the period September 1, 1998 to March 31, 2023. The verification reports are available upon request. A firm that claims compliance with the GIPS standards must establish policies and procedure for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. Verification does not provide assurance on the accuracy of any specific performance report.

Definition of the firm: The firm is currently defined for GIPS purposes as Axiom Investors, LLC (the "Firm") is a registered investment advisor under the Investment Advisers Act of 1940.

Policies: Policies for valuing investments, calculating performance, and preparing GIPS Reports are available upon request. Past performance does not predict or guarantee future results.

Composite description: The International Small/Micro Cap Opportunity strategy (the "Composite") is designed for investors who seek to invest in a broadly diversified portfolio of Small/Micro Capitalization stocks, both long and short. Portfolios are invested in the full range of developed markets outside the United States and may also invest in selected emerging markets. Currencies may be actively managed to reduce portfolio volatility. Modest levels of leverage may be used when deemed appropriate in declining markets. The Composite represents the performance of all institutional global style fee-paying, discretionary equity accounts, regardless of asset size and commingled fund(s). The Composite was initiated and created in September 2004. A list of composite descriptions, a list of limited distribution pooled fund descriptions, a list of broad distribution pooled funds and performance results are available upon request. Prior to January 1, 2018, the composite name was the International Micro Cap Strategy.

Benchmark Description: The benchmark is the HFRX Equity Hedge which encompasses various equity hedge strategies, also known as long/short equity, that combine core long holdings of equities with short sales of stock, stock indices, related derivatives, or other financial instruments related to the equity markets. Net exposure of equity hedge portfolios may range anywhere from net long to net short depending on market conditions. It is constructed using robust filtering, monitoring and quantitative constituent selection process using the Hedge Fund Research database (HFR Database), an industry standard for hedge fund data. FX is based off London 4 P.M. close.

As of 6/30/23

Reporting currency: Valuations are computed and performance is reported in US dollars. FX is based off NY 4 P.M. Close.

Fees: Gross of fees returns are presented before management and custodial fees but after all trading expenses. Net of fees returns are calculated by deducting the highest fee from the monthly gross composite return which is expressed above in the stated fee schedule along with incentive fees. Incentive Fees are applied when the fund reaches its High Water Mark and are calculated quarterly over the period its realized. Returns include the reinvestment of income. Performance is calculated net of withholding taxes on dividends. The fee schedule for the Axiom International Small/Micro Cap Opportunity Fund, L.P., which is included in the International Small/Micro Cap Opportunity Long/Short Composite is listed above. The total expense ratio including incentive fees as of December 31, 2022 were 1.25%. The performance fee is earned when the fund's total return, reduced by the management fee, exceeds the benchmark return (the excess return) and the fund's net asset value is above the high watermark, which is the fund's net asset value as of the last quarter end when the performance fee crystallized. The performance fee is 20% of the excess return, which is calculated arithmetically, accrued quarterly, and crystallizes quarterly. Further details of the performance fee calculation are available upon request.

Internal dispersion: Internal dispersion is calculated using the asset-weighted standard deviation of annual gross returns of those portfolios that were in the composite for the entire year. If 5 or less accounts, N/A is shown.

Annualized standard deviation: The three-year annualized standard deviation measures the variability of the composite gross returns and the benchmark returns over the preceding 36-month period. The standard deviation is not required for periods prior to 2011.

Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

Tracking Error: The active risk of the portfolio. It determines the standard deviation of the excess returns between the portfolio and the benchmark. It is calculated by creating a new return series of the excess returns and then calculating the population standard deviation of that return series.

Information Ratio: A measure of consistency in excess return. The annualized excess return over a benchmark divided by the annualized standard deviation (population) of excess return.

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Axiom Global Small/Micro Cap Opportunity Strategy: GIPS composite report

Global Small/Micro Cap Opportunity Long/Short Composite (Inception 02/01/07)

	Composite return (gross of fees)	Composite return (net of fees)	Benchmark Total Return (%)	No. of accounts	Market value (millions)	Total firm assets (millions)	% of firm assets (%)	Internal dispersion (%)	Composite 3-year standard deviation (%)	Benchmark 3-year standard deviation (%)
YTD 2023	3.11%	2.21%	2.97%	≤5	24.7	18,344.6	0.13	N/A	12.65	5.40
2022	-23.96%	-25.31%	-3.20%	≤5	28.0	16,580.9	0.17	N/A	16.83	8.65
2021	9.96%	6.40%	12.14%	≤5	39.9	18,639.7	0.21	N/A	14.39	8.47
2020	25.23%	18.27%	4.58%	≤5	40.8	18,535.9	0.22	N/A	15.49	9.22
2019	22.81%	19.80%	10.71%	≤5	36.8	13,458.1	0.27	N/A	10.04	5.43
2018	-7.45%	-10.08%	-9.42%	≤5	32.6	9,729.2	0.33	N/A	11.13	5.89
2017	32.25%	25.63%	9.98%	≤5	35.2	12,116.0	0.29	N/A	9.64	5.06
2016	1.30%	-1.58%	0.10%	≤5	31.4	9,671.6	0.32	N/A	10.24	5.37
2015	23.01%	17.85%	-2.33%	≤5	32.7	8,704.3	0.38	N/A	11.36	5.02
2014	1.60%	-1.25%	1.42%	≤5	32.9	9,482.3	0.35	N/A	11.95	4.54
2013	24.43%	18.79%	11.14%	≤5	35.7	9,949.8	0.36	N/A	13.33	6.67

Fee schedule: 1.75% Management Fee and 20% Incentive Fee

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As of 6/30/23

Reporting currency: Valuations are computed and performance is reported in US dollars. FX is based off NY 4 P.M. Close.

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Batting Average: The number of periods that the portfolio outperforms (or matches) the benchmark divided by the total number of periods.

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Axiom Investors

Axiom Emerging Markets Equity Strategy

Calendar Year Returns

12/31/2011 to 12/31/2022

Dates	Axiom Emerging Markets Equity Strategy (Gross)	Axiom Emerging Markets Equity Strategy (Net)	MSCI Emerging Markets Index (Net)
12/31/2022	-29.96	-30.65	-20.09
12/31/2021	-3.22	-4.15	-2.54
12/31/2020	31.22	29.99	18.31
12/31/2019	25.98	24.79	18.42
12/31/2018	-15.76	-16.59	-14.57
12/31/2017	42.57	41.21	37.28
12/31/2016	9.30	8.21	11.19
12/31/2015	-11.29	-12.19	-14.92
12/31/2014	-0.26	-1.26	-2.19
12/31/2013	4.30	3.26	-2.60
12/31/2012	22.94	21.74	18.22
12/31/2011	-17.48	-18.31	-18.42

Emerging Markets Equity (Rep Account) - Transactions vs. MSCI Emerging Markets
USD

Percent of Total Holdings 1

Asset Class - Cash/Fixed Income/Equity Excluded:
7/31/2023

	Sedol	Market Capitalization	Price	Ending Price (Local)	Port. Shares	Port. Ending Market Value	Axiom Sector	Axiom MSCI Country	Axiom MSCI Region	Port. Weight	Bench. Ending Weight	Cusip (9 Digit)	ISIN	Bloomberg ID	Asset Type (Client Definition/FactSet)
Total		131,269				223,208,803.19				100.00	100.00				
Equity		131,269				220,173,486.43				98.64	100.00				
Accton Technology Corp.	6005214	6,782	12.16	382.00	100,000	1,215,863.52	Information Technology	Taiwan	Asia Ex Japan	0.54	0.09	600521 W0002345006		2345 TT	Equity Common
AIA Group Limited	B4TX8S1	116,591	9.92	77.40	250,000	2,481,246.39	Financials	Hong Kong	Asia Ex Japan	1.11	0.00	B4TX8S HK0000069689		1299 HK	Equity Common
Airports of Thailand Public Co. Ltd.	BDFLHW9	29,841	2.09	71.50	501,700	1,048,140.19	Industrials	Thailand	Asia Ex Japan	0.47	0.13	BDFLHW TH0765010208		AOT TB	Equity Common
Airtac International Group	B52J816	5,931	29.66	932.00	30,500	904,767.97	Industrials	Taiwan	Asia Ex Japan	0.41	0.06	B52J81 YG014081064		1590 TT	Equity Common
Alchip Technologies Ltd.	B4TPSL0	4,580	63.34	1,990.00	31,300	1,982,525.94	Information Technology	Taiwan	Asia Ex Japan	0.89	0.00	B4TPSL YG022421088		3661 TT	Equity Common
Alibaba Group Holding Limited	BK6VZP5	256,618	12.50	97.50	178,400	2,230,428.93	Consumer Discretionary	China	Asia Ex Japan	1.00	2.92	BK6VZP YG017191142		9888 HK	Equity Common
Alinma Bank	B39NW73	19,725	9.86	37.00	336,864	3,322,395.84	Financials	Saudi Arabia	EMEA	1.49	0.14	B39NW7 SA122050HV19		ALINMA AB	Equity Common
Ambev SA	BG7ZWW7	49,189	3.14	14.86	516,300	1,622,719.54	Consumer Staples	Brazil	Latin America	0.73	0.21	BG7ZWW ABEVACNOR1		ABEV3 BZ	Equity Common
Americana Restaurants International PLC	BPCMH29	8,807	1.05	3.84	869,994	909,698.55	Consumer Discretionary	United Arab Emirates	EMEA	0.41	0.04	BPCMH2 AEE01135A222		AMR UH	Equity Common
Anglo American plc	B1XZS82	37,362	30.72	23.94	70,209	2,156,645.79	Materials	United Kingdom	United Kingdom	0.97	0.00	B1XZS8 IB00B1XZS820		AAL LN	Equity Common
Apollo Hospitals Enterprise Limited	6273583	9,049	62.90	5,173.45	24,143	1,518,689.01	Health Care	India	Asia Ex Japan	0.68	0.09	627358 INE437A01024		APHS IN	Equity Common
Asian Paints Ltd.	BCRWL65	39,359	41.07	3,377.35	41,428	1,701,247.10	Materials	India	Asia Ex Japan	0.76	0.22	BCRWL6 INE021A01026		APNT IN	Equity Common
ASPEED Technology, Inc.	B80VKP3	2,788	73.84	2,320.00	14,700	1,085,492.39	Information Technology	Taiwan	Asia Ex Japan	0.49	0.00	B80VKP W0005274005		5274 TT	Equity Common
Axis Bank Limited	BPFJHC7	35,722	11.60	953.90	159,816	1,853,617.99	Financials	India	Asia Ex Japan	0.83	0.37	BPFJHC INE238A01034		AXSB IN	Equity Common
B3 SA - Brasil, Bolsa, Balcão	BG36ZK1	18,017	3.15	14.90	800,000	2,521,150.59	Financials	Brazil	Latin America	1.13	0.26	BG36ZK B3SAACNOR6		B3SA3 BZ	Equity Common
Baidu Inc Sponsored ADR Class A	B0FXT17	44,242	155.99	155.99	8,480	1,322,795.20	Communication Services	China	Asia Ex Japan	0.59	0.00	056752108 JS0567521085		BJDU US	ADR/GDR
Baidu, Inc. Class A	B0J2D41	55,113	19.61	152.90	193,900	3,801,688.27	Communication Services	China	Asia Ex Japan	1.70	0.62	B0J2D4 YG070341048		9888 HK	Equity Common
Bajaj Finance Limited	B02N0P2	53,687	88.76	7,300.30	51,898	4,606,686.83	Financials	India	Asia Ex Japan	2.06	0.34	B02N0P INE296A01024		BAF IN	Equity Common
Banco BTG Pactual SA Units Cons of 1 Sh + 2 Pfc	BZBZVC7	27,387	7.19	34.01	404,300	2,908,257.83	Financials	Brazil	Latin America	1.30	0.12	BZBZVC BPACUNT006		BPAC11 BZ	Equity Common
Bangkok Dusit Medical Services Public Co. Ltd. NY	B013SV4	13,348	0.84	28.75	3,092,700	2,598,034.27	Health Care	Thailand	Asia Ex Japan	1.16	0.00	B013SV TH0264010R10		BDMS-R TB	Equity Common
BeiGene Ltd Sponsored ADR	BYYYPW6	21,996	214.22	214.22	6,390	1,368,865.80	Health Care	China	Asia Ex Japan	0.61	0.00	07725102 JS077251026		BGNE US	Equity Common
Bharat Electronics Limited	BF1THH6	11,611	1.59	130.70	1,314,091	2,088,326.45	Industrials	India	Asia Ex Japan	0.94	0.08	BF1THH INE263A01024		BHE IN	Equity Common
BYD Company Limited Class H	6536651	102,683	35.34	275.60	35,000	1,236,904.53	Consumer Discretionary	China	Asia Ex Japan	0.55	0.49	653665 NE100000296		1211 HK	Equity Common
Centre Testing International Group Co., Ltd. Class	BD05C7D3	4,728	2.81	20.10	374,500	1,053,217.39	Industrials	China	Asia Ex Japan	0.47	0.00	BD05C7 NE100000GV8		300012 C2	Equity Common
Challease Holding Co. Ltd.	B58J1S8	10,477	6.49	203.92	229,704	1,490,916.04	Financials	Taiwan	Asia Ex Japan	0.67	0.14	B58J1S YG202881093		5871 TT	Equity Common
China Construction Bank Corporation Class H	B0LMTQ3	145,223	0.58	4.53	1,473,000	855,637.62	Financials	China	Asia Ex Japan	0.38	0.79	B0LMTQ NE1000002H1		939 HK	Equity Common
China Petroleum & Chemical Corporation Class H	6291819	66,876	0.56	4.35	4,448,000	2,481,092.52	Energy	China	Asia Ex Japan	1.11	0.20	629181 NE1000002Q2		386 HK	Equity Common
China Resources Beer (Holdings) Co. Ltd.	6972459	20,778	6.41	49.95	300,000	1,921,523.37	Consumer Staples	China	Asia Ex Japan	0.86	0.15	B0J2D4 HK0291001490		291 HK	Equity Common
Coupage, Inc. Class A	BNYHDF3	32,258	18.15	18.15	25,200	457,300.00	Consumer Discretionary	United States	US & Canada	0.20	0.00	22266T109 JS22266T1097		CPNG US	Equity Common
Delta Electronics, Inc.	6260734	30,210	11.63	365.50	167,100	1,943,950.92	Information Technology	Taiwan	Asia Ex Japan	0.87	0.32	626073 W0002308004		2308 TT	Equity Common
E Ink Holdings Inc	6744283	8,165	7.16	225.00	270,000	1,933,604.94	Information Technology	Taiwan	Asia Ex Japan	0.87	0.09	674428 W0008069006		8069 TT	Equity Common
Eastroc Beverage (Group) Co. Ltd. Class A	BP91NL0	10,273	25.68	183.55	51,400	1,320,041.70	Consumer Staples	China	Asia Ex Japan	0.59	0.00	BP91NL NE100005576		605499 C1	Equity Common
Eclat Textile Co., Ltd.	6345783	4,732	17.25	542.00	66,000	1,138,582.98	Consumer Discretionary	Taiwan	Asia Ex Japan	0.51	0.05	634578 W0001476000		1476 TT	Equity Common
Emaar Properties (P.J.S.C)	B01RM25	16,267	1.84	6.76	1,416,076	2,606,653.35	Real Estate	United Arab Emirates	EMEA	1.17	0.17	B01RM2 AEE000301011		EMAAR UH	Equity Common
Erste Group Bank AG	5289837	15,444	37.80	34.38	58,012	2,192,694.03	Financials	Austria	Europe Ex UK	0.98	0.00	528983 AT0000652011		EBS AV	Equity Common
FirstRand Limited	6606996	22,947	4.07	72.79	340,921	1,388,194.34	Financials	South Africa	EMEA	0.62	0.29	660699 ZAE000066304		FSR SJ	Equity Common
Focus Media Information Technology Co Ltd Class	BD05CND5	15,055	1.04	7.45	2,720,700	2,836,005.51	Communication Services	China	Asia Ex Japan	1.27	0.01	BD05CN NE000001KK2		002027 C2	Equity Common
Fomento Economico Mexicano SAB de CV Spons	2246039	24,475	113.25	113.25	19,530	2,211,772.50	Consumer Staples	Mexico	Latin America	0.99	0.00	344419106 JS3444191064		FMX US	ADR/GDR
Galaxy Entertainment Group Limited	6465874	31,700	7.26	56.60	477,000	3,461,973.46	Consumer Discretionary	Hong Kong	Asia Ex Japan	1.55	0.00	646587 HK0027032686		27 HK	Equity Common
Glodon Company Limited Class A	BD05CK01	7,538	4.52	32.30	230,300	1,040,798.37	Information Technology	China	Asia Ex Japan	0.47	0.00	BD05CK NE100000PH8		002410 C2	Equity Common
Grupo Financiero Banorte SAB de CV Class O	2421041	27,399	9.48	158.71	342,500	3,246,853.68	Financials	Mexico	Latin America	1.45	0.35	242104 AXP3707111014		FNORTE MM	Equity Common
Grupo Mexico S.A.B. de C.V. Class B	2643674	39,601	5.20	87.04	397,600	2,067,107.72	Materials	Mexico	Latin America	0.93	0.23	264367 AXP370841019		MMEXICOB MM	Equity Common
HDFC Bank Limited	BK1N461	112,252	20.08	1,651.20	309,158	6,206,939.74	Financials	India	Asia Ex Japan	2.78	0.79	BK1N46 INE040A01034		HDFCB IN	Equity Common
HDFC Life Insurance Co. Ltd.	BF0TRG6	16,906	7.87	648.85	135,949	1,069,244.34	Financials	India	Asia Ex Japan	0.48	0.11	BF0TRG INE795G01014		HDFCLIFE IN	Equity Common
Hypera S.A.	B2QY968	5,752	9.15	43.26	142,100	1,300,178.93	Health Care	Brazil	Latin America	0.58	0.05	B2QY96 HYPEACNOR0		HYPE3 BZ	Equity Common
Indian Hotels Co. Ltd.	B1FRT61	6,822	4.80	395.10	306,124	1,470,624.41	Consumer Discretionary	India	Asia Ex Japan	0.66	0.06	B1FRT6 INE053A01029		IH IN	Equity Common
Jio Financial Services Ltd	B0QP2F3	NA	3.07	252.85	83,458	256,583.24	Financials	India	Asia Ex Japan	0.11	0.00	B0QP2F INE758E01017		0288893D IN	Equity Common
Jiumaouji International Holdings Ltd.	BLBFH65	2,842	1.95	15.24	482,000	941,934.99	Consumer Discretionary	China	Asia Ex Japan	0.42	0.03	BLBFH6 YG5141L1059		9922 HK	Equity Common
KE Holdings, Inc. Sponsored ADR Class A	BMBX7M2	20,872	17.42	17.42	120,480	2,098,761.60	Real Estate	China	Asia Ex Japan	0.94	0.16	482497104 JS4824971042		BEKE US	ADR/GDR
Korea Aerospace Industries, Ltd.	B3N3363	3,762	38.60	49,200.00	34,312	1,324,558.96	Industrials	Korea	Asia Ex Japan	0.59	0.04	B3N336 KR0747810007		047810 KS	Equity Common
Larsen & Toubro Ltd.	B0166K8	39,526	32.60	2,681.35	150,597	4,909,838.27	Industrials	India	Asia Ex Japan	2.20	0.32	B0166K INE018A01030		LT IN	Equity Common
Localiza Rent A Car SA	B08K3S0	13,888	14.22	67.22	202,200	2,874,763.96	Industrials	Brazil	Latin America	1.29	0.18	B08K3S RENTACNOR4		RENT3 BZ	Equity Common
Luzhou Liaoqiao Company Limited Class A	BD05CMM7	49,408	33.74	241.11	53,800	1,814,962.43	Consumer Staples	China	Asia Ex Japan	0.81	0.04	BD05CM NE000000GF2		000568 C2	Equity Common
MercadoLibre, Inc.	B23X1H3	62,017	1,238.05	1,238.05	3,178	3,934,522.90	Consumer Discretionary	United States	US & Canada	1.76	0.00	58733R102 JS58733R1023		MELI US	ADR/GDR
Nanya Technology Corporation	6283601	7,127	2.30	72.30	631,000	1,452,075.24	Information Technology	Taiwan	Asia Ex Japan	0.65	0.04	628360 W0002408002		2408 TT	Equity Common
Nu Holdings Ltd. Class A	BN6NP19	37,525	7.96	7.96	332,900	2,649,884.00	Financials	Brazil	Latin America	1.19	0.00	G6883N103 YG6883N1034		NU US	Equity Common
Ping An Insurance (Group) Company of China, Ltd	B01FLR7	130,606	7.21	56.25	925,000	6,671,956.15	Financials	China	Asia Ex Japan	2.99	0.65	B01FLR NE1000003X6		2318 HK	Equity Common
PT Bank Central Asia Tbk	B01C1P6	74,594	0.61	9,125.00	4,368,500	2,644,282.75	Financials	Indonesia	Asia Ex Japan	1.18	0.47	B01C1P ID1000109507		BBCA IJ	Equity Common
PT Bank Rakyat Indonesia (Persero) Tbk Class B	6709099	56,784	0.37	5,650.00	12,826,500	4,807,278.61	Financials	Indonesia	Asia Ex Japan	2.15	0.36	670909 ID1000118201		BBRI IJ	Equity Common
PTT Exploration & Production Plc	B1359K1	18,499	4.00	137.00	738,939	2,958,001.69	Energy	Thailand	Asia Ex Japan	1.33	0.09	B1359K TH0355A10204		PTPET TB	Equity Common
Raia Drogasil S.A.	B7FQV64	10,440	6.13	28.97	224,700	1,376,810.28	Consumer Staples	Brazil	Latin America	0.62	0.11	B7FQV6 RADLACNOR0		RADL3 BZ	Equity Common
Reliance Industries Limited	6099626	209,593	31.00	2,549.25	69,389	2,150,801.92	Energy	India	Asia Ex Japan	0.96	1.33	609962 INE002A01018		RIL IN	Equity Common
SAMSUNG BIOLOGICS Co., Ltd.	BYNJCV6	42,772	601.02	766,000.00	3,537	2,125,807.77	Health Care	Korea	Asia Ex Japan	0.95	0.15	BYNJCV KR2079400			

Samsung SDI Co., Ltd	6771645	34,888	521.77	665,000.00	8,917	4,652,652.02	Information Technology	Korea	Asia Ex Japan	2.08	0.41	677164	KR7006400006	006400	KS	Equity Common
Samvardhana Motherson International Limited	6743990	8,104	1.20	98.30	1,056,684	1,262,978.65	Consumer Discretionary	India	Asia Ex Japan	0.57	0.04	674399	INE775A01035	MSS	IN	Equity Common
Saudi Arabian Oil Co.	BJTM270	2,089,263	8.64	32.40	145,530	1,256,876.45	Energy	Saudi Arabia	EMEA	0.56	0.32	BJTM27	A14TG012N13	ARAMCO	AB	Equity Common
Sea Limited Sponsored ADR Class A	BYWD7L4	34,539	66.52	66.52	7,500	498,900.00	Communication Services	Singapore	Asia Ex Japan	0.22	0.00	81141R10	JS81141R1005	SE	US	Equity Common
Shenzhen Inovance Technology Co., Ltd Class A	BD5CMN8	26,394	9.94	71.01	73,700	732,246.23	Industrials	China	Asia Ex Japan	0.33	0.01	BD5CMN	INE100000V46	300124	C2	Equity Common
Shenzhen Mindray Bio-Medical Electronics Co., Ltd	BHQK864	50,090	41.42	296.00	51,500	2,132,893.06	Health Care	China	Asia Ex Japan	0.96	0.04	BHQK86	INE100003G67	300760	C2	Equity Common
SK hynix Inc.	6450267	66,612	96.82	123,400.00	32,455	3,142,367.20	Information Technology	Korea	Asia Ex Japan	1.41	0.75	645026	KR7000660001	000660	KS	Equity Common
Sun Pharmaceutical Industries Limited	6582483	33,343	13.90	1,143.40	104,089	1,447,106.13	Health Care	India	Asia Ex Japan	0.65	0.19	658248	INE044A01036	SUNP	IN	Equity Common
Taiwan Semiconductor Manufacturing Co., Ltd.	6889106	466,219	17.98	565.00	1,006,000	18,091,221.59	Information Technology	Taiwan	Asia Ex Japan	8.11	6.26	688910	W0002330008	2330	TT	Equity Common
Taiwan Semiconductor Manufacturing Co., Ltd. Sp	2113382	514,233	99.15	99.15	6,740	668,271.00	Information Technology	Taiwan	Asia Ex Japan	0.30	0.00	87403910	JS8740391003	TSM	US	ADR/GDR
Tencent Holdings Ltd.	BMMV2K8	431,234	45.44	354.40	265,900	12,083,728.92	Communication Services	China	Asia Ex Japan	5.41	4.00	BMMV2K	YG875721634	700	HK	Equity Common
Titan Company Limited	6139340	32,445	36.53	3,004.05	67,822	2,477,280.07	Consumer Discretionary	India	Asia Ex Japan	1.11	0.18	613934	INE280A01028	TTAN	IN	Equity Common
TOTVS S.A.	B10LQP6	3,741	6.25	29.57	223,500	1,397,820.43	Information Technology	Brazil	Latin America	0.63	0.05	B10LQP	TOTSACNOR8	TOTS3	BZ	Equity Common
Trip.com Group Ltd.	BNYK8H9	24,689	39.93	311.40	40,200	1,605,216.39	Consumer Discretionary	China	Asia Ex Japan	0.72	0.31	BNYK8H	YG9066F1019	9961	HK	Equity Common
Trip.com Group Ltd. Sponsored ADR	BK1K3N2	25,376	41.04	41.04	151,100	6,201,144.00	Consumer Discretionary	China	Asia Ex Japan	2.78	0.00	89677Q107	JS89677Q1076	CTRP	US	ADR/GDR
TVS Motor Company Limited	6726548	7,950	16.74	1,376.70	93,674	1,568,034.95	Consumer Discretionary	India	Asia Ex Japan	0.70	0.06	672654	INE494B01023	TVSL	IN	Equity Common
United Microelectronics Corp.	6916628	18,699	1.50	47.00	1,049,000	1,569,259.66	Information Technology	Taiwan	Asia Ex Japan	0.70	0.24	691662	W0002303005	2303	TT	Equity Common
Varun Beverages Ltd.	BOLPLZ7	12,704	9.78	804.40	206,352	2,018,264.61	Consumer Staples	India	Asia Ex Japan	0.90	0.06	BOLPLZ	NE200M01021	VBL	IN	Equity Common
Wal-Mart de Mexico SAB de CV	BW1YVH8	72,877	4.16	69.71	420,200	1,749,641.14	Consumer Staples	Mexico	Latin America	0.78	0.31	BW1YVH	X01WA000038	WALMEX	MM	Equity Common
WEG S.A.	2945422	35,214	8.44	39.92	334,200	2,821,756.35	Industrials	Brazil	Latin America	1.26	0.20	294542	VEGEACNOR0	WEG3	BZ	Equity Common
Yum China Holdings, Inc.	BYW4289	25,445	61.02	61.02	44,400	2,709,288.00	Consumer Discretionary	China	Asia Ex Japan	1.21	0.36	98850P109	JS98850P1093	YUMC	US	Equity Common
[Cash]	NA					3,035,316.75				1.36	0.00					
Brazilian Real	CASH_BRL	NA	0.21	1.00	-43	-9.01	NA	NA	NA	0.00	0.00	CASH_BRL9	NA	NA	NA	[Cash]
British Pounds	CASH_GBP	NA	1.28	1.00	5	6.89	NA	NA	NA	0.00	0.00	CASH_GBP6	NA	NA	NA	[Cash]
Dividends - BRL	DIVA_BRL	NA	0.21	1.00	393,016	83,125.26	NA	NA	NA	0.04	0.00	DIVA_BRL2	NA	NA	NA	[Cash]
Dividends - HKD	DIVA_HKD	NA	0.13	1.00	559,428	71,735.30	NA	NA	NA	0.03	0.00	DIVA_HK04	NA	NA	NA	[Cash]
Dividends - INR	DIVA_INR	NA	0.01	1.00	7,695,943	93,574.86	NA	NA	NA	0.04	0.00	DIVA_INR8	NA	NA	NA	[Cash]
Dividends - KRW	DIVA_KRW	NA	0.00	1.00	84,438,850	66,252.53	NA	NA	NA	0.03	0.00	DIVA_KRW8	NA	NA	NA	[Cash]
Dividends - TWD	DIVA_TWD	NA	0.03	1.00	959,850	30,550.96	NA	NA	NA	0.01	0.00	DIVA_TWD5	NA	NA	NA	[Cash]
Euro	CASH_EUR	NA	1.10	1.00	16	17.41	NA	NA	NA	0.00	0.00	CASH_EUR6	NA	NA	NA	[Cash]
Hong Kong Dollar	CASH_HKD	NA	0.13	1.00	39,696	5,090.21	NA	NA	NA	0.00	0.00	CASH_HKD1	NA	NA	NA	[Cash]
Indian Rupee	CASH_INR	NA	0.01	1.00	1,097,845	13,348.68	NA	NA	NA	0.01	0.00	CASH_INR5	NA	NA	NA	[Cash]
Indonesian Rupiah	CASH_IDR	NA	0.00	1.00	1	0.00	NA	NA	NA	0.00	0.00	CASH_IDR6	NA	NA	NA	[Cash]
Philippines Peso	CASH_PHP	NA	0.02	1.00	20	0.36	NA	NA	NA	0.00	0.00	CASH_PHP0	NA	NA	NA	[Cash]
Polish Zloty	CASH_PLN	NA	0.25	1.00	0	-0.09	NA	NA	NA	0.00	0.00	CASH_PLN0	NA	NA	NA	[Cash]
Saudi Arabian Riyal	CASH_SAR	NA	0.27	1.00	14	3.78	NA	NA	NA	0.00	0.00	CASH_SAR7	NA	NA	NA	[Cash]
South African Rand	CASH_ZAR	NA	0.06	1.00	28	1.55	NA	NA	NA	0.00	0.00	CASH_ZAR1	NA	NA	NA	[Cash]
South Korean Won	CASH_KRW	NA	0.00	1.00	286,190,773	224,551.41	NA	NA	NA	0.10	0.00	CASH_KRW5	NA	NA	NA	[Cash]
Taiwan Dollar	CASH_TWD	NA	0.03	1.00	6,750,711	214,867.64	NA	NA	NA	0.10	0.00	CASH_TWD2	NA	NA	NA	[Cash]
U.S. Dollar	CASH_USD	NA	1.00	1.00	2,232,199	2,232,198.80	NA	NA	NA	1.00	0.00	CASH_USD4	NA	NA	NA	[Cash]
UAE Dirham	CASH_AED	NA	0.27	1.00	1	0.20	NA	NA	NA	0.00	0.00	CASH_AED3	NA	NA	NA	[Cash]

Portfo Emerging Markets Equity (Rep Account) - Transactions 7/31/2023

Benc MSCI Emerging Markets 7/31/2023

Hide Benchmark Only Securities and Groups



NEPC, LLC

Firm:

Kayne Anderson Capital Advisors, LP ("KACALP")

Strategy/Product:

Kayne Anderson Energy Fund VII, L.P.

Client:

MWRA Employees' Retirement System

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that all materials submitted in relation to MWRA Retirement System may be subject to disclosure consistent with Massachusetts Public Record laws.

Firm/Organization

1. Have there been any changes in ownership or management in the past year?

No changes.

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

	2019	2020	2021	2022	7/31/2023
Firm AUM	\$ 31,934.32	\$ 32,818.91	\$ 31,396.50	\$ 32,135.76	\$ 32,287.31
# of Clients Gained	18	24	7	14	1
Assets (\$MM) Gained	3,153	6,032	5,771	5,885	632
# of Clients Lost	8	6	-	-	-
Assets (\$MM) Lost	275	389	-	-	-
**2021 lost excluded Irradiant transfers					

3. Have there been any new or discontinued products in the past year?

The Firm is currently marketing the following funds:

(1) Kayne Anderson Core Real Estate Fund, an open-end fund focused on investment in stabilized real estate in medical office, senior housing, student housing and self-storage properties with a current size of \$4.0 billion.

(2) Kayne Anderson BDC, a seed investor opportunity, focused on core middle market direct lending with a target of \$500 million seed investor capital. Current equity commitments total \$832.3 million.



(3) Kayne Anderson Multifamily Fund, an open-end fund focused on acquiring/renovating and developing multifamily housing that promotes housing attainability for middle market renters, social impact, and environmental sustainability with a target of \$1.5 billion.

(4) Kayne Commercial Real Estate Debt, an open-end fund focused on Freddie Mac structured products and direct loan originations secured by assets in the firm's real estate sectors of expertise (multifamily, student and seniors housing, medical office and self-storage). Current size is \$1.2 billion.

(5) Kayne Anderson Private Income Fund III, an open-end fund focused on private upstream energy companies with a target of \$1.5 billion.

(6) Kayne Anderson Senior Credit Fund V, an open-end fund focused on secured loans of middle market companies with a target fund size of \$2.0 billion.

(7) The Firm also has several open-end funds that are continuously in the market and invest in the equity and debt of energy infrastructure and renewable infrastructure companies, including the Kayne Renewable Infrastructure UCITS Fund, a European offering focused on renewable energy infrastructure companies.

4. Are any products capacity constrained?

No

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

None

6. Describe your diversity, equity and inclusion efforts with regard to the firm and its employees.

Kayne Anderson is committed to fostering, cultivating, and preserving a diverse workplace and a culture of inclusion and recognizes the value of attracting and retaining employees with a variety of backgrounds, knowledge, experiences, and abilities. The firm's diversity, equity, and inclusion (DEI) strategy focuses on four areas of influence outlined below: Education, Workplace Initiatives, Recruitment and Inclusion, and Community Engagement:

Education: Kayne Anderson has and will continue to collaborate with industry partners to educate our employees and the management teams of our portfolio companies on DEI.

Workplace Initiatives: As part of our commitment to DEI, Kayne Anderson's has implemented a number of enhancements to our operational practices, including a formal DEI Policy, vendor selection targeting MWOBs, equitable pay analysis, standardized hiring procedures/diverse candidate pool policy, and several other initiatives.

Recruitment & Inclusion: As part of Kayne Anderson's objective to improve greater diversity within our firm and the asset management industry, we are collaborating with industry recruiters and nationally recognized non-profits to enhance diversity and



inclusion in our hiring practices and ensure females and minorities have the resources and opportunities to thrive in meaningful careers.

Community Engagement: The Kayne Anderson Foundation has worked to identify and support organizations that promote equality, education, financial literacy, and social change in minority communities.

Kayne Anderson's investment strategies have taken a number of steps to integrate DEI within their investment processes. For example, the firm's marketable securities, private credit and growth equity strategies are monitoring diversity across portfolio companies. The firm's growth equity strategy has also established the Women's Technology Circle, a portfolio-wide initiative to help support and create a community of executive-level women. In addition, the firm's Energy Private Equity strategy has included DEI on the agenda of strategy's annual ESG Summits for portfolio companies. Furthermore, the strategy has established relationships with external organizations to facilitate better representation of women and minorities for future board seats and required portfolio companies to adopt diversity trainings.

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?

In July 2023, Ryan Sauer left our firm to pursue other business opportunities. Danny Weingeist subsequently replaced Ryan on the Investment Committee for Energy Fund VII.

2. Are there any expected changes to the team in the future (planned additions or departures)?

We expect to hire one additional investment professional with engineering and operational experience in the coming months, as well as two additional investment professionals at the Associate level.

Process

1. Have there been significant changes in any of the areas below in the past year?

- Identification of investment ideas
- Process for exploring and vetting ideas
- Portfolio trading practices including buy/sell rules
- Approach to portfolio monitoring and risk management

No, there have been no significant changes to the processes above in the past year.

Philosophy

1. Describe recent changes in investment philosophy, if any.

There have been no recent material changes to the Fund's investment philosophy, however, the Fund has adapted to the new E&P environment following the impact of COVID-19 on global markets.

KAEF VII has repositioned its unrealized investments by placing a higher focus on liquidity and existing cash flow maintenance versus delineation of new inventory and



“proof-of-concept” development. We remain focused on compounding returns via the drill bit and re-investing a portion of cash flow into ongoing development of high-confidence drilling inventory.

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.). Please reference attached presentation.

2. List strategy AUM, net flows and accounts gained/lost for the past 5 years.

	2019	2020	2021	2022	7/31/2023
Strategy AUM	\$ 7,982.48	\$ 5,811.54	\$ 6,814.14	\$ 6,182.39	\$ 6,053.23
# of Clients Gained	2	-	-	-	-
Assets (\$MM) Gained	698	-	-	-	-
# of Clients Lost	-	-	-	-	-
Assets (\$MM) Lost	-	-	-	-	-

3. Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

Org Type	% Commitment
Foundation/Endowment	25.06%
Public Pensions	18.24%
Corporate/Private Pensions	16.20%
Taft-Hartley	14.02%
High Net Worth	10.79%
Insurance	5.78%
KACALP Capital	3.59%
Fund of Funds	3.52%
Family Office	2.78%
Corporate	0.02%
Grand Total	100.00%

Top Investors

1	11.48%
2	6.25%
3	5.26%
4	4.11%
5	3.80%



Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.
See attached excel file titled “KAEF Gross Quarterly Valuations (6.30.23)”

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.

Consistent with our focus since 2020, the Fund’s remaining portfolio companies - Kraken Resources, 89 Energy III and Riverbend Permian II - have maintained their emphasis on capital discipline. These companies now benefit from healthy balance sheets (leverage <1.0x), significant liquidity and an inventory of high-confidence development locations that will provide an opportunity for disciplined reinvestment.

As a result, these three investments are well-positioned to create material additional value for investors in the current commodity price environment. All three companies currently have the financial flexibility to fund ongoing development, pursue accretive bolt-on acquisitions or, in the case of 89 Energy III and Kraken Resources, make equity distributions.

3. Describe your market outlook and how strategy positioning is impacted by your views.

As mentioned above, the three remaining portfolio companies are well-positioned to continue creating value through disciplined reinvestment in high-return development projects. Each portfolio company is actively running a rig to develop their large inventories of economic locations at current commodity prices, growing free cash flow organically and converting undeveloped reserves to existing production.

Going forward, we expect these companies to continue growing their production bases and aggregating within their respective basins via bolt-on acquisitions at attractive values. We believe their increasing size will provide flexibility for various realization opportunities. Notably, the A&D market has experienced a considerable uptick in announced transaction value after several years of historically weak activity, and certain buyers have shown an interest and willingness to pay for quality undeveloped inventory locations. This trend has been particularly acute in the Permian Basin, where Riverbend Permian II has established a contiguous acreage position with highly repeatable well results. We will continue to monitor the market for opportunistic exits of all our remaining investments, though we expect to run a sales process for Riverbend Permian II in 2024 in an effort to capitalize on the market’s appetite for proven Permian Basin drilling inventory.

4. Could you please include a slide in your presentation that sows the MWRA’s account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

Please reference attached presentation.

Kayne Anderson

Capital Advisors, L.P.



KAYNE ENERGY PRIVATE EQUITY FUNDS

DISCUSSION MATERIALS | AUGUST 2023

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Kayne Energy Private Equity Funds

Investment team

Kayne Anderson

Capital Advisors, L.P.

Kayne Energy Private Equity Leadership



Mark Teshoian
Managing Partner



Danny Weingeist
Managing Partner

Senior Leadership

Danny Weingeist
Managing Partner

Mark Teshoian
Managing Partner

David Iverson
Senior Managing Director

Finance & Structuring

Jack Foster
Managing Director

Oren Marouni
Managing Director

Jose Linardi
Vice President

Kyle Murphy
Vice President

Mitch Suson
Vice President

Drew Colowich
Associate

Jon Taylor
Associate

Patrick O'Keefe
Associate

Brad Witmer
CAO

Engineering & Operations

Stephan Cadwallader
Senior Vice President

New Hire
Vice President

Turner Smith
Senior Engineering Analyst

Savannah Zelaya
Engineering Analyst

Steven Oliveira
Engineering Analyst

Experienced investment team applying a deep technical and financial knowledge base to Kayne's dedicated energy private equity strategies

Kayne Energy Private Equity Funds

MWRA Employees' Retirement System as of June 30, 2023

Kayne Anderson

Capital Advisors, L.P.

Investment Detail and Net IRR

Fund	Investment Start Date	Commitment Detail		Capital Activity			Performance			
		Total Funds Committed	Unfunded Commitment	Contributions	Internal Transfers In	Internal Transfers Out	Withdrawals/Distributions	Net Gain/(Loss)	Net Capital Balance	IRR
Commitment Funds										
EF7	12/01/15	\$5,000,000	\$648,718	\$5,314,636	-	-	(\$2,169,067)	(\$433,931)	\$2,711,638	-2.3%
Total		\$5,000,000	\$648,718	\$5,314,636	-	-	(\$2,169,067)	(\$433,931)	\$2,711,638	-2.3%

Investment start date represents the first effective cash flow date used in the calculation of the IRR.

The above Contributions and Withdrawals/Distributions represent capital wired between Kayne Anderson and Partner's external account. Excludes transfers to/from Kayne entities, which are included in the Internal Transfers columns. For Commitment Funds, the above Contributions and Withdrawals/Distributions include deemed transactions, when applicable.

Unfunded Commitment represents the total amount of capital that the fund may still call from your account. This amount generally may be called only during the Commitment Period or to fund investment commitments made but not funded during the Commitment Period, and expenses, including fees, whenever incurred. Prior distributions from the fund may be included in this amount if the distributed proceeds are recallable under the fund's limited partnership agreement. Please refer to the fund documents for further information regarding the Unfunded Commitment.

MACRO OVERVIEW

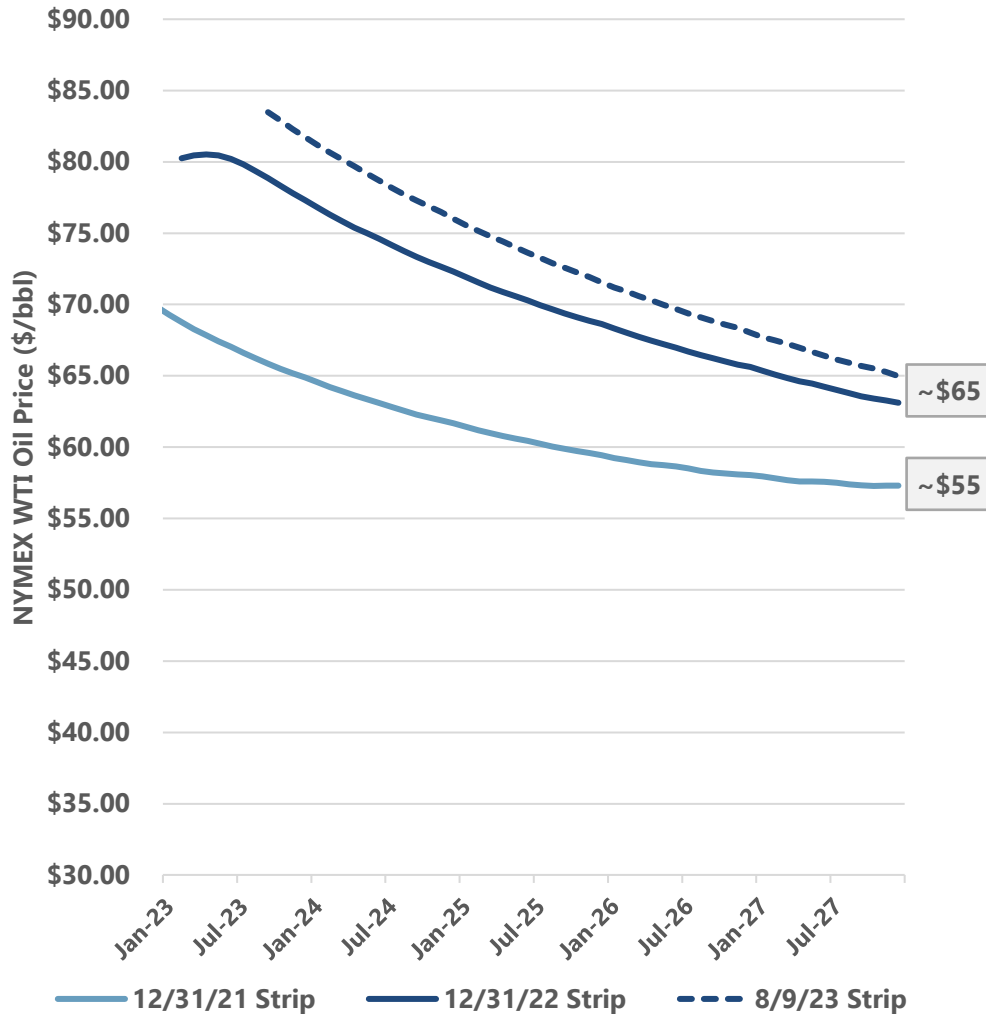
Kayne Energy Private Equity Funds

Long-term commodity prices are continuing to strengthen

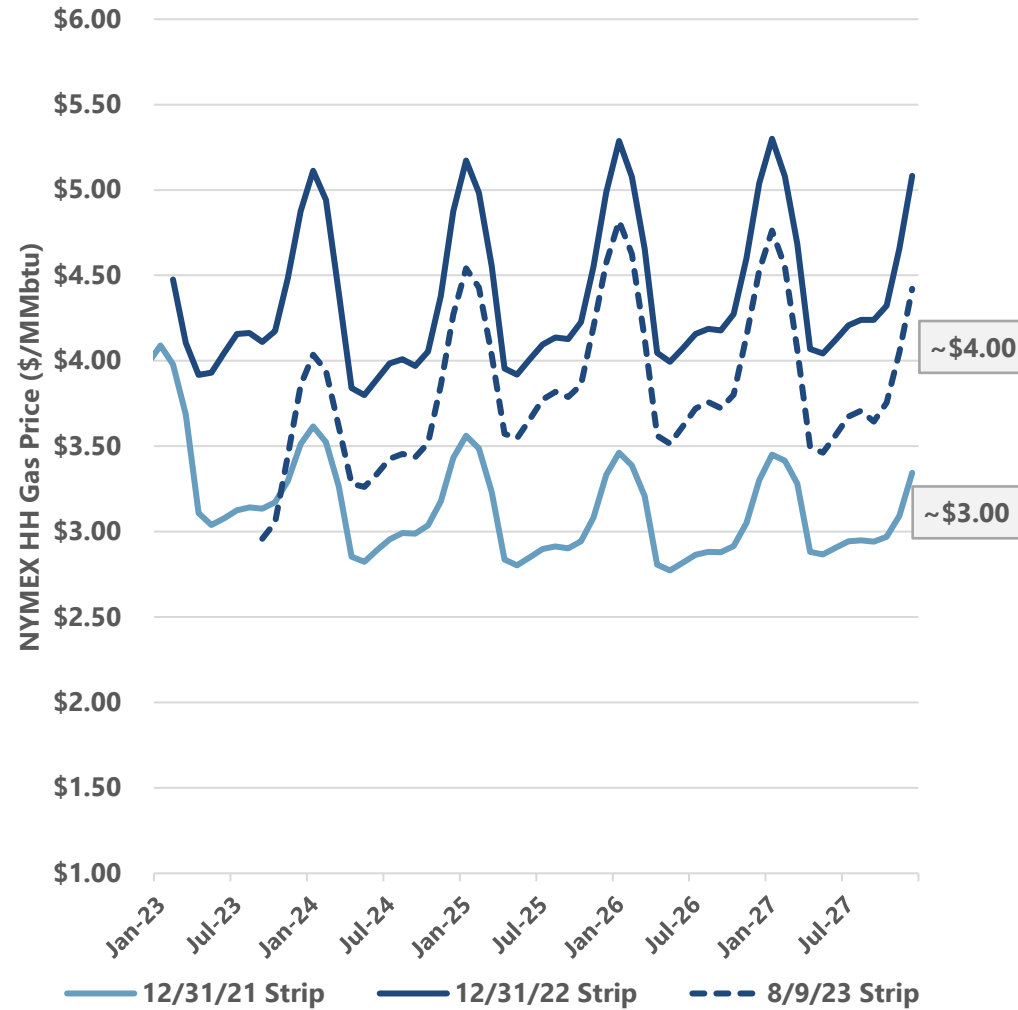
Kayne Anderson

Capital Advisors, L.P.

NYMEX WTI Oil Prices (\$/bbl)



NYMEX Henry Hub Natural Gas Prices (\$/MMBtu)



A combination of significant underinvestment and a considerable post-COVID rebound in demand has strengthened energy fundamentals and provides a constructive outlook for commodity prices

Source: EIA, Bloomberg as of August 9, 2023

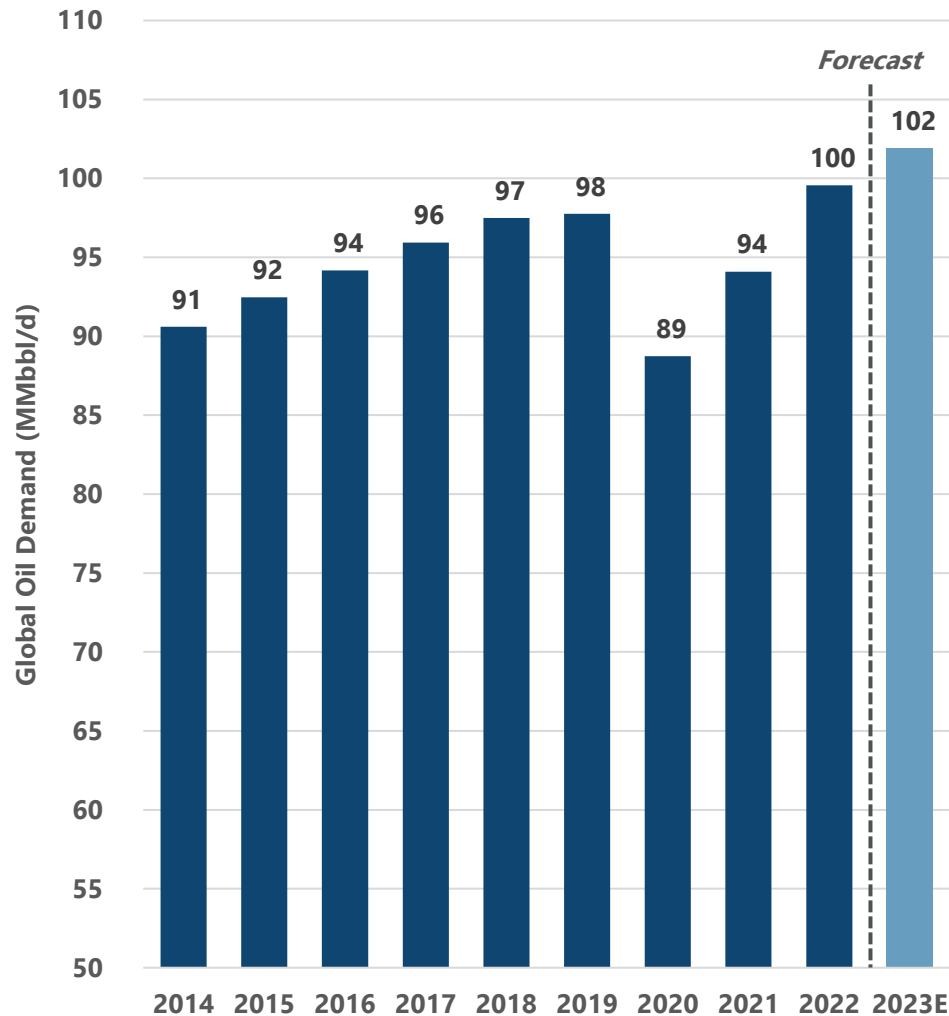
Kayne Energy Private Equity Funds

Oil and natural gas demand have fully recovered to pre-COVID levels

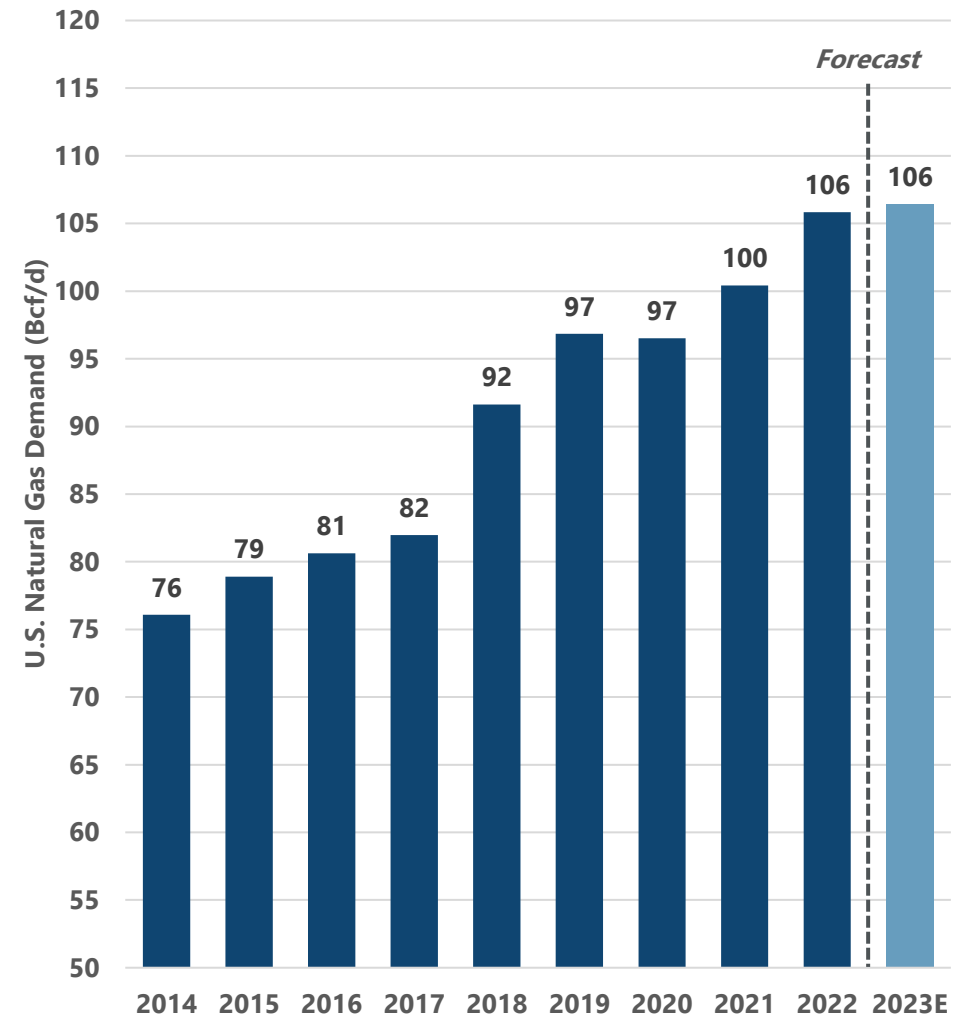
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Global Oil Demand (MMbbl/d)



U.S. Natural Gas Demand (Bcf/d)



Oil and natural gas demand recovered much quicker than initially anticipated after the COVID pandemic, and further growth from current levels is expected

Source: BP Statistical Review of World Energy, BTU Analytics.

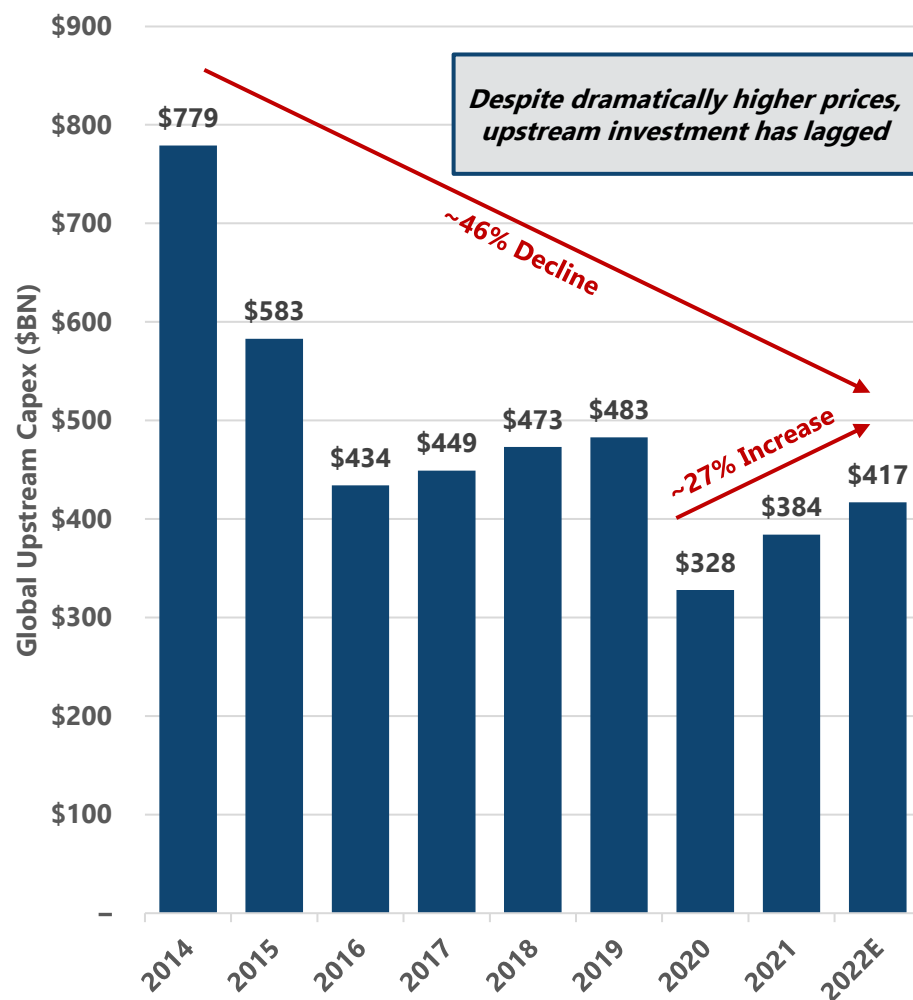
Kayne Energy Private Equity Funds

Producer reinvestment rates remain depressed despite higher commodity prices

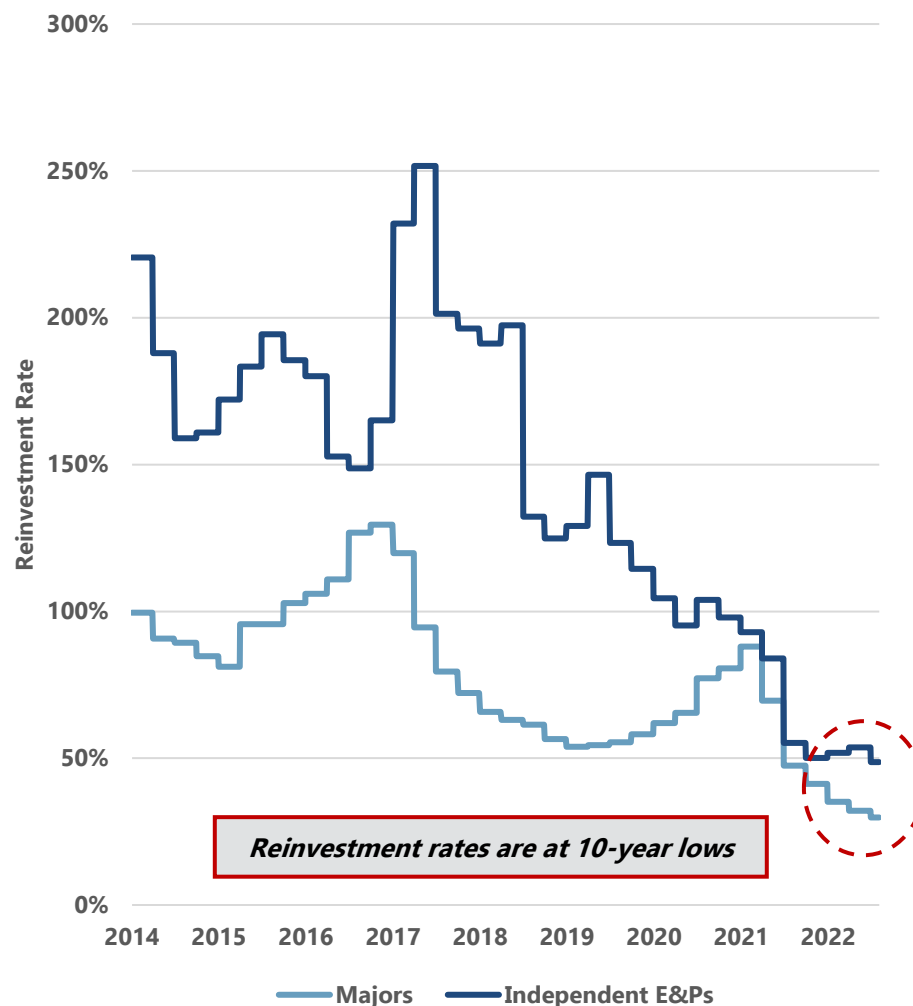
Kayne Anderson

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Global Upstream Oil and Gas Investment



Public E&P Reinvestment Rates¹



Several factors have contributed to a fundamental shift in producers' approach towards supply growth and capital allocation, resulting in chronic underinvestment in oil and gas supply capacity

Source: Citi, IEA, EIA.

¹Capital Expenditures divided by Cash Flow from Operations.

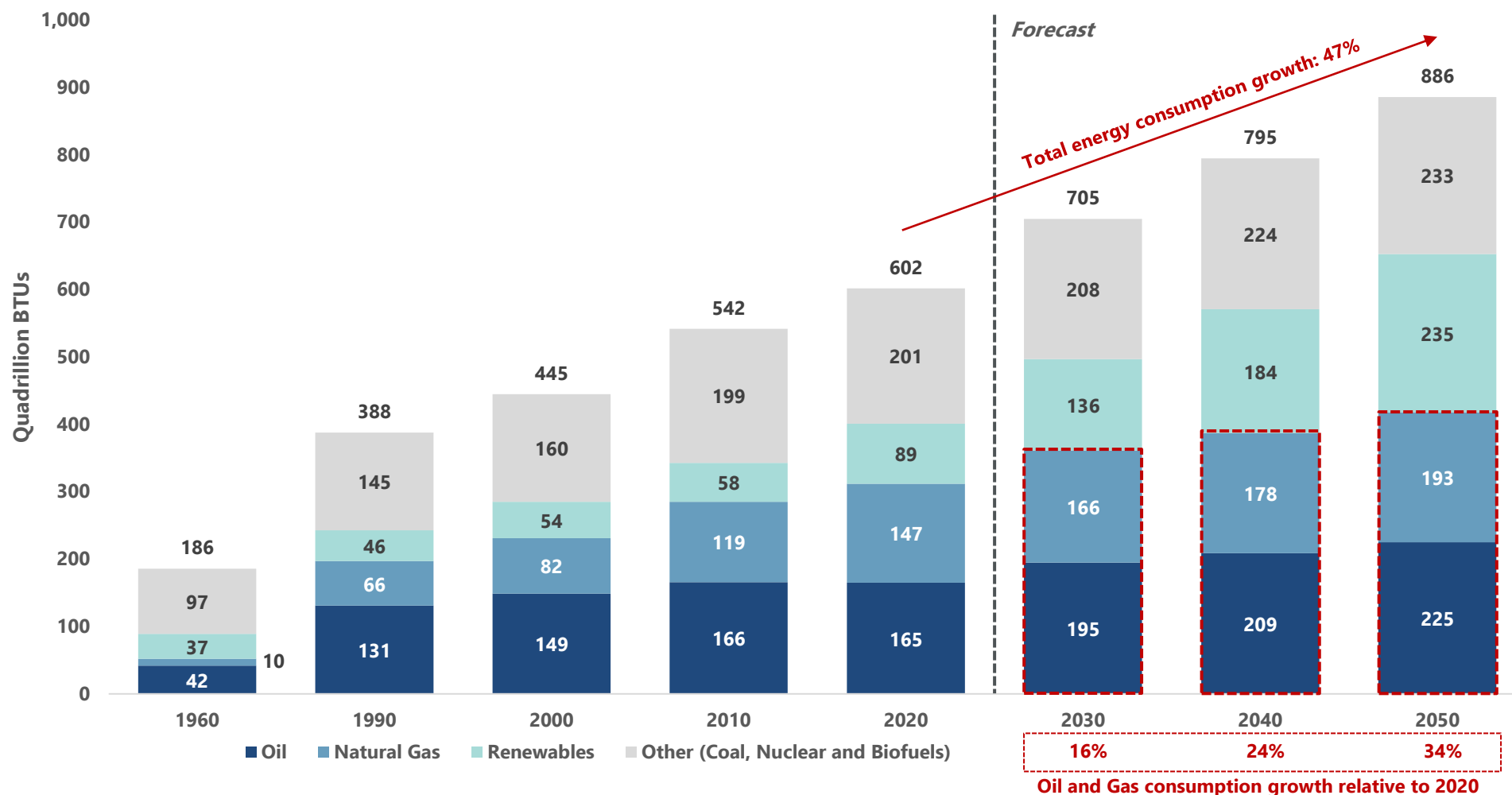
Kayne Energy Private Equity Funds

Hydrocarbons will remain a meaningful portion of expected future demand growth

Kayne Anderson

Capital Advisors, L.P.

Global Energy Consumption



Despite consensus expectations of strong renewables growth, total oil and gas consumption is still expected to grow by 34% through 2050 relative to 2020

Source: EIA International Energy Outlook 2021, Raymond James Research, World Bank DataBank.
 Note: Low Income, Middle Income and High Income designations based on World Bank country classifications as of July 2020.

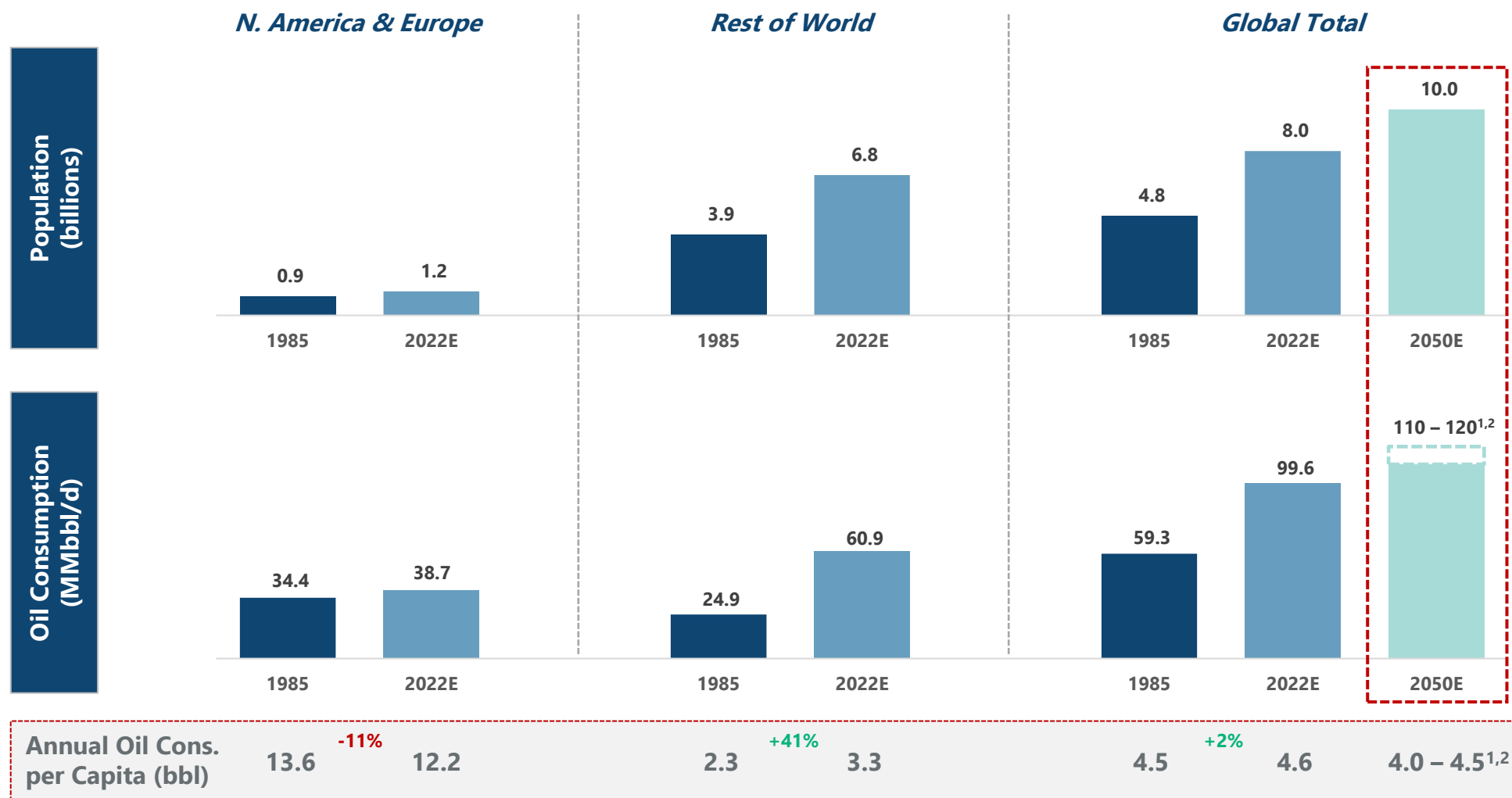
Kayne Energy Private Equity Funds

Population growth and increasing energy intensity will drive future oil demand

Kayne Anderson

Capital Advisors, L.P.

Global Population and Oil Consumption



Developing countries will be the primary drivers of oil demand growth as their populations increase and seek increased prosperity

Source: BP Statistical Review of World Energy.

¹Low range assumes annual oil consumption per capita of 6.00 and 3.75 for North America & Europe and Rest of World, respectively.

²High range assumes annual oil consumption per capita of 8.00 and 4.00 for North America & Europe and Rest of World, respectively.

KAEF VII UPDATE

Kayne Energy Private Equity Funds

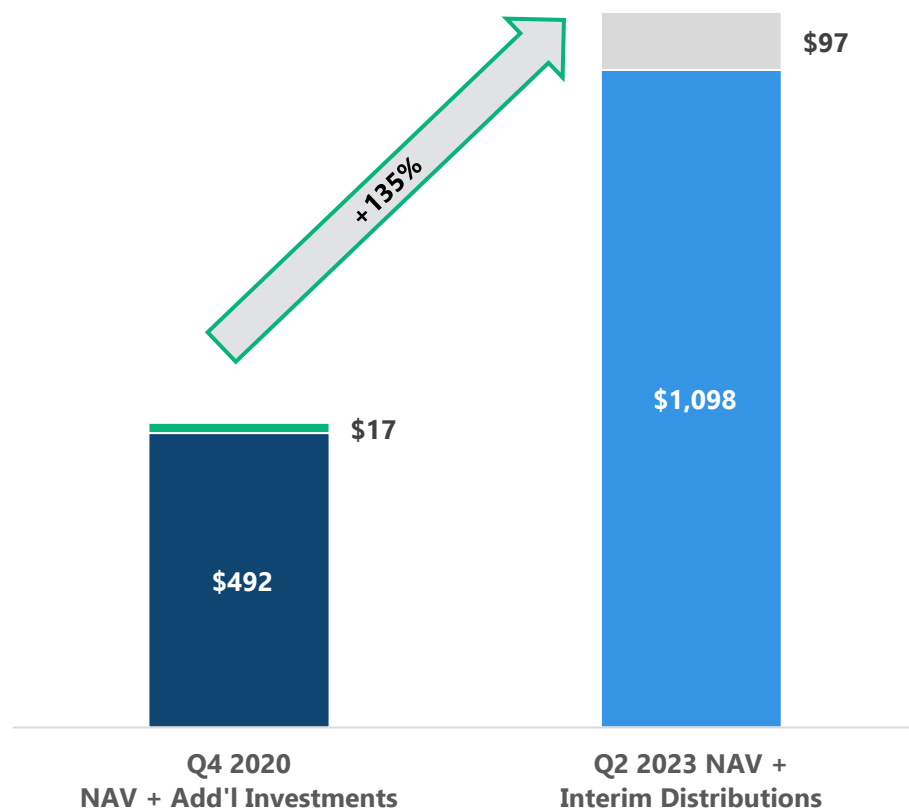
KAEF VII gross fund performance update

Kayne Anderson

Capital Advisors, L.P.

KAEF VII Gross Performance Since Year-End 2020

■ : Q4 2020 NAV ■ : Additional Investments¹
■ : Q2 2023 NAV ■ : Interim Distributions



Improved Balance Sheets and Forthcoming Distributions

89 Energy III

- Took advantage of an improved A&D market and monetized its STACK assets for \$45 million in 2021, using proceeds to pay down debt
- Highly economic recent development and improved commodity prices have allowed for meaningful debt repayment, the company exited the quarter with LTM net leverage below 1.0x
- Initiated quarterly equity distributions from free cash flow in 2023

Kraken Resources

- Successfully divested Mountrail County asset for \$271 million, proceeds used for debt repayment and to make a \$100 million equity distribution
- Maintain a modest leverage profile, with LTM net leverage near 0.7x while generating over \$550 million in LTM EBITDA
- Anticipate making ~\$150 million (~\$70 million net to KAEF VII) of equity distributions out of free cash flow in 2023, representing ~4% of the fund's total invested equity (~8% of invested equity in remaining active portfolio companies)

Strategic Investments

89 Energy III

- Turned 47 horizontal wells to production since resuming development across the company's SCOOP position
- Successfully ran two rigs throughout the second half of 2022 and dropped to one rig in May 2023

Kraken Resources

- Closed on two bolt-on acquisitions surrounding Kraken's existing acreage position for \$85 million in first half of 2022
- Kraken continued to actively develop its position in first half of 2023, bringing online 26 wells; the company is currently outperforming YTD budgeted production by 10% and hedged EBITDA by 15%

Riverbend Permian II

- Brought 36 wells online since resuming development in the fourth quarter of 2020 through continuous one-rig development
- Continuing to extend inventory runway in the highly sought-after Midland Basin through a combination of the company's leasing program and creative drill-to-earn transaction structures

KAEF VII remains focused on creating value through the drill bit at a manageable reinvestment rate, allowing for accelerated equity distributions to investors in 2023 and beyond

Performance data is provided through June 30, 2023.

Past performance is not a guarantee of future performance.

¹Additional investments represent investments made by KAEF VII between Q4 2020 and Q2 2023.

KPEIF III OPPORTUNITY

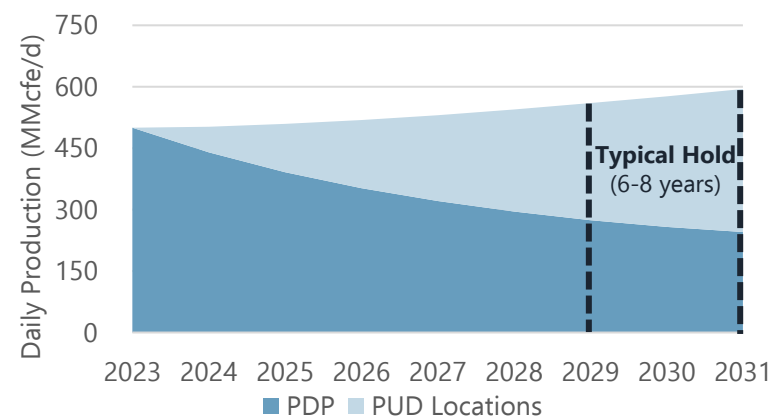
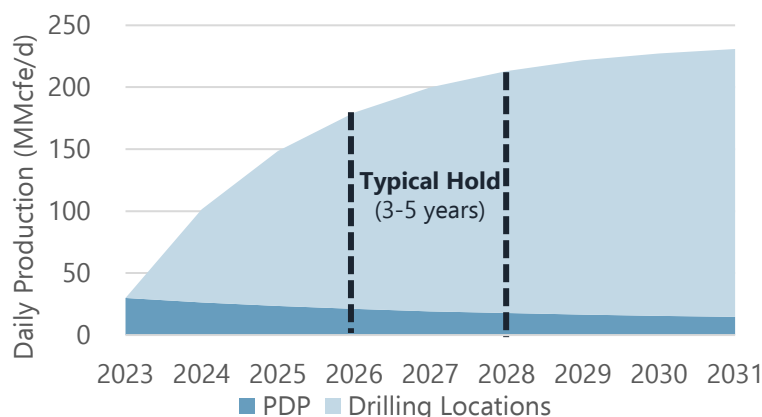
Kayne Energy Private Equity Funds

Old Energy PE Model vs. New Energy PE Model

Kayne Anderson

Capital Advisors, L.P.

	Old Energy PE Model	New Energy PE Model
<u>Strategy Description</u>	<ul style="list-style-type: none"> “Lease and Drill” strategy <u>focused on acquiring and proving up undeveloped acreage</u> 	<ul style="list-style-type: none"> PDP acquisition strategy <u>targeting large, mature producing assets with low base decline rates</u>
<u>Value Allocation</u>	<ul style="list-style-type: none"> Primarily attributable to <u>undeveloped reserves</u> 	<ul style="list-style-type: none"> Primarily attributable to <u>producing reserves</u>
<u>Financing Sources</u>	<ul style="list-style-type: none"> Acquisition costs and drilling capital <u>primarily funded with equity</u> 	<ul style="list-style-type: none"> Acquisition costs and drilling capital (if relevant) <u>funded with a mix of debt, equity and asset free cash flow</u>
<u>Distribution Profile</u>	<ul style="list-style-type: none"> <u>Zero equity distributions</u>, entirely dependent on exit valuation to generate returns 	<ul style="list-style-type: none"> <u>Strong equity distribution yield</u> significantly reduces dependence on exit valuation
<u>Free Cash Flow Generation</u>	<ul style="list-style-type: none"> <u>Zero or minimal</u> free cash flow generation 	<ul style="list-style-type: none"> <u>Substantial</u> free cash flow generation
<u>Ability to Hedge</u>	<ul style="list-style-type: none"> <u>Minimal ability to hedge</u> commodity price risk 	<ul style="list-style-type: none"> <u>Ability to hedge</u> commodity price risk
<u>Growth Profile</u>	<ul style="list-style-type: none"> <u>Significant forecasted production growth</u> during hold period 	<ul style="list-style-type: none"> <u>Zero to modest production growth forecasted</u> during hold period



Kayne was a first mover into the “new energy PE model” and has more experience underwriting large-scale, cash flowing assets than any other private equity firm

Note: The investment profiles shown above are illustrative and do not represent any specific investment or transaction.

Kayne Energy Private Equity Funds

Energy offers an extraordinary investment opportunity

Kayne Anderson

Capital Advisors, L.P.

What is the Investment Opportunity?

1

We are acquiring low risk, producing oil and gas assets that we are underwriting to a 20% net IRR and 2.0x+ net ROI¹ at current commodity prices, with the potential to materially outperform in an energy bull market

2

These assets generate substantial free cash flow to support material equity distributions; the Funds have averaged a 19% annualized net yield on invested equity since inception²

3

The Income Funds Platform has proven successful to date, generating a combined ~24% net IRR and ~1.9x net ROI across the KPEIF Funds and Co-Investments³

Why Does This Opportunity Exist?

1

Chronic underinvestment in oil and gas supply is creating a structural bull market for commodities

2

Depressed valuations for assets due to lack of both debt and equity capital to fund acquisitions

3

Exodus of financial sponsors has resulted in significantly less competition for acquisitions

Past performance is not a guarantee of future performance.

¹The target return set forth herein is provided as an indicator as to how KPEIF III will be managed and is not intended to be viewed as an indicator of likely performance returns to investors. Embedded in the target return are estimates and assumptions around future commodity prices, service costs, asset performance, industry regulations and other such key factors. The target return is based on estimates and assumptions that potential investments will yield certain returns, however, there can be no assurance that KPEIF III's return objectives will be realized or that the General Partner will be successful in finding investment opportunities that meet these anticipated return parameters.

²Annualized net yield based on cumulative distributions paid (excluding monetizations) net of carried interest, management fees and fund expenses through Q2 2023 (inclusive of July 2023 and August 2023 distributions) divided by average invested equity (adjusted for realizations); excludes invested equity associated with pre-asset management teams.

³Based on due dates of capital contributions, dates of capital distributions and partners' capital as of June 30, 2023. Combined Net IRR time normalized to initial KPEIF I investment on April 1, 2016.

Kayne Energy Private Equity Funds

Kayne is the market leader of the “New Energy PE Model”

Kayne Anderson

Capital Advisors, L.P.

Why Kayne Anderson?

- 1** We were first movers into the “new energy PE model” and have more experience underwriting large-scale, cash flowing assets than any other PE firm
- 2** Our portfolio of large-scale, high-yielding companies provides a distinct competitive advantage and will enable attractive investments for KPEIF III
- 3** The Income Funds Platform has delivered top quartile returns¹, demonstrating the success of the strategy

Kayne Private Energy Income Funds Platform Track Record

(\$ in millions)

	Funds			Co-Investments		KPEIF Funds + Co-Investments
	KPEIF I	KPEIF II	KPEIF II-B	Terra Energy Partners	Flywheel Energy	
Fund Commitments²	\$1,550	\$1,148	\$310	\$150	\$200	\$3,358
<i>Number of Investments³</i>	6	8	6	1	1	13
<i>Vintage Year</i>	2016	2018	2018	2016	2018	
Total Equity Invested³	\$1,388	\$884	\$148	\$89	\$159	\$2,669
<i>% of Fund Commitments³</i>	90%	77%	48%	60%	80%	79%
Total Distributions⁴	\$2,080	\$445	\$14	\$207	\$259	\$3,005
<i>% of Capital Invested</i>	150%	50%	9%	232%	163%	113%
Annualized Net Yield⁵	14%	27%	12%	33%	36%	19%
Net IRRs^{6,7}	18.7%	28.9%	20.9%	32.1%	38.7%	23.5%
Net ROIs^{6,7}	2.01x	1.50x	1.19x	3.50x	3.13x	1.91x

Performance data is provided through June 30, 2023.

Past performance is not a guarantee of future performance.

¹Top quartile determined by benchmarking KPEIF Funds and Co-Investments March 31, 2023 internal marks to Cambridge Associates data as of March 31, 2023. Top quartile funds include KPEIF I, KPEIF II, Terra-Co Investment and Flywheel Co-Investment.

²Pro forma for release of commitments at KPEIF II/II-B as a result of the Kayne Private Energy Income Secondary Holdings (“KPEISH”) transaction.

³Includes equity investments associated with two management teams that have no assets as of June 30, 2023.

⁴Inclusive of July 2023 and August 2023 distributions from Ensign, Flywheel, Flywheel II and KPEISH.

⁵Annualized net yield based on cumulative distributions paid (excluding monetizations) net of carried interest, management fees and fund expenses through Q2 2023 (including July 2023 and August 2023 distributions) divided by average invested equity (adjusted for realizations); excludes invested equity associated with pre-asset management teams.

⁶Funds and Co-Investments based on due dates of capital contributions, dates of capital distributions and partners’ capital as of June 30, 2023. Combined Net IRR time normalized to initial KPEIF I investment on April 1, 2016.

⁷Fund expenses, management fees and carried interest reallocations are included in the calculation.

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Investment in the Funds, involves a high degree of risk, including but not limited to the risks that the sectors within the Funds perform unfavorably, market return expectations change with respect to yielding investments, and interest rates rise. Opportunities for withdrawal and transferability of interest are restricted, so investors may not have access to capital when it is needed. There is no secondary market for the interests and none is expected to develop. An investor's investment in the Fund should be limited to the risk capital portion of its investment portfolio. For a more detailed explanation of risks relating to an investment in the Funds, please review the Fund's respective Private Placement Memoranda (Offering Documents).

This presentation contains "forward-looking statements". The words "forecast", "estimate", "project", "intend", "expect", "should", "believe" and similar expressions are intended to identify forward-looking statements. These forward-looking statements involve known and unknown risks, uncertainties, assumptions and other factors, including those discussed in the Memorandum, which may cause the Fund's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. In addition, new risks and uncertainties may arise from time to time. Accordingly, all forward-looking statements should be evaluated with an understanding of their inherent uncertainty. Except as required by law, we assume no obligation to publicly update or revise these forward-looking statements for any reason, or to update the reasons actual results could differ materially from those anticipated in these forward-looking statements, even if new information becomes available in the future.

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Past performance is not necessarily indicative of future results and there can be no assurance that targeted returns will be achieved. There can be no assurance that the Funds will achieve results comparable to or that the returns generated will equal or exceed those of other investment activities of KACALP or its affiliates or that the Funds will be able to implement its investment strategy or achieve its investment objectives. KACALP does not make any representation or warranty, express or implied, regarding future performance. Targeted investor returns shown herein are based on assumptions and calculations of KACALP using data available to it. Targeted returns are subjective and should not be construed as providing any assurance to the results that may be realized by the Funds in the future.

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Past performance is no guarantee of future results. An investment in the Funds could suffer a loss.



NEPC, LLC

Firm: Real Estate Global Partnership Fund II, LP (fka MFIRE Global II)

Strategy/Product: Real Estate Fund of Funds

Client: MWRA

NEPC Manager Due Diligence Questionnaire - Update

Instructions

In support of our upcoming meeting we ask that you please complete this due diligence questionnaire. Please provide your responses in the form of brief descriptions, lists or tables added directly to this Word document.

Thank you for taking the time to complete this questionnaire. Please note that all materials submitted in relation to MWRA Retirement System may be subject to disclosure consistent with Massachusetts Public Record laws.

Firm/Organization

1. Have there been any changes in ownership or management in the past year?

No.

2. List firm AUM, net flows and accounts gained/lost for the past 5 years.

AUM/AUA

- **StepStone:** \$143AUM / \$497AUA
- **SRE:** \$13B AUM / \$174B AUA

Client Gain/Loss¹

- Gain
 - In the past 5 years, StepStone has gained 110+ clients, with ~\$90B of AUM/AUA. These clients include public/private pension funds, insurance companies, sovereign wealth funds, endowments, family offices, financial institutions and superannuation funds.
 - In the past 5 years, SRE has gained 45+ clients, with ~\$70B of AUM/AUA. These clients include public/private pension funds,

¹ Figures as of June 30, 2023. Reflects final data for the prior period (March 31, 2023), adjusted for net new client account activity through June 30, 2022. Does not include post-period investment valuation or cash activity.



insurance companies, sovereign wealth funds, endowments, family offices, financial institutions and superannuation funds.

- Loss²
 - In the past 5 years, StepStone has lost 5 clients.
 - In the past 5 years, SRE has lost 3 clients.

3. Have there been any new or discontinued products in the past year?

SRE launched StepStone Real Estate Partners V (“SREP V”, or the “Fund”), the fifth in a series of funds focused on providing liquidity to real estate vehicles and their investors through special situations secondaries including recapitalizations in September 2022. The Fund V held its first close in March 2023 on close to \$1 billion of capital commitments, representing ~50% of the target fund size.³

No products have been discontinued in the past year.

4. Are any products capacity constrained?

No.

5. Describe any current or pending regulatory, compliance or litigation issues and the expected business impact.

Not applicable.

6. Describe your diversity, equity and inclusion efforts with regard to the firm and its employees.

StepStone has been committed to promoting diversity since its inception. One of the three founders of the Firm, Mr. Jose Fernandez, is Hispanic and all the firm’s Partners are committed to hiring a diverse workforce and investing in managers that are diverse and promote diversity. We believe that a diverse workforce improves investment returns because different life experiences, backgrounds, and insights of the professionals in such organizations can be leveraged to perform more thorough diligence and analysis and, therefore, produce better returns than those of a less diverse organization.

Further demonstrating our commitment to diversity, StepStone implemented a Diversity, Equity & Inclusion (“DEI”) Committee that includes senior leadership

² Number of lost clients is not inclusive of clients where there is a fixed contract length.

³ Reflects current Stepstone estimate. Actual capital invested/committed is inherently uncertain and is dependent on many factors such as general economic conditions. Actual capital invested/committed may vary materially from the information set forth herein.



across the Firm, as well as representatives from each business unit. The committee helps StepStone define, evaluate, measure, and help implement StepStone’s diversity and inclusion goals and initiatives. Members of the DEI Committee are as follows:

STEPSTONE DIVERSITY, EQUITY & INCLUSION COMMITTEE	
Lindsay Creedon Partner, Head of Diversity, Equity & Inclusion	Scott Hart Partner, CEO
Jose Fernandez Partner, Co-COO	Jennifer Ishiguro Partner, Chief Legal Officer & Secretary
Nitin Malik Managing Director, Head of Global Talent	Leyla Holterud Managing Director, Private Equity
Alesia Dawidowicz Managing Director, Private Debt	Corey Wilkins Director, Enterprise Services
Serena Mandrile Vice President, Real Estate	Ying Lin Vice President, Infrastructure and Real Assets
Eden Lawrence Vice President, Enterprise Services	Lyn Blithe Senior Executive Assistant, Private Equity

The StepStone Diversity & Inclusion Network (“SDIN”) focuses on providing opportunities for our employees to learn about various DEI issues and initiatives and to meet with and talk to experts who are championing these causes at other organizations. We have also launched employee resource groups (“ERG”), also known as affinity groups, to provide networks and a resource for employees from traditionally underrepresented groups and their allies. These ERGs are employee-led and supported by an executive-level sponsor and the StepStone Diversity & Inclusion Committee. Additionally, StepStone is a founding signatory to the ILPA Diversity in Action Initiative, which serves as a means for GPs and LPs to publicly acknowledge their commitment to take concrete steps to advance diversity, equity, and inclusion.

Portfolio Management Team

1. Have there been any changes in the portfolio management team in the past year?
No.
2. Are there any expected changes to the team in the future (planned additions or departures)?
No.



Process

1. Have there been significant changes in any of the areas below in the past year?

No.

- Identification of investment ideas
- Process for exploring and vetting ideas
- Portfolio trading practices including buy/sell rules
- Approach to portfolio monitoring and risk management

Philosophy

1. Describe recent changes in investment philosophy, if any.

Not applicable.

Portfolio

1. If not included in your meeting presentation, provide portfolio holdings, sector exposure, geographic exposure and common characteristics (yield, duration, market cap, P/E, etc.).

Please refer to Attachment 1 – StepStone Real Estate Presentation to MWRA Global RE 2023.

2. List strategy AUM, net flows and accounts gained/lost for the past 5 years.

Global Partnership Fund II's investment value as of 1Q23 is \$16.8 million. There have been no clients gained or lost (it is a closed-end fund-of-funds structure).

3. Describe investor concentration for the strategy and note the percent of AUM attributable to the top five investors.

Top 5 investors in RE Global II equals 88.8%.

Performance / Market Outlook

1. If not included in your meeting presentation, provide trailing returns as of the most recent quarter-end and calendar year returns for the past 10 years, both relative to benchmark.

The IRR summary in the presentation summarizes most of this. A 10-year history can be provided but not in time for this presentation.

2. Briefly discuss recent performance trends and identify environments in which the strategy is likely to be in or out of favor.



Of the fund's 16 investments, 12 remain active. The Fund continues to be in harvesting mode and has already returned over 100% of the committed capital, with additional distributions forthcoming. Given the recent rise in interest rates, it may take longer for some underlying investments to liquidate given the higher cost of capital for potential asset buyers and a general slowdown of leasing and rent growth velocity. As such, the fund has been extended through April 5, 2024.

3. Describe your market outlook and how strategy positioning is impacted by your views.

The goal of the vehicles was to provide global diversity to investors by investing in diverse value-add/opportunistic structures worldwide. The fund is experiencing solid performance in most of its underlying investments in North America, Europe, and Asia. The Fund's Latin American investments have struggled due to political and economic instability in the region which has caused construction delays, a slowdown in sales, and a lack of consumer confidence which has led to additional cancellations of sales contracts in the for-sale housing strategy. Additionally, this region suffered from significant currency depreciation.

4. Could you please include a slide in your presentation that shows the MWRA's account history, initial contribution, cumulative subsequent contributions, cumulative subsequent distributions, gain/loss and current value.

Please refer to Attachment 1 – StepStone Real Estate Presentation to MWRA Global RE 2023.



Real Estate Global Partnership Fund II

September 2023 | CONFIDENTIAL

Presentation to MWRA Employees' Retirement System



Disclosure



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On September 20, 2021, StepStone Group Inc. acquired Greenspring Associates, Inc. (“Greenspring”). Upon the completion of this acquisition, the management agreement of each Greenspring vehicle was assigned to StepStone Group LP

The presentation is being made based on the understanding that each recipient has sufficient knowledge and experience to evaluate the merits and risks of investing in private market products. All expressions of opinion are intended solely as general market commentary and do not constitute investment advice or a guarantee of returns. All expressions of opinion are as of the date of this document, are subject to change without notice and may differ from views held by other businesses of StepStone.

All valuations are based on current values calculated in accordance with StepStone’s Valuation Policies and may include both realized and unrealized investments. Due to the inherent uncertainty of valuation, the stated value may differ significantly from the value that would have been used had a ready market existed for all of the portfolio investments, and the difference could be material. The long-term value of these investments may be lesser or greater than the valuations provided.

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Prospective investors should inform themselves and take appropriate advice as to any applicable legal requirements and any applicable taxation and exchange control regulations in the countries of their citizenship, residence or domicile which might be relevant to the subscription, purchase, holding, exchange, redemption or disposal of any investments. Each prospective investor is urged to discuss any prospective investment with its legal, tax and regulatory advisors in order to make an independent determination of the suitability and consequences of such an investment.

An investment involves a number of risks and there are conflicts of interest. Please refer to the risks and conflicts disclosed herein.

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All data is as of March 2023 unless otherwise noted.

PAST PERFORMANCE IS NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. ACTUAL PERFORMANCE MAY VARY.

Account Summary

MWRA ACCOUNT AS OF 1Q2023

Name of Partner: MWRA Employees' Retirement System

Commitment: \$ 2,000,000

In \$USD

	<u>Current Quarter</u>	<u>Year to Date</u>	<u>Inception to Date</u>
Beginning Capital Account	\$ 356,751	\$ 356,751	\$
Capital Contributions			1,310,000
Distributions			(1,421,675)
Net contributions/(distributions)			<u>(111,675)</u>
Net investment gain/(loss) before management fee	(612)	(612)	(68,854)
Management fee	(1,467)	(1,467)	(161,769)
Net realized gain/(loss) on investments	403	403	889,629
Net change in unrealized appreciation/(depreciation) on investments	7,402	7,402	(172,805)
General Partner's carry allocation			
Net change in partner's capital resulting from operations	<u>5,726</u>	<u>5,726</u>	<u>486,201</u>
Syndication costs			(12,049)
Capital Account at 3/31/2023¹	<u>\$ 362,477</u>	<u>\$ 362,477</u>	<u>\$ 362,477</u>

¹Balance may not sum due to rounding.

Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve its objectives or avoid substantial losses.

TIME WEIGHTED RETURNS

	Quarter	Year to Date	1 Year	TVP ⁽¹⁾⁽²⁾
RE Global Fund II (Gross)	2.8%	2.8%	-4.5%	1.3x
<i>NCREIF Property Index⁽³⁾</i>	-1.8%	-1.8%	-1.6%	n/a

INTERNAL RATE OF RETURN (IRR)⁽²⁾

	Thru 1Q 2023
RE Global Fund II (Gross) ⁽⁴⁾	8.3%
RE Global Fund II (Net of Fees) ⁽⁵⁾	6.3%
RE Global Fund II (Net of Fees & Allocated Carry)	6.3%

(1) "TVPI" refers to the ratio of Total Value to Invested.

(2) IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPs' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital.

(3) The referenced indices/benchmarks are shown for general market comparisons and are not meant to represent any particular fund. An investor cannot directly invest in an index. Moreover, indices do not reflect commissions or fees that may be charged to an investment product based on the index, which may materially affect the performance data presented.

(4) GPF Gross calculation represents performance of underlying funds without any impact of the fund of fund fees/expenses.

(5) GPF Fund of Funds Net calculation represents the performance of the fund of funds net of all fees and expenses.

Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve its objectives or avoid substantial losses.

Real Estate Global Partnership Fund II Performance as of 1Q2023



UNDERLYING MANAGER PERFORMANCE AS OF 1Q2023

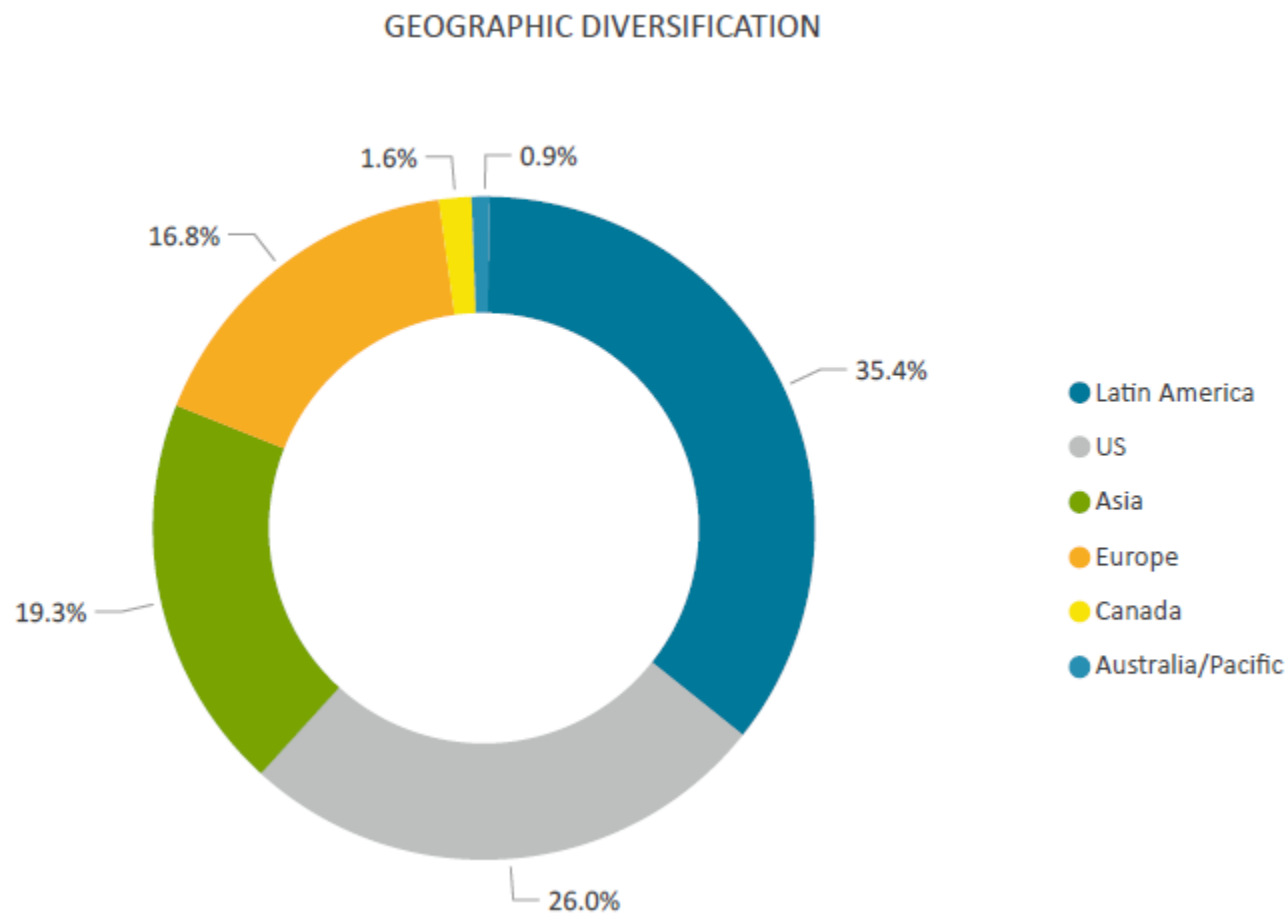
Activity	Activity				Performance		
	Commitment	Contributions as of 3/31/2023	Distributions as of 3/31/2023	Value as of 3/31/2023	DPI	TVPI	Net IRR
Investment							
Blackstone Real Estate Partners Asia	6,900,000	7,459,879	(8,566,638)	2,666,222	1.15x	1.51x	11.72%
JEN Fund IV	6,900,000	5,679,324	(7,859,187)	-	1.38x	1.38x	13.63%
Limetree China Car Parks Investment Fund	6,500,000	6,429,917	(8,725,166)	-	1.36x	1.36x	6.16%
Sterling Value Add Partners	6,160,000	6,357,155	(5,205,393)	4,174,682	0.82x	1.48x	9.90%
Kitty Hawk Capital Partners II	5,893,436	5,311,870	(5,311,414)	1,019,043	1.00x	1.19x	5.21%
European Property Investors Special Opportunities 3	5,778,164	6,344,935	(5,693,364)	1,771,835	0.90x	1.18x	4.98%
Woodbourne Canada Partners II	5,617,563	7,695,549	(9,761,871)	265,997	1.27x	1.30x	7.51%
Bayview Opportunity Fund IIIb	5,600,000	6,961,908	(9,204,861)	-	1.32x	1.32x	9.82%
FPA Apartment Opportunity Fund IV	5,600,000	5,364,705	(9,471,083)	46,818	1.77x	1.77x	30.25%
Hemisferio Sul Investimentos Fund IV	5,600,000	5,585,061	(561,542)	673,844	0.10x	0.22x	-20.96%
Madison Realty Capital Sullivan Debt	5,600,000	8,239,593	(11,684,055)	155,490	1.42x	1.44x	12.53%
Terranum Capital Latin America Real Estate Fund I, L.P.	5,600,000	6,645,725	(3,760,373)	1,127,536	0.57x	0.74x	-6.96%
Fortress Japan Opportunity Fund II(Yen)	5,056,519	6,396,873	(9,795,631)	767,901	1.53x	1.65x	18.13%
Alsis Mexico Housing Opportunities Fund	4,730,753	5,000,000	(1,504,498)	4,139,745	0.30x	1.13x	2.02%
Lubert-Adler Real Estate Fund VI, L.P.	4,039,518	3,933,732	(6,724,070)	-	1.71x	1.71x	27.57%
Lubert-Adler Real Estate Fund VI-A	1,543,475	1,453,318	(2,770,817)	-	1.91x	1.91x	33.22%
JER Europe Fund III	1,407,949	1,425,577	(1,889,746)	13,109	1.33x	1.33x	22.92%
Lubert-Adler Real Estate Fund V, L.P.	629,229	629,229	(1,090,634)	-	1.73x	1.73x	14.24%
Total	89,156,606	96,914,351	(109,580,344)	16,822,221	1.13x	1.3x	8.30%

*Commitment is non-USD; currently translated at the period end FX Rate.

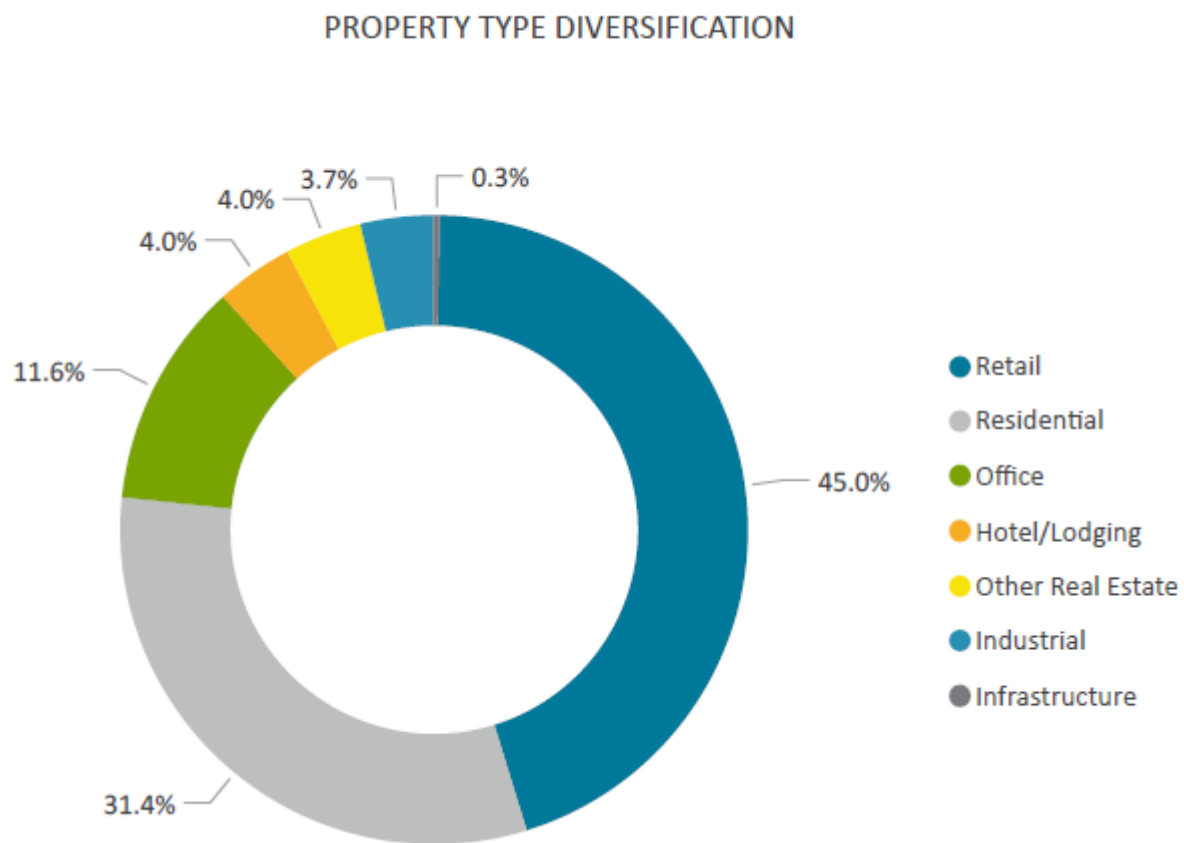
**Liquidated investments are included on the schedule to show the inception to date performance of Real Estate Global Partnership Fund II.

(1)IRR and TVPI for certain vehicles may have been impacted by Stepstone's or the underlying GPS' use of subscription-backed credit facilities by such vehicles. Reinvested/recycled amounts increase contributed capital. Confidential

Past performance is not necessarily indicative of future results and there can be no assurance that the fund will achieve its objectives or avoid substantial losses.



Property Type Diversification



Risks and Other Considerations



Risks Associated with Investments. Identifying attractive investment opportunities and the right underlying fund managers is difficult and involves a high degree of uncertainty. There is no assurance that the investments will be profitable and there is a substantial risk that losses and expenses will exceed income and gains.

Restrictions on Transfer and Withdrawal; Illiquidity of Interests; Interests Not Registered. The investment is highly illiquid and subject to transfer restrictions and should only be acquired by an investor able to commit its funds for a significant period of time and to bear the risk inherent in such investment, with no certainty of return. Interests in the investment have not been and will not be registered under the laws of any jurisdiction. Investment has not been recommended by any securities commission or regulatory authority. Furthermore, the aforementioned authorities have not confirmed the accuracy or determined the adequacy of this document.

Limited Diversification of Investments. The investment opportunity does not have fixed guidelines for diversification and may make a limited number of investments.

Reliance on Third Parties. StepStone will require, and rely upon, the services of a variety of third parties, including but not limited to attorneys, accountants, brokers, custodians, consultants and other agents and failure by any of these third parties to perform their duties could have a material adverse effect on the investment.

Reliance on Managers. The investment will be highly dependent on the capabilities of the managers.

Risk Associated with Portfolio Companies. The environment in which the investors directly or indirectly invests will sometimes involve a high degree of business and financial risk. StepStone generally will not seek control over the management of the portfolio companies in which investments are made, and the success of each investment generally will depend on the ability and success of the management of the portfolio company.

Uncertainty Due to Public Health Crisis. A public health crisis, such as the recent outbreak of the COVID-19 global pandemic, can have unpredictable and adverse impacts on global, national and local economies, which can, in turn, negatively impact StepStone and its investment performance. Disruptions to commercial activity (such as the imposition of quarantines or travel restrictions) or, more generally, a failure to contain or effectively manage a public health crisis, have the ability to adversely impact the businesses of StepStone's investments. In addition, such disruptions can negatively impact the ability of StepStone's personnel to effectively identify, monitor, operate and dispose of investments. Finally, the outbreak of COVID-19 has contributed to, and could continue to contribute to, extreme volatility in financial markets. Such volatility could adversely affect StepStone's ability to raise funds, find financing or identify potential purchasers of its investments, all of which could have material and adverse impact on StepStone's performance. The impact of a public health crisis such as COVID-19 (or any future pandemic, epidemic or outbreak of a contagious disease) is difficult to predict and presents material uncertainty and risk with respect to StepStone's performance.

Taxation. An investment involves numerous tax risks. Please consult with your independent tax advisor.

Conflicts of Interest. Conflicts of interest may arise between StepStone and investors. Certain potential conflicts of interest are described below; however, they are by no means exhaustive. There can be no assurance that any particular conflict of interest will be resolved in favor of an investor.

Allocation of Investment Opportunities. StepStone currently makes investments, and in the future will make investments, for separate accounts having overlapping investment objectives. In making investments for separate accounts, these accounts may be in competition for investment opportunities.

Existing Relationships. StepStone and its principals have long-term relationships with many private equity managers. StepStone clients may seek to invest in the pooled investment vehicles and/or the portfolio companies managed by those managers.

Carried Interest. In those instances where StepStone and/or the underlying portfolio fund managers receive carried interest over and above their basic management fees, receipt of carried interest could create an incentive for StepStone and the portfolio fund managers to make investments that are riskier or more speculative than would otherwise be the case. StepStone does not receive any carried interest with respect to advice provided to, or investments made on behalf, of its advisory clients.

Other Activities. Employees of StepStone are not required to devote all of their time to the investment and may spend a substantial portion of their time on matters other than the investment.

Material, Non-Public Information. From time to time, StepStone may come into possession of material, non-public information that would limit their ability to buy and sell investments.

ESG Integration. While StepStone seeks to integrate certain ESG factors into its investment process and firm operations, there is no guarantee that StepStone's ESG strategy will be successfully implemented or that any investments or operations will have a positive ESG impact. Applying ESG factors to investment decisions involves qualitative and subjective decisions and there is no guarantee the criteria used by StepStone to formulate decisions regarding ESG, or StepStone's judgment regarding the same, will be reflected in the beliefs or values of any particular client or investor. There are significant differences in interpretation of what constitutes positive ESG impact and those interpretations are rapidly changing. The description of ESG integration herein is provided to illustrate StepStone's intended approach to investing and firm operations; however, there is no guarantee that the processes will be followed in every circumstance or at all.

Performance Information. No investment decisions may be made in reliance on this document. In considering performance information herein, readers should bear in mind that past performance is not necessarily indicative of future results and that actual results may vary. There can be no assurance that any StepStone fund will be able to successfully implement its investment strategy or avoid losses. Performance shown herein may include investments across different StepStone funds. The aggregate returns are not indicative of the returns an individual investor would receive from these investments. No individual investor received such aggregate returns as the investments were made across multiple funds and accounts over multiple years.



MONTHLY PERFORMANCE REPORT

**MWRA EMPLOYEES' RETIREMENT
SYSTEM**

JULY 31, 2023



PROPRIETARY & CONFIDENTIAL

EXECUTIVE SUMMARY

	Market Value (\$)	1 Mo (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Composite	681,275,962	1.9	3.8	8.2	4.2	6.3	5.8	6.4
<i>Allocation Index</i>		2.2	4.6	8.6	4.8	7.4	6.4	6.9
<i>Policy Index</i>		2.2	4.7	9.2	5.4	7.8	7.0	7.2

20 Years As of July 31, 2023				
	Return	Standard Deviation	Sharpe Ratio	Sortino Ratio
Composite	7.5	8.4	0.7	1.1
<i>Allocation Index</i>	6.9	7.9	0.7	1.1
<i>Policy Index</i>	7.4	8.5	0.7	1.1

Performance

- The Composite had a preliminary return of 1.9% (net) for the month, underperforming both the Allocation Index of 2.2% and Policy Index of 2.2%.
- In equities, the S&P 500 Index trended higher last month, rising 3.2%, and within striking distance of reaching an all-time high. The Russell 2000 Index outperformed, gaining 6.1%, as regional bank stocks recovered from their March lows. Meanwhile, a weaker U.S. dollar supported non-U.S. stocks with the MSCI EAFE Index rising 3.2% and 1.7% in dollar- and local-terms, respectively. The portfolio's Domestic Equity composite returned 3.6% (net) and the Non-US Equity composite was up 3.8%(net).
- In fixed income, the 10-year Japanese government bond (JGB) yield rose to 61 basis points—marking the highest level since 2014—after the Bank of Japan made a surprise announcement aimed at increasing flexibility around its policy to control the yield curve and repurchase 10 JGB at a 1% yield, up from 0.5%. The Fixed Income composite returned 0.2% (net) for the month while the Bloomberg Agg and the Bloomberg US HY returned -0.1% and 1.4%, respectively.
- This brings the total plan return for the trailing one-year period to 4.2% (net), while the Allocation Index and Policy Index both returned 4.8 and 5.4%, respectively.

Returns for 20 years Risk/Return and Statistics Summary are gross of fees.
 Since inception return is 8.2% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.



TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Composite	681,275,962	100.0	100.0	1.9	8.2	4.2	6.3	5.8	6.4	6.8	Jan-86
Allocation Index				2.2	8.6	4.8	7.4	6.4	6.9		
Policy Index				2.2	9.2	5.4	7.8	7.0	7.2		
Total Balanced	4,180,105	0.6	0.0	0.0	6.6	2.4	8.4	5.5	4.9	4.7	Dec-10
PRIT Core Fund	4,180,105	0.6	0.0	0.0	6.6	2.4	8.5	7.0	7.8	6.8	Apr-99
60% S&P 500 / 40% Bloomberg Aggregate				1.9	12.9	6.4	6.4	7.9	8.3	6.2	
Total Domestic Equity	222,658,496	32.7	31.0	3.6	16.0	9.0	10.7	10.0	10.8	7.6	May-99
Russell 3000 Index				3.6	20.3	12.6	13.1	11.4	12.1	7.4	
Large Cap	173,990,168	25.5	24.0	3.5	17.2	9.5	10.1	11.1	11.5	12.5	Dec-10
Rhumblin Advisors S&P 500 Index Fund	72,407,030	10.6	10.0	3.2	20.6	12.9	13.7	12.1	12.6	9.1	Apr-97
S&P 500 Index				3.2	20.6	13.0	13.7	12.2	12.7	9.1	
Coho Relative Value Equity	53,005,215	7.8	7.0	2.8	2.0	3.1	9.4	8.4		10.0	Mar-16
Russell 1000 Value Index				3.5	8.8	8.3	14.1	8.0		10.6	
Polen Focused Growth	48,577,923	7.1	7.0	4.6	31.8	11.3	5.3	11.8		14.1	Feb-16
Russell 1000 Growth Index				3.4	33.4	17.3	12.2	15.2		17.3	
Small Cap	48,668,328	7.1	7.0	3.9	11.9	7.5	12.6	6.9	9.1	11.1	Dec-10
Loomis Sayles Small Cap Growth	23,771,977	3.5	3.5	1.9	11.5	9.4	6.8	7.2	10.1	6.8	Jan-97
Russell 2000 Growth Index				4.7	18.9	11.6	6.5	4.8	8.5	6.9	
Mesirow Small Cap Value Equity CIT - Founders Class	24,896,351	3.7	3.5	5.9						8.2	Apr-23
Russell 2000 Value Index				7.5						11.0	
Total Non-US Equity	116,092,124	17.0	19.0	3.8	13.6	8.7	2.4	1.7	3.3	4.0	Mar-99
International Equity	76,494,688	11.2	12.0	3.2	15.4	10.8	4.7	3.6	4.5	3.8	Sep-05
SEG Baxter Street	32,086,623	4.7	5.0	3.2	14.2	7.5	2.0	4.4		6.9	May-16
MSCI AC World ex USA (Net)				4.1	13.9	13.4	7.1	3.9		6.2	
Schroder International Alpha Trust Class 1	29,244,786	4.3	4.0	1.5	14.0	13.4	7.7	6.3	6.3	6.7	Mar-12
MSCI AC World ex USA (Net)				4.1	13.9	13.4	7.1	3.9	4.7	4.8	
Baillie Gifford International Growth Fund Class K	15,163,280	2.2	3.0	6.7	21.0	13.3				-4.9	Oct-20
MSCI AC World ex USA (Net)				4.1	13.9	13.4				6.9	

Since inception return is 8.3% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

In November 2019, Loomis Sayles and Schroders transitioned from a mutual fund to a CIT structure. Performance prior to the transition to the CIT investment vehicle is linked to mutual fund performance history.

Preliminary performance is subject to change once finalized.

TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)								
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
Emerging Markets Equity	39,597,435	5.8	7.0	5.0	9.9	4.8					-11.2	Mar-21
Axiom Emerging Markets Trust Class 2	18,750,562	2.8	7.0	4.1	6.5	-0.3					-14.5	Mar-21
<i>MSCI Emerging Markets (Net)</i>				6.2	11.4	8.3					-7.2	
ABS Emerging Markets MA Fund	20,846,874	3.1		5.9	12.9	9.6					-7.0	Dec-21
<i>MSCI Emerging Markets (Net)</i>				6.2	11.4	8.3					-5.7	
Total Fixed Income	126,296,995	18.5	20.0	0.2	2.8	-1.7	-2.2	1.9	2.6	5.6	5.6	Mar-99
Garcia Hamilton Fixed Income Aggregate	32,241,919	4.7	6.0	-0.4	1.7	-4.8	-4.2	0.5		0.5	0.5	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.1	2.0	-3.4	-4.5	0.7		0.7	0.7	
Lord Abbett Core Fixed Income	37,123,321	5.4	4.0	0.0	2.4	-3.0	-4.0	1.0		0.9	0.9	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.1	2.0	-3.4	-4.5	0.7		0.7	0.7	
Loomis Sayles Multisector Full Discretion Trust	47,283,008	6.9	8.0	0.6	3.3	-0.6	-2.2	2.3	3.2	6.7	6.7	Mar-99
<i>Blmbg. U.S. Aggregate Index</i>				-0.1	2.0	-3.4	-4.5	0.7	1.5	3.8	3.8	
<i>Blmbg. U.S. Corp: High Yield Index</i>				1.4	6.8	4.4	2.0	3.4	4.4	6.2	6.2	
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	9,633,437	1.4	2.0	1.0	6.3	7.8	4.3			3.5	3.5	Aug-19
<i>Credit Suisse Leveraged Loan</i>				1.3	7.7	9.5	6.0			4.1	4.1	
Invesco Mortgage Recovery Loans Feeder Fund	15,311	0.0		0.0	-0.1	0.1	-0.2	0.9	5.8	9.5	9.5	Apr-10
<i>Blmbg. U.S. Aggregate Index</i>				-0.1	2.0	-3.4	-4.5	0.7	1.5	2.2	2.2	
Total Hedge Fund	39,713,346	5.8	6.0	0.7	3.8	3.4	5.6	3.9	3.3	3.4	3.4	Oct-06
PRIM Portfolio Completion Strategies	11,994,948	1.8		0.0	3.5	3.4	6.1	3.2	3.9	3.8	3.8	Oct-06
Corbin Pinehurst Partners	13,350,488	2.0		1.6	6.0	6.3	5.2			5.0	5.0	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				1.1	3.4	4.0	4.6			4.3	4.3	
UBS Neutral Alpha Strategies	14,313,494	2.1		0.6	2.1	5.9	7.1			6.2	6.2	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				1.1	3.4	4.0	4.6			4.3	4.3	
Entrust Peru Wind Down	54,417	0.0		-0.6	-17.8	-92.6	-58.1	-42.1		-38.5	-38.5	Dec-17
<i>HFRI Fund of Funds Composite Index</i>				1.1	3.4	4.0	4.6	3.5		3.4	3.4	
Other	12,142,621	1.8	0.0	0.2	2.6	3.9	1.3	1.6	1.1	0.9	0.9	Dec-10
Cash Account	12,142,621	1.8		0.2	2.6	3.9	1.3	1.6	1.1	1.8	1.8	Feb-00
<i>90 Day U.S. Treasury Bill</i>				0.4	2.7	4.0	1.4	1.6	1.0	1.7	1.7	

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.

Preliminary performance is subject to change once finalized.

TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Real Estate	68,422,836	10.0	12.0	0.0	-2.1	-4.0	10.6	8.5	9.9	8.1	Apr-99
<i>NCREIF Property Index</i>				0.0	-3.8	-6.6	6.8	5.9	7.8	8.3	
Morgan Stanley Prime Property (\$2.8m commitment in '95)	25,082,213	3.7		0.0	-3.5	-7.1	8.5	6.8	9.3	8.4	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	25,752,509	3.8		0.0	-1.9	-6.1	13.0			10.6	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	858,992	0.1		0.0	-3.6	-22.8	-26.3	-13.2		-4.7	Oct-15
Landmark VI (\$2m commitment in '11)	5,866	0.0		0.0	-9.3	-13.4	-7.7	-10.3	-1.8	1.3	Jul-11
Landmark VIII (\$4m commitment in '17)	2,168,367	0.3		0.0	1.3	3.5	20.5	12.9		17.4	Nov-17
StepStone Real Estate Fund II (\$2m commitment in '11)	362,477	0.1		0.0	1.6	-2.0	0.2	-2.3	3.6	1.8	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	479,669	0.1		0.0	1.7	12.4	21.1	15.8	14.9	14.5	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,622,319	0.2		0.0	0.7	18.6	9.6				Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,623,884	0.5		0.0	-1.2	2.6	9.2				Nov-17
TerraCap Partners V, LP (\$8m commitment in '22)	8,466,539	1.2		0.0	-0.5	5.4					Jun-22
Total Private Equity and Debt	91,769,439	13.5	12.0	0.0	3.6	2.5	21.1	13.5	14.3		Apr-99
<i>CIA US All PE</i>				0.0	2.4	4.3	20.4	14.8	14.3	10.2	
<i>NASDAQ W/O Income</i>				4.0	37.1	15.8	10.1	13.3	14.7	13.0	
PRIM Vintage Year 2008 (\$3m commitment in '08)	874,648	0.1		0.0	15.0	9.9	27.4	15.5	18.8		Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	63,552	0.0		0.0	-8.5	-11.9	36.5	26.4	23.9		Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	410,054	0.1		0.0	-8.9	-18.7	18.7	12.8	16.7	9.6	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	779,750	0.1		0.0	0.9	-6.4	33.1	22.8	22.2	9.5	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	470,703	0.1		0.0	2.1	-12.1	13.3	12.3	13.2	-8.7	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,101,432	0.3		0.0	0.8	-3.1	26.0	21.1		8.0	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	2,586,598	0.4		0.0	3.9	2.0	29.7	18.9		15.3	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	4,103,595	0.6		0.0	1.0	-3.7	18.8			14.1	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	3,548,280	0.5		0.0	4.1	-4.7				0.6	Dec-20
PRIM Vintage Year 2022 (\$7.5m commitment in '22)	1,569,831	0.2		0.0	3.2	0.1				-2.1	Apr-22
PRIM Vintage Year 2023 (\$10m commitment in '23)	212,049	0.0		0.0						-0.3	May-23
Alcentra European DLF (\$5m commitment in '14)	208,684	0.0		0.0	4.9	6.8	27.8	13.6		11.8	Jan-15
Ascent Fund IV-B (\$1m commitment in '16)	20,394	0.0		0.0	-0.6	-49.4	-30.6	-29.7		-21.7	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,269,470	0.2		0.0	0.6	-5.9	2.9	-1.9	2.2	3.8	Oct-08
Ascent VI (\$3m commitment in '15)	3,249,972	0.5		0.0	-0.2	-9.3	2.7	0.1		1.0	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	5,030,865	0.7		0.0	1.9	6.1	11.2	6.5		6.2	Dec-17
Invesco Fund VI (\$5m commitment in '13)	603,938	0.1		0.0	-21.5	-39.7	8.5	8.7	11.9	11.8	Jul-13

Importantly, all returns in this report, including those of the private real estate managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.

Preliminary performance is subject to change once finalized.



TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kayne Energy Fund VII (\$5m commitment in '15)	2,686,582	0.4		0.0	-5.1	-20.0	23.7	-18.0		-4.7	Jan-16
Foundry 2007 (\$3m commitment in '07)	205,925	0.0		0.0	-0.6	-57.5	3.2	-14.2	2.3	12.7	Dec-07
Foundry 2010 (\$3m commitment in '10)	5,882,837	0.9		0.0	-0.3	-2.8	34.4	20.4	13.4	13.5	Feb-11
Foundry 2010 Annex (\$0.4m commitment in '15)	1,100,130	0.2		0.0	0.0	-1.3	89.5	54.7		38.3	Sep-15
Pinebridge PEP V (\$6.23m commitment in '07)	439,074	0.1		0.0	0.4	-7.8	5.1	3.4	7.6	7.4	Dec-10
Pinebridge (AIG) PEP V Asia (\$.55m commitment)	31,731	0.0		0.0	0.0	-6.4	-8.8			-13.0	Oct-18
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)	88,883	0.0		0.0	0.1	-15.5	13.2			5.1	Oct-18
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)	17,219	0.0		0.0	5.3	-3.6	-14.3			103.8	Oct-18
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)	83,015	0.0		0.0	2.0	0.5	8.5			7.7	Oct-18
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)	67,760	0.0		0.0	-1.0	-11.8	-2.6			-5.6	Oct-18
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)	20,143	0.0		0.0	-4.2	-15.9	-13.4	-14.4		-11.2	Jan-17
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)	91,163	0.0		0.0	1.8	3.0	7.7			14.0	Oct-18
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)	39,160	0.0		0.0	-1.8	-16.8	-3.3			-6.1	Oct-18
Landmark XV (\$3m commitment in '13)	619,449	0.1		0.0	-2.1	-19.3	9.3	4.2		9.7	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	2,302,229	0.3		0.0	27.9	34.9	42.3	42.8		38.6	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	4,606,965	0.7		0.0	7.5	9.9	20.3	22.8		19.1	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,806,289	0.4		0.0	2.5	6.8	7.2	8.2		6.8	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	1,568,254	0.2		0.0	5.2	10.8	12.3			11.5	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	6,909,762	1.0		0.0	1.5	2.5	29.6			51.2	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	7,635,026	1.1		0.0	1.2	3.5	28.8			27.9	Jul-20
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)	12,377,930	1.8		0.0	1.9	-0.6				2.4	Nov-21
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)	4,107,601	0.6		0.0	4.6	1.1					Jan-22
JFL Equity Investors V, L.P. (\$9m commitment in '20)	11,417,570	1.7		0.0	14.6	32.3				10.3	Sep-20

Importantly, all returns in this report, including those of the private markets managers, are based on a time weighted return calculation and not based on IRRs, which can result in return differences.

NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 6.8% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.3% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 02/01/2022.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI, 7% MSCI Emerging Markets, 12% Bloomberg US Aggregate TR, 8% Bloomberg US Universal TR, 6% HFRI Fund of Funds Composite Index, 12% NCREIF Property Index, 12% CJA US All PE.
- 8 - Allocation index consists of: Weighted index of underlying managers to their respective benchmark.
- 9 - All Private Market managers are final as of 3/31/23, except for StepStone which is final as of 12/31/22 and Cerberus IREP III which is final as of 6/30/23.

CASH FLOW SUMMARY BY MANAGER

	1 Month Ending July 31, 2023						Ending Market Value
	Beginning Market Value	Contributions	Withdrawals	Net Cash Flows	Fees	Net Investment Change	
ABS Emerging Markets MA Fund	\$19,676,942	-	-	-	-	\$1,169,932	\$20,846,874
Alcentra European DLF (\$5m commitment in '14)	\$208,684	-	-	-	-	-	\$208,684
Ascent Fund IV-B (\$1m commitment in '16)	\$20,394	-	-	-	-	-	\$20,394
Ascent Fund V (\$2m commitment in '08)	\$1,269,470	-	-	-	-	-	\$1,269,470
Ascent VI (\$3m commitment in '15)	\$3,249,972	-	-	-	-	-	\$3,249,972
Axiom Emerging Markets Trust Class 2	\$17,998,282	-	-	-	-	\$752,279	\$18,750,562
Baillie Gifford International Growth Fund Class K	\$14,211,274	-	-	-	-	\$952,006	\$15,163,280
Cash Account	\$3,532,355	\$19,406,446	-\$10,821,323	\$8,585,123	-	\$25,143	\$12,142,621
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	\$479,669	-	-	-	-	-	\$479,669
Coho Relative Value Equity	\$48,599,487	\$3,000,000	-	\$3,000,000	-	\$1,405,728	\$53,005,215
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)	\$12,377,930	-	-	-	-	-	\$12,377,930
Corbin Pinehurst Partners	\$13,140,244	-	-	-	-	\$210,244	\$13,350,488
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	\$5,030,865	-	-	-	-	-	\$5,030,865
Entrust Peru Wind Down	\$54,734	-	-	-	-	-\$317	\$54,417
Foundry 2007 (\$3m commitment in '07)	\$205,925	-	-	-	-	-	\$205,925
Foundry 2010 (\$3m commitment in '10)	\$5,882,837	-	-	-	-	-	\$5,882,837
Foundry 2010 Annex (\$0.4m commitment in '15)	\$1,100,130	-	-	-	-	-	\$1,100,130
Garcia Hamilton Fixed Income Aggregate	\$32,382,721	-	-	-	-	-\$140,803	\$32,241,919
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	\$7,635,026	-	-	-	-	-	\$7,635,026
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)	\$4,107,601	-	-	-	-	-	\$4,107,601
HarbourVest Dover Street X (\$9m commitment in '20)	\$6,909,762	-	-	-	-	-	\$6,909,762
Invesco Fund VI (\$5m commitment in '13)	\$603,938	-	-	-	-	-	\$603,938
Invesco Mortgage Recovery II (\$3M commitment in '15)	\$858,992	-	-	-	-	-	\$858,992
Invesco Mortgage Recovery Loans Feeder Fund	\$15,311	-	-	-	-	-	\$15,311
Ironsides Constitution Opportunities (\$3m commitment in '18)	\$1,568,254	-	-	-	-	-	\$1,568,254
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	\$2,252,064	\$50,165	-	\$50,165	-	-	\$2,302,229
JFL Equity Investors V, L.P. (\$9m commitment in '20)	\$11,417,570	-	-	-	-	-	\$11,417,570
Kayne Energy Fund VII (\$5m commitment in '15)	\$2,711,638	\$16,389	-\$41,445	-\$25,056	-	-	\$2,686,582
Landmark VI (\$2m commitment in '11)	\$5,866	-	-	-	-	-	\$5,866
Landmark VIII (\$4m commitment in '17)	\$2,168,367	-	-	-	-	-	\$2,168,367
Landmark XV (\$3m commitment in '13)	\$619,449	-	-	-	-	-	\$619,449
Loomis Sayles Multisector Full Discretion Trust	\$45,054,669	\$2,000,000	-	\$2,000,000	-	\$228,339	\$47,283,008
Loomis Sayles Small Cap Growth	\$23,330,353	-	-	-	-	\$441,624	\$23,771,977
Lord Abbett Core Fixed Income	\$35,070,098	\$2,000,000	-	\$2,000,000	-	\$53,223	\$37,123,321
Mesirow Small Cap Value Equity CIT - Founders Class	\$23,504,630	-	-	-	-	\$1,391,721	\$24,896,351
Morgan Stanley Prime Property (\$2.8m commitment in '95)	\$25,082,213	-	-	-	-	-	\$25,082,213

CASH FLOW SUMMARY BY MANAGER

	Beginning Market Value	Contributions	Withdrawals	Net Cash Flows	Fees	Net Investment Change	Ending Market Value
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	\$9,536,836	-	-	-	-	\$96,601	\$9,633,437
Park Square Credit Opportunities III (\$3m commitment in '17)	\$2,806,289	-	-	-	-	-	\$2,806,289
Pinebridge (AIG) PEP V Asia (\$.55m commitment)	\$31,731	-	-	-	-	-	\$31,731
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)	\$88,883	-	-	-	-	-	\$88,883
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)	\$17,219	-	-	-	-	-	\$17,219
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)	\$83,015	-	-	-	-	-	\$83,015
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)	\$67,760	-	-	-	-	-	\$67,760
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)	\$20,143	-	-	-	-	-	\$20,143
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)	\$91,163	-	-	-	-	-	\$91,163
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)	\$39,160	-	-	-	-	-	\$39,160
Polen Focused Growth	\$46,435,144	-	-	-	-	\$2,142,779	\$48,577,923
PRIM Portfolio Completion Strategies	\$13,494,948	-	-\$1,500,000	-\$1,500,000	-	-	\$11,994,948
PRIM Vintage Year 2008 (\$3m commitment in '08)	\$874,648	-	-	-	-	-	\$874,648
PRIM Vintage Year 2009 (\$1m commitment in '09)	\$63,552	-	-	-	-	-	\$63,552
PRIM Vintage Year 2010 (\$1m commitment in '10)	\$410,054	-	-	-	-	-	\$410,054
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	\$779,750	-	-	-	-	-	\$779,750
PRIM Vintage Year 2012 (\$1m commitment in '12)	\$470,703	-	-	-	-	-	\$470,703
PRIM Vintage Year 2014 (\$2m commitment in '14)	\$2,101,432	-	-	-	-	-	\$2,101,432
PRIM Vintage Year 2017 (\$2m commitment in '17)	\$2,586,598	-	-	-	-	-	\$2,586,598
PRIM Vintage Year 2020 (\$5m commitment in '20)	\$4,103,595	-	-	-	-	-	\$4,103,595
PRIM Vintage Year 2021 (\$5m commitment in '21)	\$3,548,280	-	-	-	-	-	\$3,548,280
PRIM Vintage Year 2022 (\$7.5m commitment in '22)	\$1,569,831	-	-	-	-	-	\$1,569,831
PRIM Vintage Year 2023 (\$10m commitment in '23)	\$212,049	-	-	-	-	-	\$212,049
PRIT Core Fund	\$5,180,105	-	-\$1,000,000	-\$1,000,000	-	-	\$4,180,105
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	\$4,606,965	-	-	-	-	-	\$4,606,965
Rhumblin Advisors S&P 500 Index Fund	\$70,156,588	-	-	-	-	\$2,250,442	\$72,407,030
Schroder International Alpha Trust Class 1	\$28,787,264	-	-	-	-	\$457,522	\$29,244,786
SEG Baxter Street	\$31,092,801	-	-	-	-\$26,761	\$993,821	\$32,086,623
StepStone Real Estate Fund II (\$2m commitment in '11)	\$362,477	-	-	-	-	-	\$362,477
TA Realty Core Property Fund, LP (\$15m commitment in '19)	\$25,752,509	-	-	-	-	-	\$25,752,509
TA Realty Fund X LP (\$3.5m commitment in '12)	\$682	-	-\$681	-\$681	-	-	\$1
TerraCap Partners III, LP (\$2.6m commitment in '15)	\$1,622,319	-	-	-	-	-	\$1,622,319
TerraCap Partners IV, LP (\$4m commitment in '17)	\$3,623,884	-	-	-	-	-	\$3,623,884
TerraCap Partners V, LP (\$8m commitment in '22)	\$8,466,539	-	-	-	-	-	\$8,466,539
UBS Neutral Alpha Strategies	\$14,232,225	-	-	-	-	\$81,269	\$14,313,494
Total	\$655,654,859	\$26,473,000	-\$13,363,449	\$13,109,551	-\$26,761	\$12,511,553	\$681,275,962

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PRIT Core Fund	0.49 % of Assets	4,180,105	0.61	20,483	0.49
Rhumblin Advisors S&P 500 Index Fund	0.04 % of Assets	72,407,030	10.63	28,963	0.04
Coho Relative Value Equity	0.50 % of First \$75 M 0.40 % of Next \$75 M 0.35 % Thereafter	53,005,215	7.78	265,026	0.50
Polen Focused Growth	0.65 % of Assets	48,577,923	7.13	315,757	0.65
Loomis Sayles Small Cap Growth	0.45 % of Assets Minimum Fee: \$45,000	23,771,977	3.49	106,974	0.45
SEG Baxter Street	1.00 % of Assets	32,086,623	4.71	320,866	1.00
Schroder International Alpha Trust Class 1	0.55 % of Assets	29,244,786	4.29	160,846	0.55
Baillie Gifford International Growth Fund Class K	0.60 % of Assets	15,163,280	2.23	90,980	0.60
Axiom Emerging Markets Trust Class 2	0.73 % of Assets	18,750,562	2.75	136,879	0.73
ABS Emerging Markets MA Fund	0.75 % of Assets	20,846,874	3.06	156,352	0.75
Garcia Hamilton Fixed Income Aggregate		32,241,919	4.73	40,302	0.13
Lord Abbett Core Fixed Income	0.19 % of Assets	37,123,321	5.45	70,534	0.19
Loomis Sayles Multisector Full Discretion Trust	0.39 % of First \$50 M 0.30 % Thereafter	47,283,008	6.94	184,404	0.39
Mesirow Small Cap Value Equity CIT - Founders Class	0.45 % of Assets	24,896,351	3.65	112,034	0.45
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	0.40 % of Assets	9,633,437	1.41	38,534	0.40
Invesco Mortgage Recovery Loans Feeder Fund		15,311	0.00		
PRIM Portfolio Completion Strategies		11,994,948	1.76		
Corbin Pinehurst Partners	0.85 % of Assets	13,350,488	1.96	113,479	0.85
UBS Neutral Alpha Strategies	0.90 % of Assets	14,313,494	2.10	128,821	0.90
Entrust Peru Wind Down	0.50 % of Assets	54,417	0.01	272	0.50
Cash Account		12,142,621	1.78		
Morgan Stanley Prime Property (\$2.8m commitment in '95)		25,082,213	3.68		
TA Realty Core Property Fund, LP (\$15m commitment in '19)		25,752,509	3.78		
Invesco Mortgage Recovery II (\$3M commitment in '15)		858,992	0.13		
Landmark VI (\$2m commitment in '11)		5,866	0.00		
Landmark VIII (\$4m commitment in '17)		2,168,367	0.32		
StepStone Real Estate Fund II (\$2m commitment in '11)		362,477	0.05		
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)		479,669	0.07		
TA Realty Fund X LP (\$3.5m commitment in '12)		1	0.00		
TerraCap Partners III, LP (\$2.6m commitment in '15)		1,622,319	0.24		

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
TerraCap Partners IV, LP (\$4m commitment in '17)		3,623,884	0.53		
TerraCap Partners V, LP (\$8m commitment in '22)		8,466,539	1.24		
PRIM Vintage Year 2008 (\$3m commitment in '08)		874,648	0.13		
PRIM Vintage Year 2009 (\$1m commitment in '09)		63,552	0.01		
PRIM Vintage Year 2010 (\$1m commitment in '10)		410,054	0.06		
PRIM Vintage Year 2011 (\$1.5m commitment in '11)		779,750	0.11		
PRIM Vintage Year 2012 (\$1m commitment in '12)		470,703	0.07		
PRIM Vintage Year 2014 (\$2m commitment in '14)		2,101,432	0.31		
PRIM Vintage Year 2017 (\$2m commitment in '17)		2,586,598	0.38		
PRIM Vintage Year 2020 (\$5m commitment in '20)		4,103,595	0.60		
PRIM Vintage Year 2021 (\$5m commitment in '21)		3,548,280	0.52		
PRIM Vintage Year 2022 (\$7.5m commitment in '22)		1,569,831	0.23		
PRIM Vintage Year 2023 (\$10m commitment in '23)		212,049	0.03		
Alcentra European DLF (\$5m commitment in '14)		208,684	0.03		
Ascent Fund IV-B (\$1m commitment in '16)		20,394	0.00		
Ascent Fund V (\$2m commitment in '08)		1,269,470	0.19		
Ascent VI (\$3m commitment in '15)		3,249,972	0.48		
CVI Credit Value Fund IV A LP (\$6m commitment in '17)		5,030,865	0.74		
Invesco Fund VI (\$5m commitment in '13)		603,938	0.09		
Kayne Energy Fund VII (\$5m commitment in '15)		2,686,582	0.39		
Foundry 2007 (\$3m commitment in '07)		205,925	0.03		
Foundry 2010 (\$3m commitment in '10)		5,882,837	0.86		
Foundry 2010 Annex (\$0.4m commitment in '15)		1,100,130	0.16		
Pinebridge (AIG) PEP V Asia (\$.55m commitment)		31,731	0.00		
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)		88,883	0.01		
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)		17,219	0.00		
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)		83,015	0.01		
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)		67,760	0.01		
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)		20,143	0.00		
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)		91,163	0.01		
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)		39,160	0.01		
Landmark XV (\$3m commitment in '13)		619,449	0.09		
JFL Equity Investors IV, L.P. (\$6m commitment in '16)		2,302,229	0.34		
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)		4,606,965	0.68		

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Park Square Credit Opportunities III (\$3m commitment in '17)		2,806,289	0.41		
Ironsides Constitution Opportunities (\$3m commitment in '18)		1,568,254	0.23		
HarbourVest Dover Street X (\$9m commitment in '20)		6,909,762	1.01		
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)		7,635,026	1.12		
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)		12,377,930	1.82		
JFL Equity Investors V, L.P. (\$9m commitment in '20)		11,417,570	1.68		
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)		4,107,601	0.60		
Investment Management Fee		681,275,962	100.00	2,291,505	0.34

DISCLAIMERS & DISCLOSURES

Past performance is no guarantee of future results.

Returns for pooled funds, e.g. mutual funds and collective investment trusts, are collected from third parties; they are not generally calculated by NEPC. Returns for separate accounts, with some exceptions, are calculated by NEPC. Returns are reported net of manager fees unless otherwise noted.

A “since inception” return, if reported, begins with the first full month after funding, although actual inception dates (e.g. the middle of a month) and the timing of cash flows are taken into account in Composite return calculations.

NEPC’s preferred data source is the plan’s custodian bank or record-keeper. If data cannot be obtained from one of the preferred data sources, data provided by investment managers may be used. Information on market indices and security characteristics is received from additional providers. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within. In addition, some index returns displayed in this report or used in calculation of a policy index, allocation index or other custom benchmark may be preliminary and subject to change.

All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.

The opinions presented herein represent the good faith views of NEPC as of the date of this presentation and are subject to change at any time. Neither fund performance nor universe rankings contained in this report should be considered a recommendation by NEPC.

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Source of private fund performance benchmark data: Cambridge Associates, via Refinitiv

MWRA Employees' Retirement System

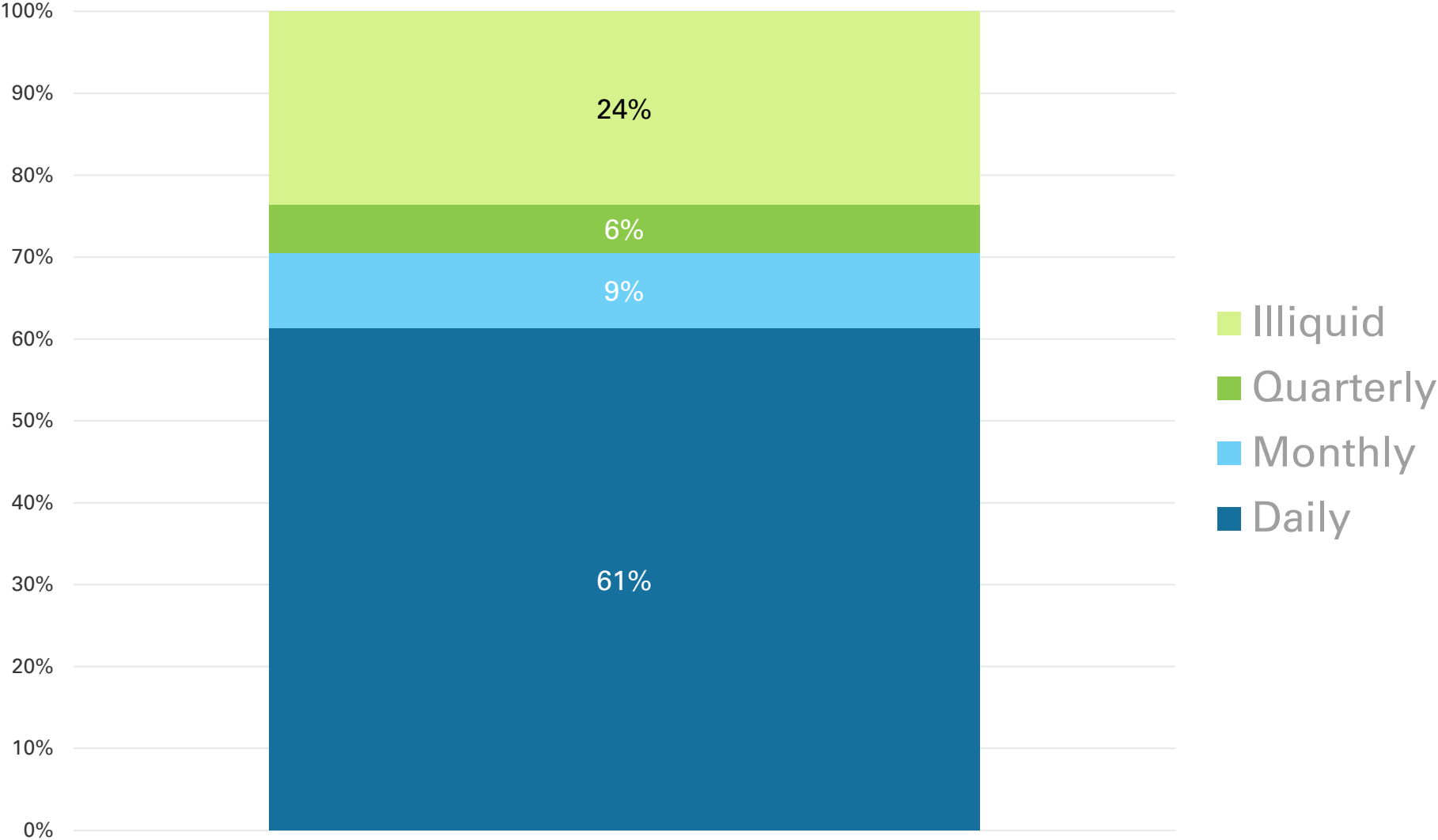
Estimated Asset Allocation Rebalance Summary

August 28, 2023

	Market Value	Weight in Fund	Target Weight	Recommendation	New Market Value	New Weight
Composite	\$672,088,967	100.0%	100.0%	\$0	\$672,088,967	100.0%
Total Balanced	\$4,180,105	0.6%	0.0%	\$0	\$4,180,105	0.6%
PRIT Core Fund	\$4,180,105	0.6%	0.0%	\$0	\$4,180,105	0.6%
Total Domestic Equity	\$211,323,184	31.4%	31.0%	-\$6,000,000	\$205,323,184	30.6%
Rhumblin Advisors S&P 500 Index Fund	\$70,090,005	10.4%	10.0%	-\$6,000,000	\$64,090,005	9.5%
Coho Relative Value	\$51,065,224	7.6%	7.0%	\$0	\$51,065,224	7.6%
Polen Focused Growth	\$42,402,962	6.3%	7.0%	\$0	\$42,402,962	6.3%
Mesirow Smcall Cap Value	\$24,896,351	3.7%	3.5%	\$0	\$24,896,351	3.7%
Loomis Sayles Small Cap Growth	\$22,868,642	3.4%	3.5%	\$0	\$22,868,642	3.4%
Total International Equity	\$115,057,998	17.1%	19.0%	\$0	\$115,057,998	17.1%
SEG - Baxter Street Fund	\$32,086,623	4.8%	5.0%	\$0	\$32,086,623	4.8%
Schroders International Alpha	\$29,849,810	4.4%	4.0%	\$0	\$29,849,810	4.4%
Baillie Gifford	\$13,524,129	2.0%	3.0%	\$0	\$13,524,129	2.0%
Axiom Emerging Markets	\$18,750,562	2.8%	3.5%	\$0	\$18,750,562	2.8%
ABS Emerging Markets Strategic Portfolio	\$20,846,874	3.1%	3.5%	\$0	\$20,846,874	3.1%
Total Equity	\$326,381,182	48.6%	50.0%	-\$6,000,000	\$320,381,182	47.7%
Total Fixed Income	\$124,266,399	18.5%	20.0%	\$12,000,000	\$136,266,399	20.3%
Garcia Hamilton	\$31,500,355	4.7%	6.0%	\$0	\$31,500,355	4.7%
Lord Abbett	\$36,529,348	5.4%	6.0%	\$0	\$36,529,348	5.4%
Loomis Sayles Multi Sector Bonds	\$46,587,948	6.9%	7.0%	\$0	\$46,587,948	6.9%
LMCG Serenitas	\$0	0.0%	0.0%	\$12,000,000	\$12,000,000	1.8%
Octagon Senior Secured Loans	\$9,633,437	1.4%	1.0%	\$0	\$9,633,437	1.4%
Invesco Mortgage Recovery	\$15,311	0.0%	0.0%	\$0	\$15,311	0.0%
Total Hedge Fund	\$39,713,347	5.9%	6.0%	\$0	\$39,713,347	5.9%
PRIM Absolute Return Fund	\$11,994,948	1.8%		\$0	\$11,994,948	1.8%
Corbin Pinehurst Partners	\$13,350,488	2.0%		\$0	\$13,350,488	2.0%
UBS Neutral Alpha Strategies	\$14,313,494	2.1%		\$0	\$14,313,494	2.1%
Entrust Peru Winddown	\$54,417	0.0%		\$0	\$54,417	0.0%
Total Real Estate	\$68,422,836	10.2%	12.0%	\$0	\$68,422,836	10.2%
TA Realty Core	\$25,752,509	3.8%		\$0	\$25,752,509	3.8%
Morgan Stanley PPF	\$25,082,213	3.7%		\$0	\$25,082,213	3.7%
Total Private Equity	\$91,769,439	13.7%	12.0%	\$0	\$91,769,439	13.7%
Cash	\$17,355,659	2.6%	0.0%	-\$6,000,000	\$11,355,659	1.7%
M&T Cash	\$17,355,659	2.6%	0.0%	-\$6,000,000	\$11,355,659	1.7%



LIQUIDITY PROFILE AS OF JULY 31, 2023





PRIVATE MARKETS PACING

MWRA EMPLOYEES' RETIREMENT
SYSTEM

AUGUST 31, 2023

Sebastian Grzejka
Alexandra Sollers
Francesca LoVerde



PROPRIETARY & CONFIDENTIAL

OVERVIEW AND RECOMMENDATION

- **NEPC provides a review of MWRA's private markets allocations to determine the commitment budget for the upcoming year**
 - We consider: existing manager commitments and anticipated calls/distributions, adjustments to the target allocation and the forecasted net growth rate
 - An annual review provides an opportunity to make adjustments to any of the above factors and assess the program carefully so as to not over-allocate to illiquid investments

- **The strategy is to maintain an active commitment pace in each vintage year going forward, being mindful of the liquidity needs**
 - Fund and manager recommendations are made in the context of the existing portfolio along with NEPC's market views
 - Our goal is to develop a program that will invest in various strategies and achieve returns in excess of public market returns
 - Currently, the MWRA Retirement System has a 12% target each to private equity and private real estate

- **Based on our review, the System should commit up to \$20 million dollars to private markets strategies across equity and real estate**
 - For private equity, we recommend a commitment of ~\$12 million
 - The System made a single commitment of \$10 million to PRIM VY 2023 last year
 - For real estate, we recommend a commitment of ~\$8 million
 - The System approved an \$8 million commitment each to TA Realty XIII and Terra Cap V last year



PRIVATE MARKETS PACING PLAN



PROPRIETARY & CONFIDENTIAL

NEPC PRIVATE EQUITY OUTLOOK

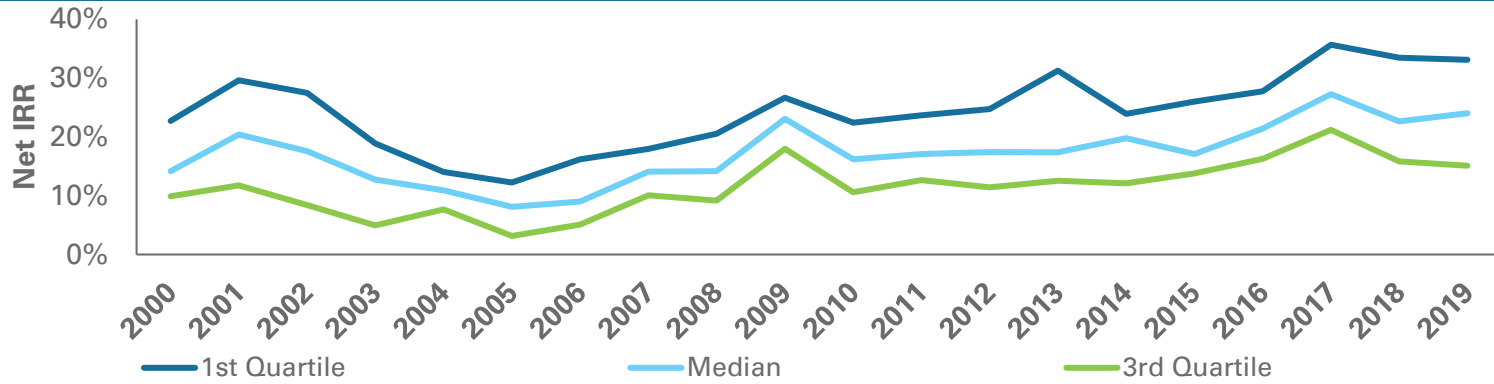
- **Private markets will continue to reset throughout 2023. Lower valuations should provide investors attractive entry points**
 - Established, scaled managers will have a competitive advantage in this market
- **We expect reduced market activity (fundraising, deal activity, exits, downward valuation momentum) to persist well into 2023**
 - In the interim, this may result in less near-term liquidity to LPs
- **Recession and recovery-era vintage years are some of the best opportunities to deploy capital to private equity strategies**
 - Consider secondary and complex / special situations strategies
- **Continue to commit to your private equity managers, even if it means writing smaller checks in this environment**
 - Opportunity to pick up exposure to top managers



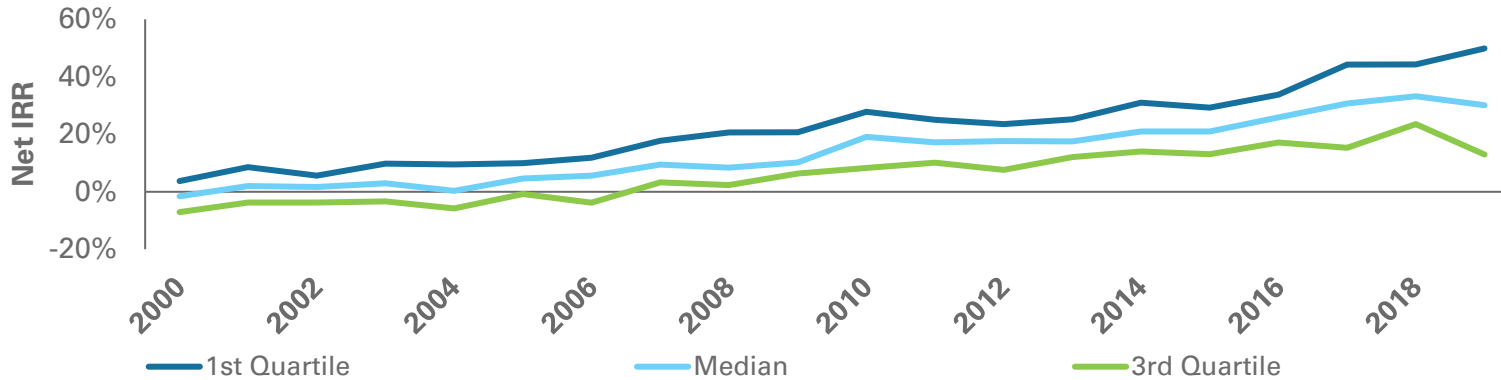
PRIVATE EQUITY RETURNS

ATTRACTIVE VINTAGE YEAR RETURNS

North America Buyout IRR



North America Venture IRR

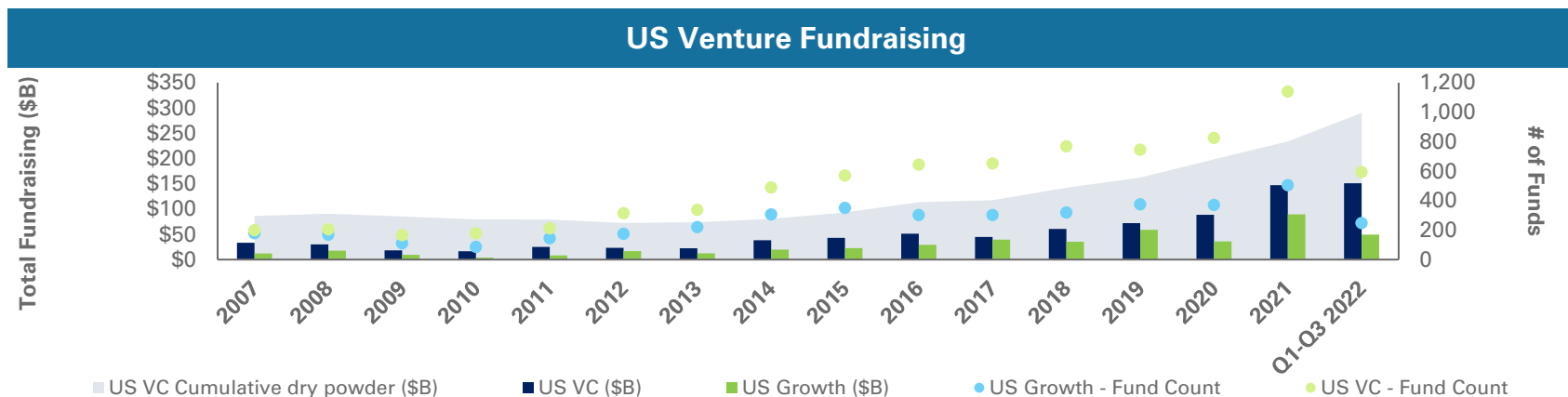
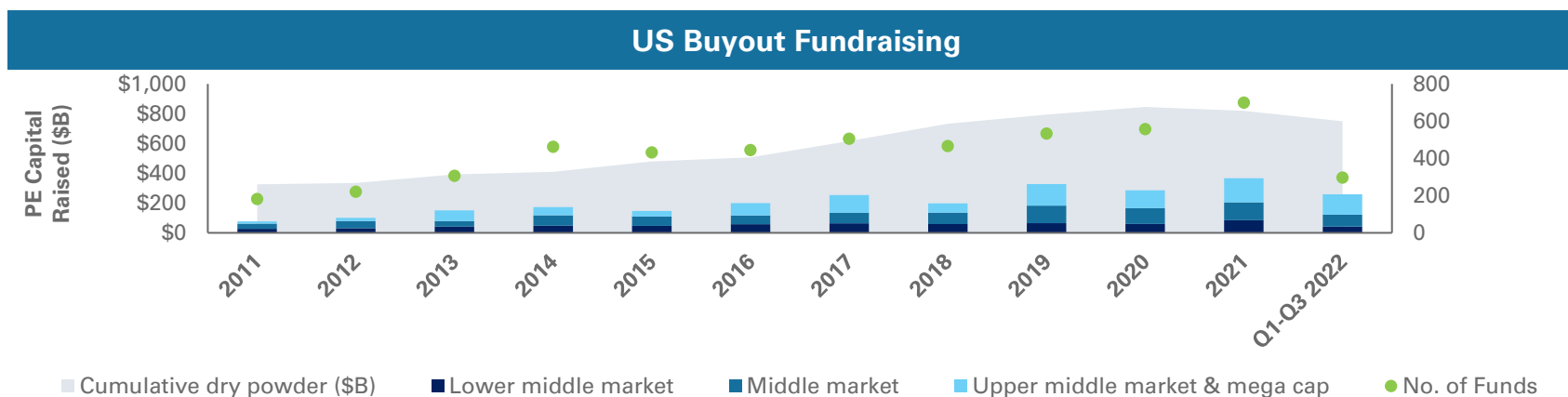


Source: Thomson One/CJA as of 06/30/2022. Performance for 2020-2022 vintage funds not yet meaningful. PE Out/Underperformance is shown based on a PME using the pooled cash flows of all funds. 1st Quartile outperformance will be meaningfully higher. PME method is Direct Alpha and benchmark is Russell 2000



PRIVATE EQUITY FUNDRAISING

FUNDRAISING DOWN FROM 2021, BUT STILL ON HEALTHY PACE

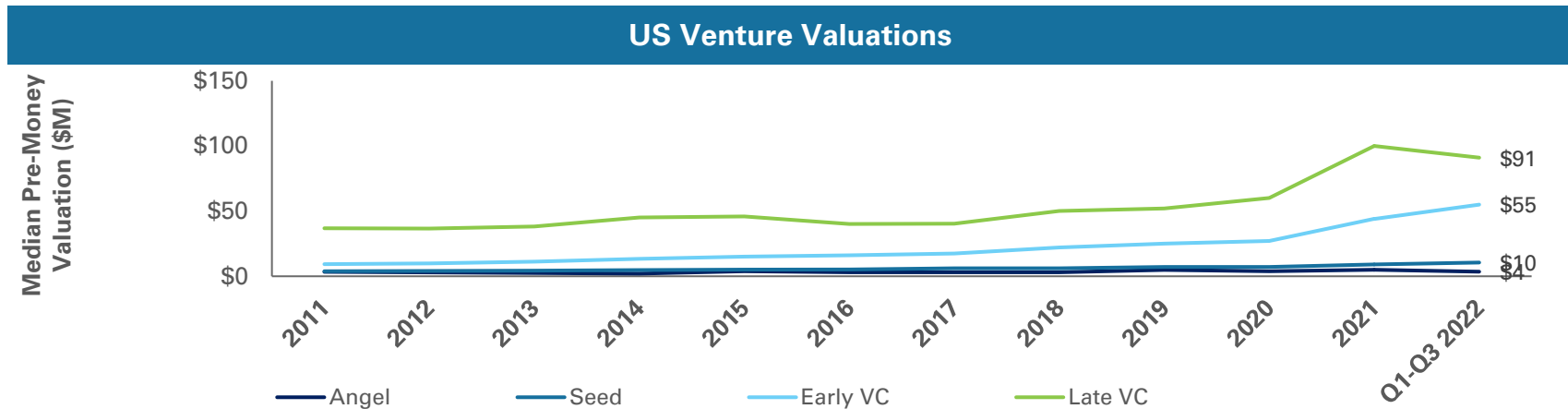
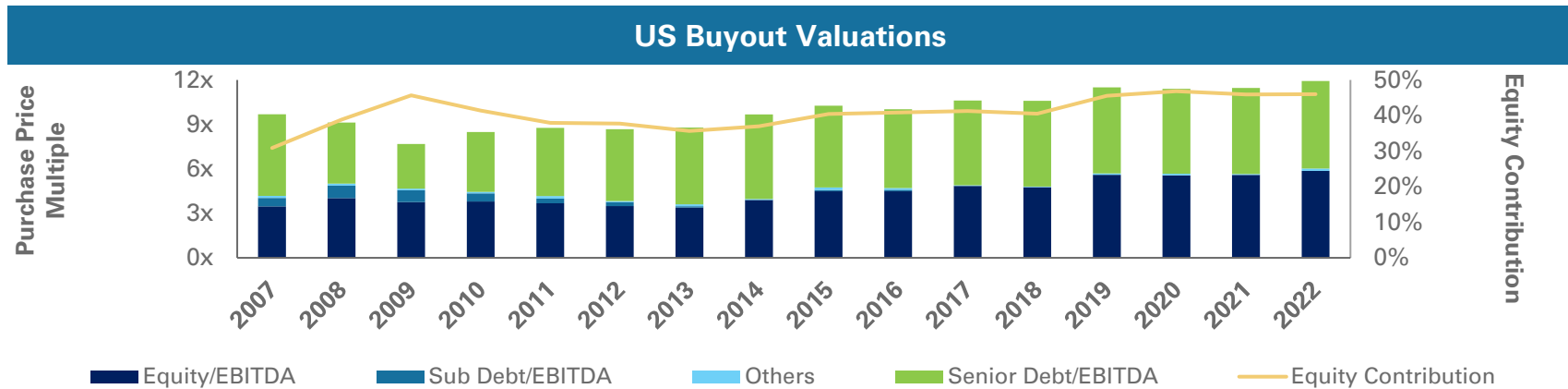


Source: Venture fundraising data from Q3 2022 Pitchbook NVCA Venture Monitor Report as of 09/30/2022. Growth equity and buyout fundraising data from Pitchbook Q3 2022 US PE Breakdown Report as of 09/30/2022. Buyout dry powder data from Pitchbook Q2 2022 US PE Breakdown Report as of 06/30/2022. Venture dry powder data from Pitchbook Q3 2022 Pitchbook NVCA Venture Monitor Report as of 06/30/2022.



PRIVATE EQUITY VALUATIONS

VALUATIONS STALLED THROUGH 2022



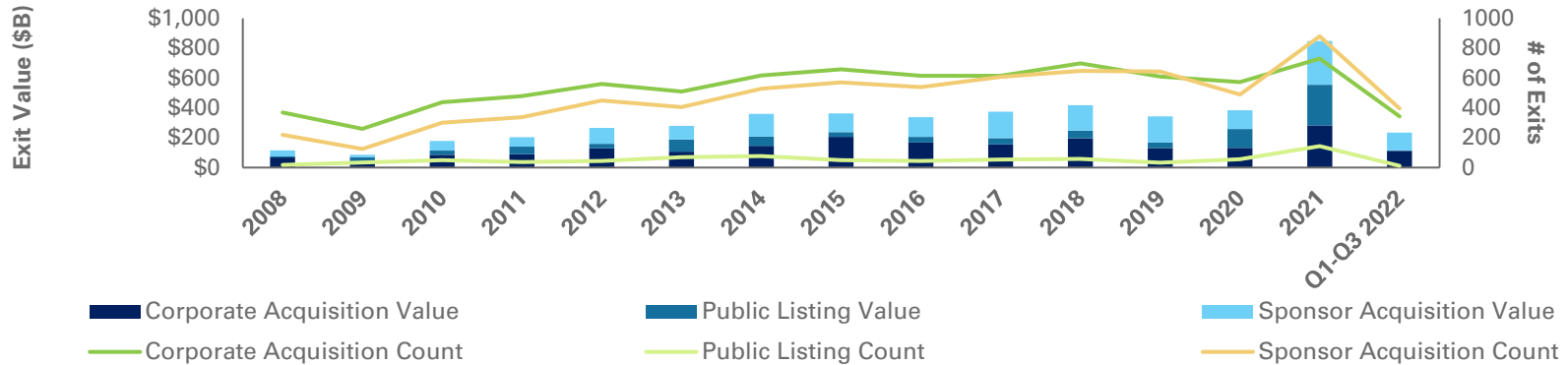
Source: Buyout valuation data from Pitchbook LCD Leveraged Buyout Review Q3 2022.
 Venture valuation data from Q3 2022 Pitchbook NVCA Venture Monitor Report as of 9/30/2022.



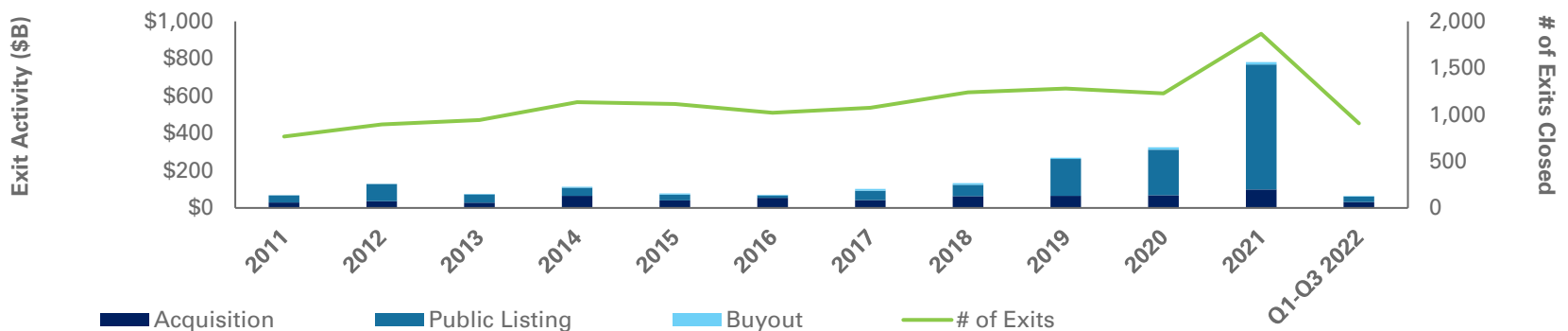
PRIVATE EQUITY EXITS

EXIT ACTIVITY HAS PLUMMETED

US Buyout Exit Activity



US Venture Exit Deal Activity

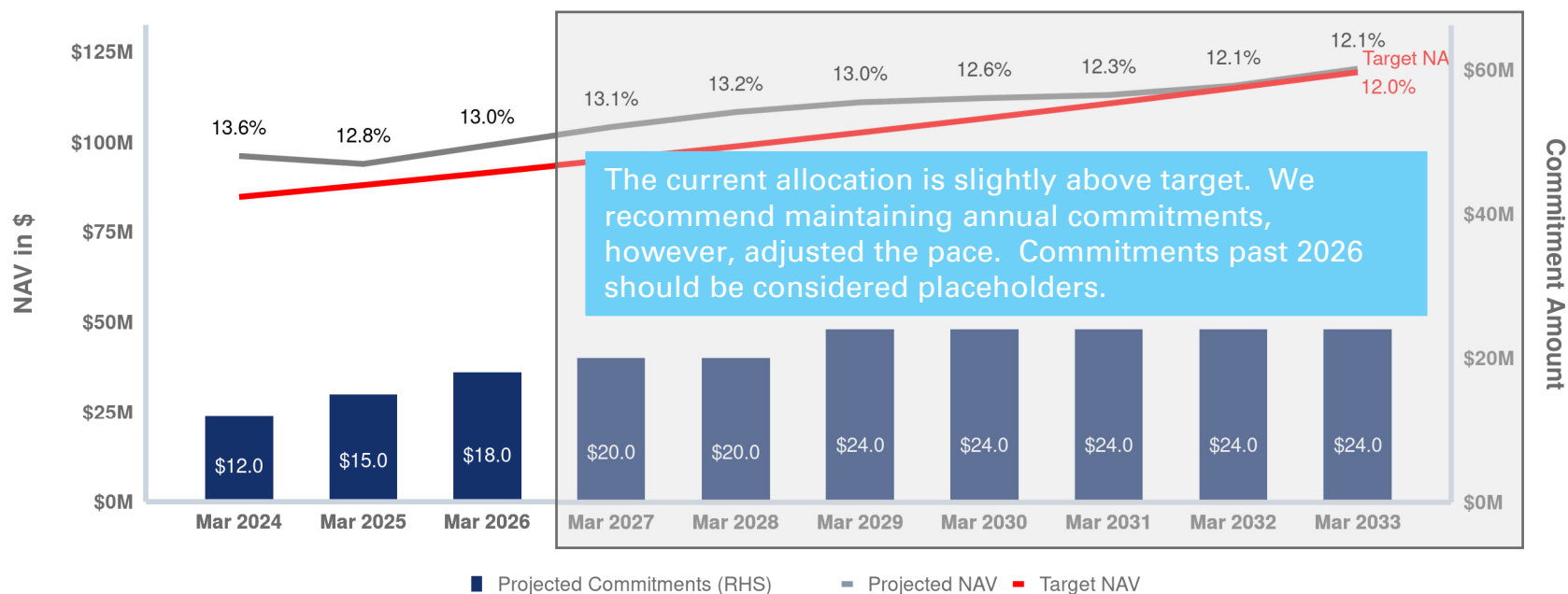


Source: Buyout exit data from Pitchbook Q3 2022 US PE Breakdown Report.
 Venture exit data from Q3 2022 Pitchbook NVCA Venture Monitor Report as of 9/30/2022.



COMMITMENTS & ALLOCATION PROJECTIONS

Private Markets Commitments by Vintage

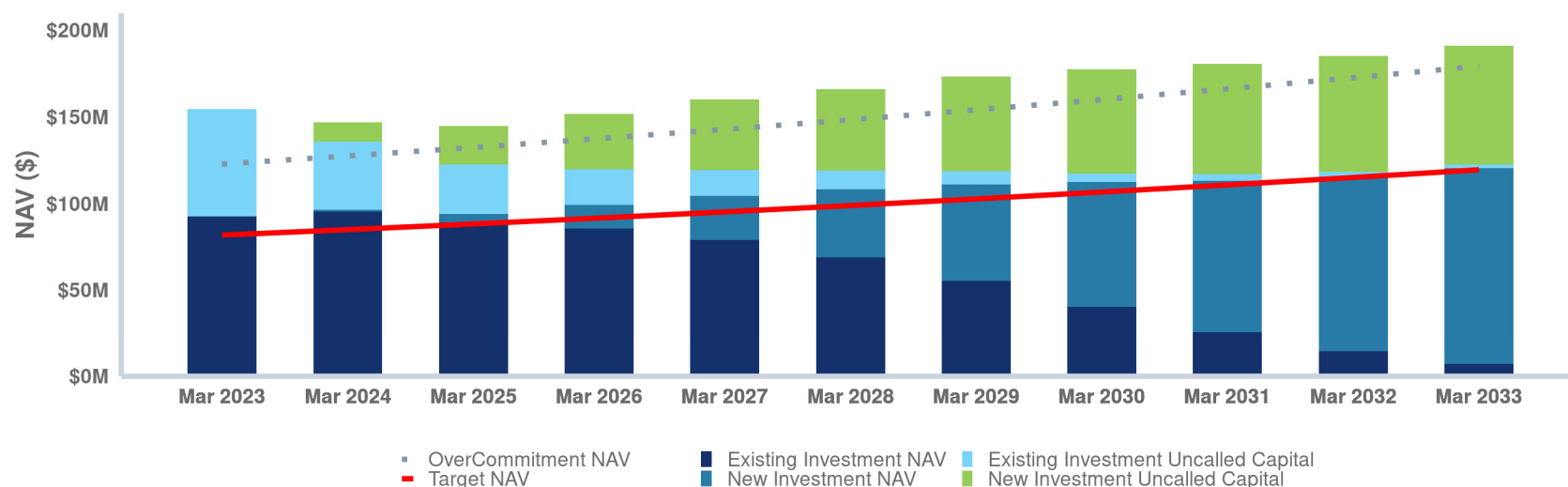


Description	More Certain			Less Certain						
	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Total Commitments (\$M)	\$12.0	\$15.0	\$18.0	\$20.0	\$20.0	\$24.0	\$24.0	\$24.0	\$24.0	\$24.0
Target (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Projected NAV / Total Portfolio Assets	13.6%	12.8%	13.0%	13.1%	13.2%	13.0%	12.6%	12.3%	12.1%	12.1%



ASSET PROJECTIONS

Private Markets Portfolio Projections



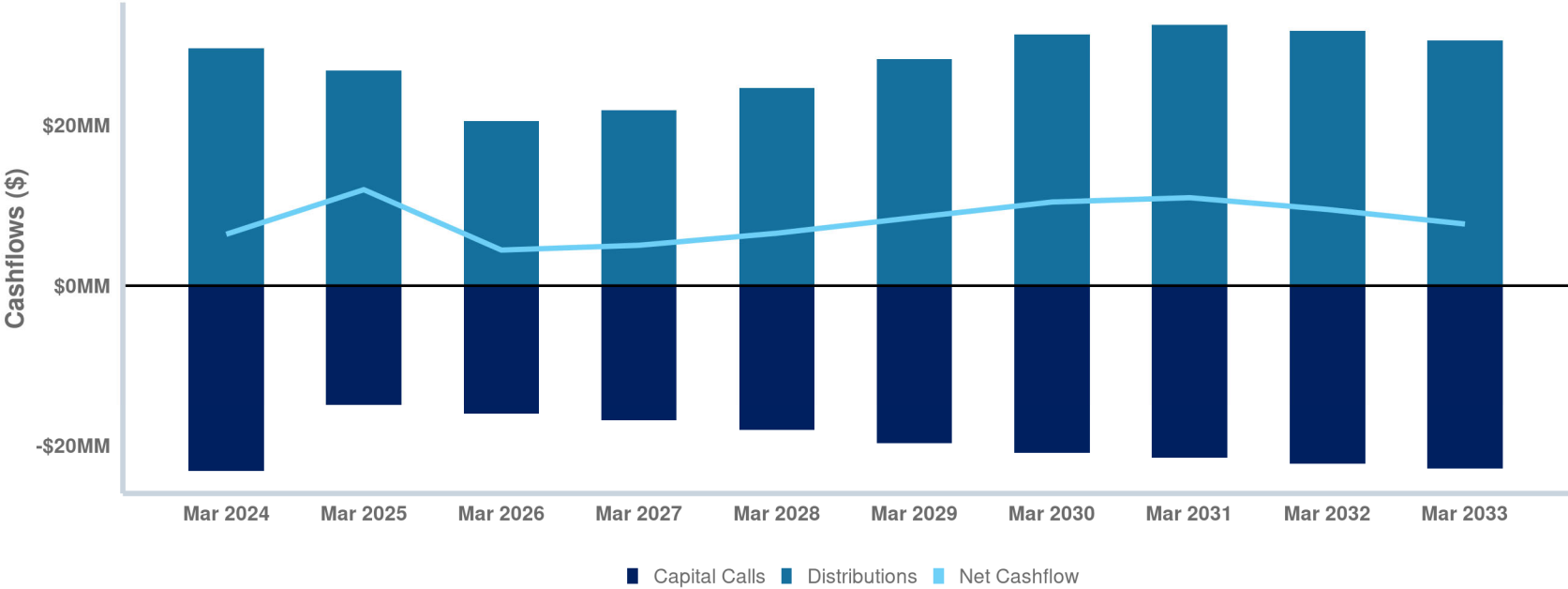
Projection Summary

Description	Mar 2023	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Net Asset Value (NAV)	\$92.7	\$96.2	\$94.0	\$99.1	\$104.2	\$108.3	\$111.0	\$112.2	\$113.1	\$115.6	\$120.3
Uncalled Capital	\$61.7	\$50.6	\$50.7	\$52.6	\$55.8	\$57.7	\$62.0	\$65.1	\$67.5	\$69.2	\$70.3
NAV + Uncalled Capital	\$154.4	\$146.8	\$144.7	\$151.8	\$160.0	\$166.0	\$173.0	\$177.2	\$180.6	\$184.8	\$190.7
Target NAV	\$81.8	\$84.9	\$88.2	\$91.6	\$95.1	\$98.8	\$102.6	\$106.6	\$110.7	\$115.0	\$119.4
NAV (%)	13.6%	13.6%	12.8%	13.0%	13.1%	13.2%	13.0%	12.6%	12.3%	12.1%	12.1%
NAV + Uncalled Capital (%)	22.7%	20.7%	19.7%	19.9%	20.2%	20.2%	20.2%	20.0%	19.6%	19.3%	19.2%
Target Allocation (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%



CASH FLOW PROJECTIONS

Private Markets Projected Capital Calls & Distributions



Projected Cashflows (in millions)

Description	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Capital Calls	-\$23.2	-\$14.9	-\$16.0	-\$16.9	-\$18.1	-\$19.7	-\$20.9	-\$21.5	-\$22.3	-\$22.9
Distributions	\$29.6	\$26.8	\$20.5	\$21.9	\$24.7	\$28.2	\$31.3	\$32.5	\$31.8	\$30.6
Net Cash Flow	\$6.4	\$12.0	\$4.4	\$5.0	\$6.5	\$8.5	\$10.4	\$11.0	\$9.5	\$7.7





REAL ESTATE PACING PLAN



PROPRIETARY & CONFIDENTIAL

REAL ESTATE MARKET OVERVIEW

- **To date, 2023 has been a year of both challenges and opportunities**

- **Rising interest rates, constrained debt availability, and diminished demand for traditional office weigh on real estate**
 - Muted transaction volume
 - Continued but slowing value declines for legacy portfolios
 - More pain expected in office

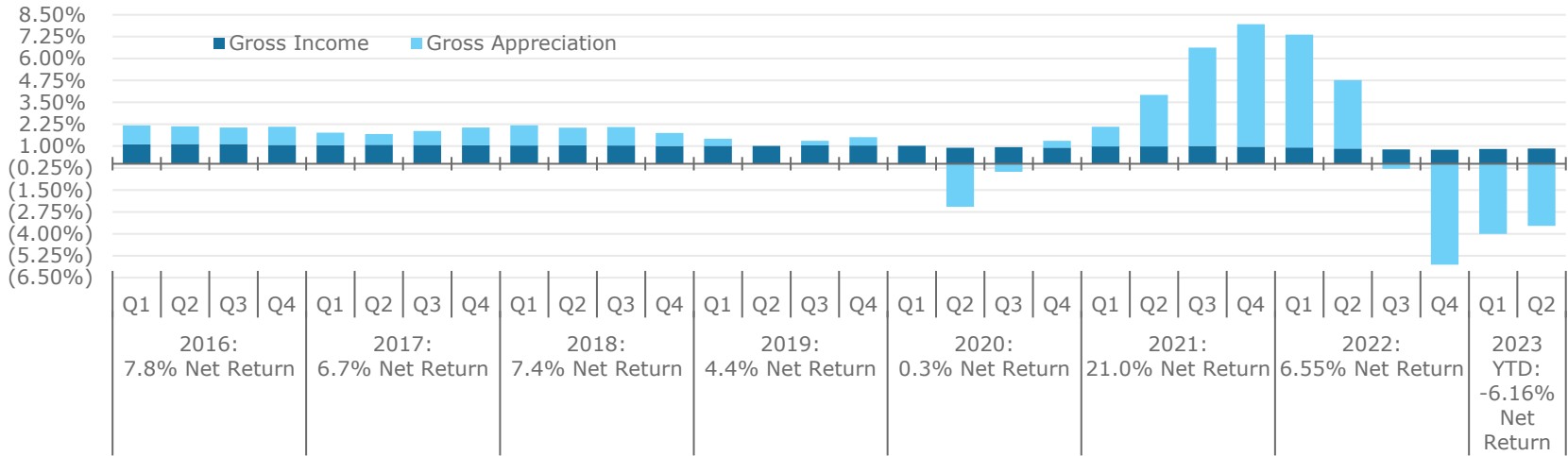
- **Well-capitalized investors can take advantage of discounted value opportunities, higher interest rates with debt investments, and distress**
 - Seek debt funds, opportunistic funds, and skilled “sharpshooters” in property sectors expected to outperform
 - Secondaries may also present opportunities with deeper discounts and increased volume as LPs and GPs seek liquidity

- **Uncertainty remains, but there has been more clarity as 2023 has unfolded**
 - Interest rates are expected to be higher for longer
 - Demographic- and technology-driven sectors should continue to benefit from sustained demand
 - Operating fundamentals have remained healthy for most property sectors except office
 - Rent levels are beginning to normalize from elevated levels coming out of the pandemic
 - Cap rates are adjusting upward and values downward

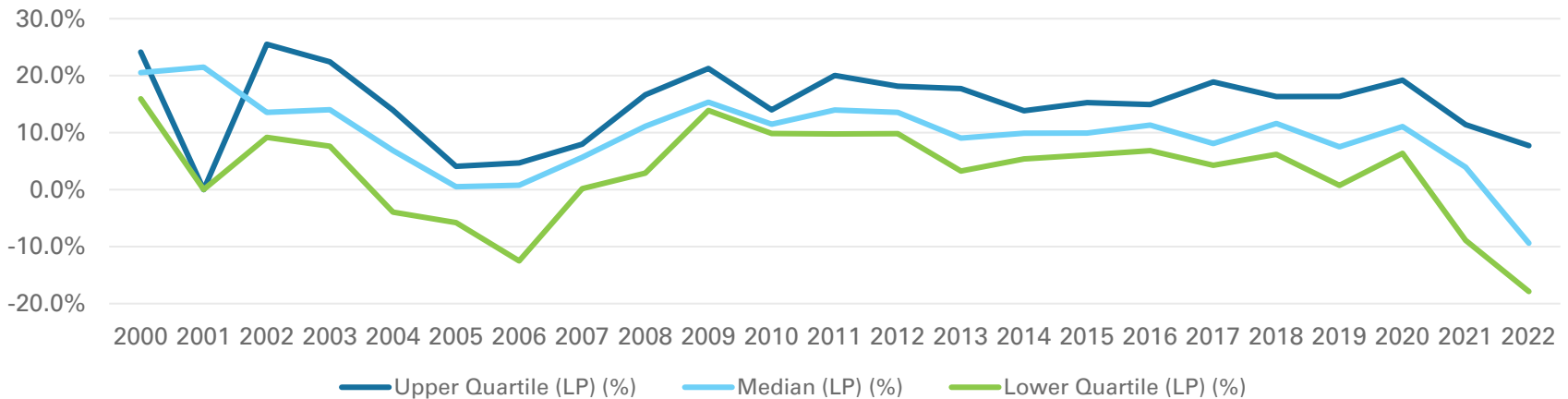


IS THE PARTY OVER FOR REAL ESTATE?

After the 2021 historical high, core returns began to moderate and became negative in late 2022



Recent vintage non-core real estate fund performance has declined with widening dispersion

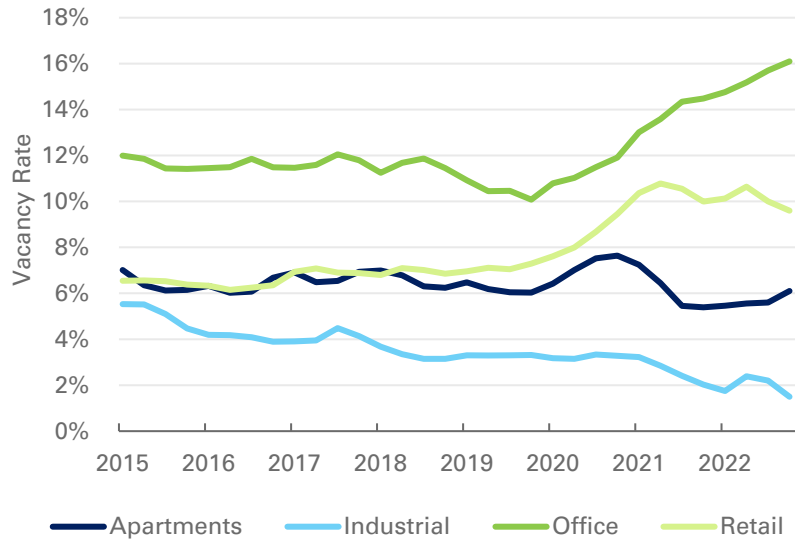


Sources: Core Real Estate returns represented by the NCREIF Open-End Diversified Core Equity Index (ODCE) as of June 30, 2023. Non-core real estate fund performance represents the CJA Global Opportunistic and Value-Add Real Estate Fund Benchmark with annual pooled net IRRs by quartile as of March 31, 2023.

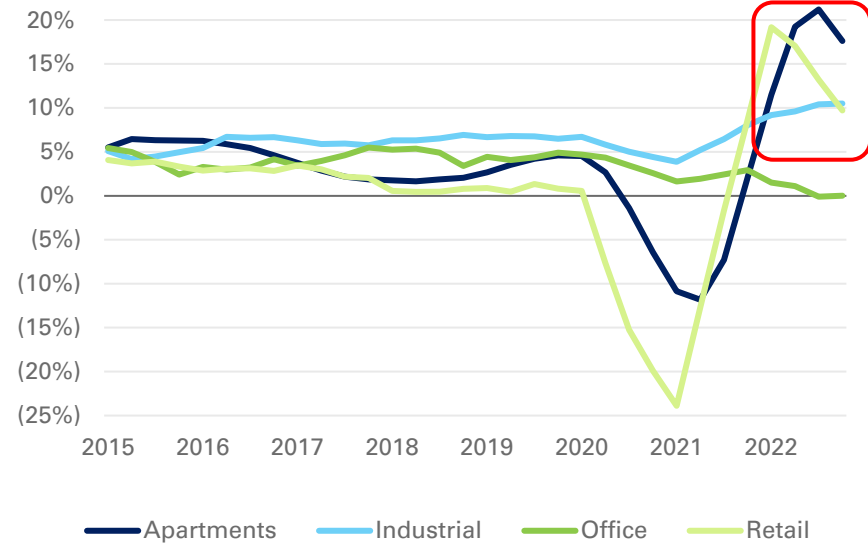


OPERATIONS REMAIN SOLID BUT VARY

Demand drives vacancy disparity among property sectors



NOI growth is healthy except for office



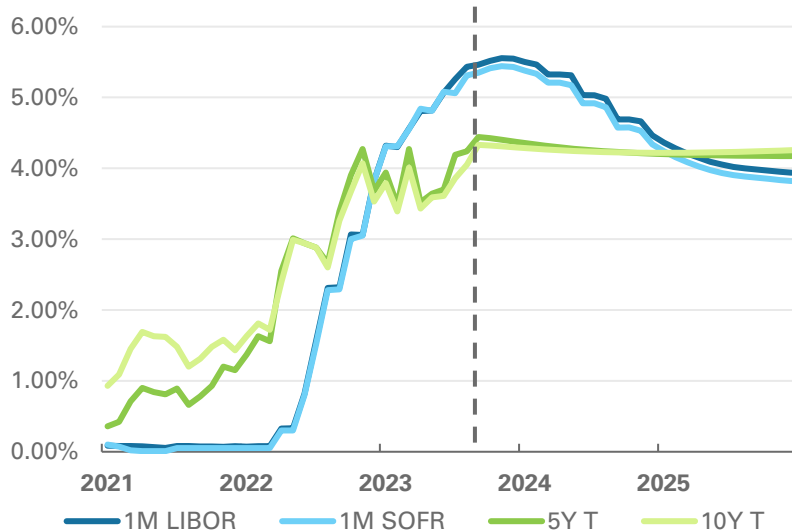
- **With the exception of office, demand has been driving strong NOI growth**
- **Industrial boom continues, fueled by e-commerce, onshoring, and just-in-case warehousing**
- **Apartments benefit from strong demand, higher mortgage rates, and elevated home pricing**
- **Retail recovered from pandemic strife with pent up consumer demand and strong spending**
- **Office remains challenged due to pandemic-induced structural changes in working preferences**



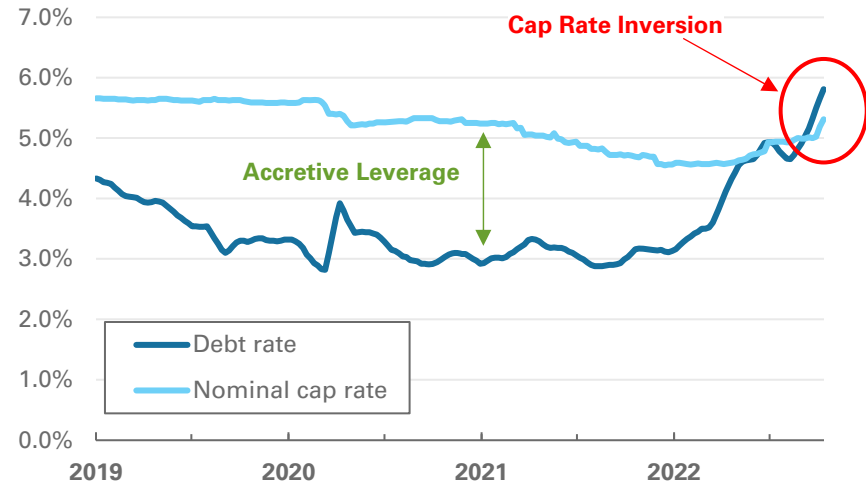
Sources: Data from NCREIF, as of December 31, 2022. NOI Growth shown is the seasonally-adjusted annual rate (SAAR).

INTEREST RATE HIKES CREATED DOMINO EFFECT

Base Lending Rates Spiked



Leverage Became No Longer Accretive



- Interest rate increases driven by the Fed’s desire to tame inflation shocked real estate capital markets in 2022 with continued rate increases into 2023
- Base lending rates for real estate spiked as a result and increased over 4% for fixed and 5% for floating with spreads also increasing, leading to all-in interest rates of 6.00% to 9.25% in the second quarter
- Cap rate inversion occurred mid-year 2022 and widened as interest rates continued to increase
- Higher interest rates are creating downward pressure on real estate values, which are still adjusting

Sources: Green Street, Trepp, CoStar, Chatham Financial, Global-rates.com; Macrotrends. Historical rates are first day of each month through August 2023. Forward curve is based on Chatham Financial forward curve as of August 21, 2023. 1M LIBOR forward curve represents Fallback Rate SOFR. “Debt rate” based on 10 year loan, 50-59% LTV.

2022 DISRUPTION CREATES 2023 OPPORTUNITY

Investors Should be Mindful of

1. Open-end funds

- Anticipate limited liquidity to continue, particularly for ODCE funds and other open-end equity funds
- Consider delaying new allocations to core and core plus funds as rising cap rates are absorbed

2. Traditional office

- Traditional office market likely to continue to be challenged
- Be cautious of strategies with high office concentrations

3. Closed-end funds with existing portfolios

- Particularly with investments made prior to June 2022

Investors Should Target

1. Debt funds

- Higher interest rates and market spreads; less competition from traditional lenders; more conservative terms

2. Opportunity funds

- Can take advantage of any distress that materializes
- Identify firms that have successfully executed through prior market disruptions

3. Skilled “sharpshooters”

- Sector-specific and market-specific strategies with vertically-integrated platforms

4. European opportunistic

- Expect to lead U.S. in distress; strong dollar provides more buying power; structural growth in certain less-institutional property sectors

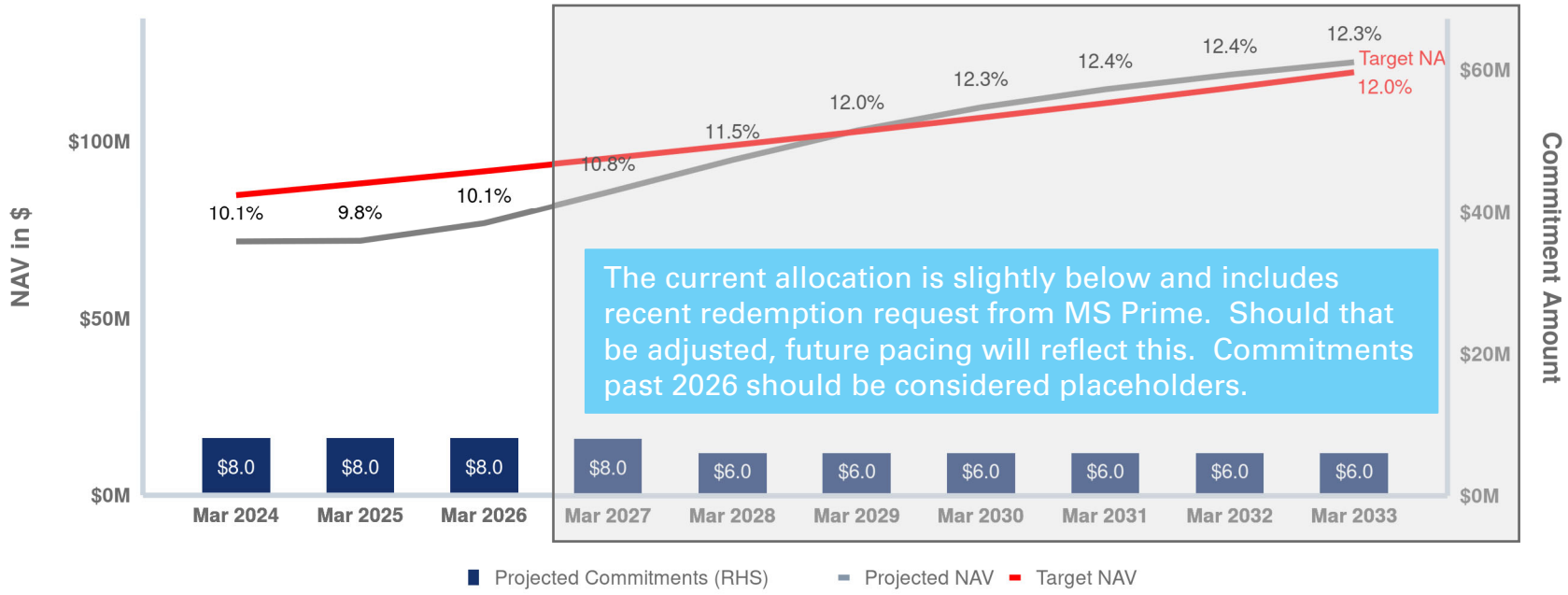
5. Secondaries

- Opportunities arise from LPs and GPs seeking liquidity; greater pricing discounts and volume



COMMITMENTS & ALLOCATION PROJECTIONS

Private Markets Commitments by Vintage

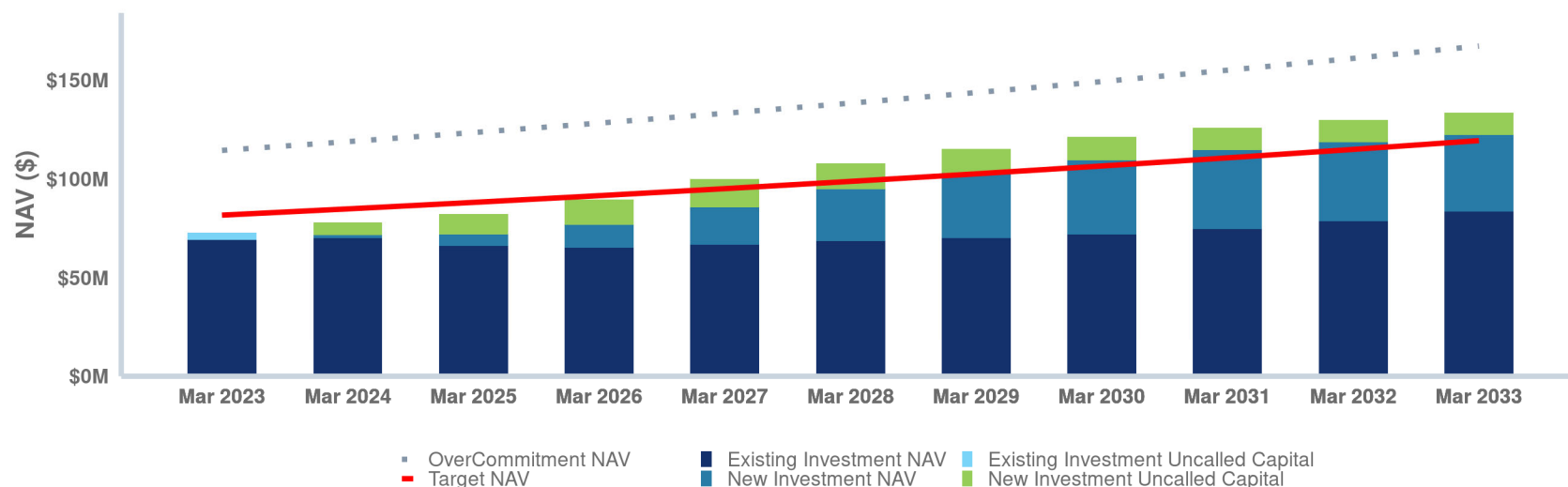


Description	More Certain			Less Certain						
	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Total Commitments (\$M)	\$8.0	\$8.0	\$8.0	\$8.0	\$6.0	\$6.0	\$6.0	\$6.0	\$6.0	\$6.0
Target (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Projected NAV / Total Portfolio Assets	10.1%	9.8%	10.1%	10.8%	11.5%	12.0%	12.3%	12.4%	12.4%	12.3%



ASSET PROJECTIONS

Private Markets Portfolio Projections



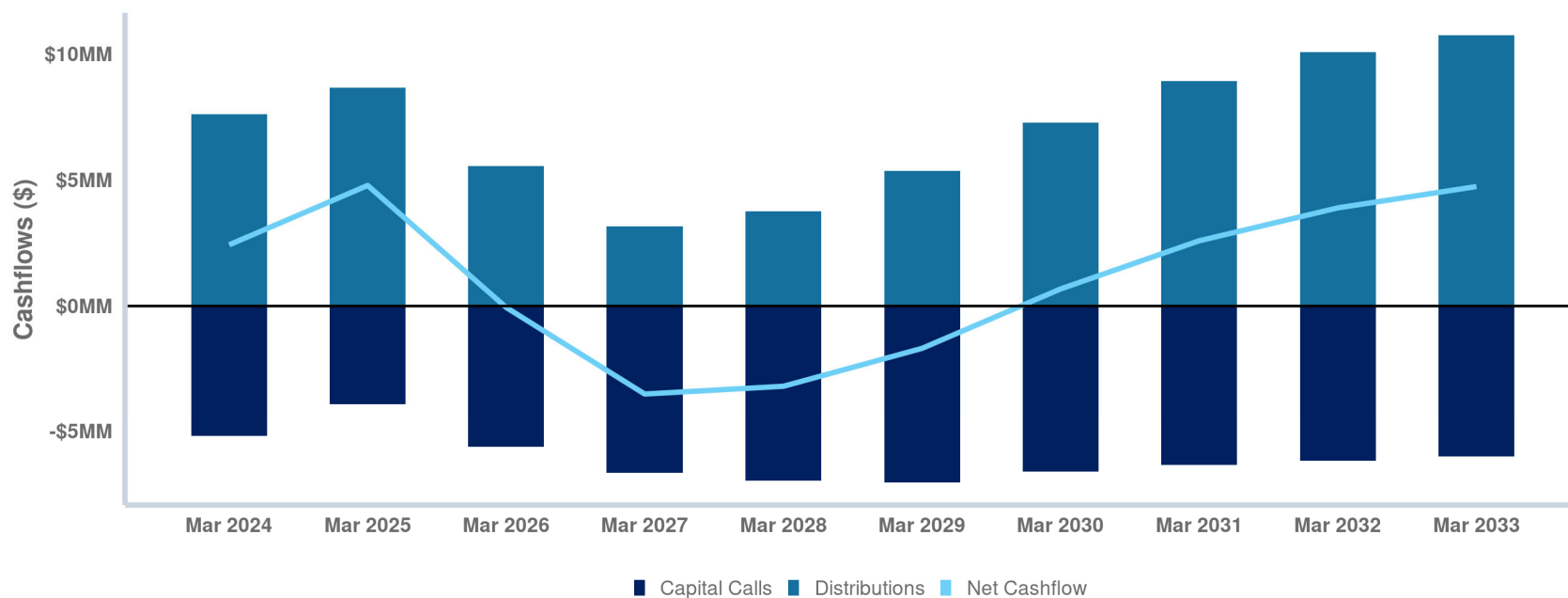
Projection Summary

Description	Mar 2023	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Net Asset Value (NAV)	\$69.3	\$71.6	\$71.8	\$76.8	\$85.6	\$94.7	\$103.0	\$109.5	\$114.6	\$118.7	\$122.2
Uncalled Capital	\$3.7	\$6.5	\$10.6	\$13.0	\$14.3	\$13.4	\$12.4	\$11.8	\$11.4	\$11.2	\$11.2
NAV + Uncalled Capital	\$73.0	\$78.1	\$82.4	\$89.8	\$99.9	\$108.1	\$115.3	\$121.2	\$126.0	\$129.9	\$133.5
Target NAV	\$81.8	\$84.9	\$88.2	\$91.6	\$95.1	\$98.8	\$102.6	\$106.6	\$110.7	\$115.0	\$119.4
NAV (%)	10.2%	10.1%	9.8%	10.1%	10.8%	11.5%	12.0%	12.3%	12.4%	12.4%	12.3%
NAV + Uncalled Capital (%)	10.7%	11.0%	11.2%	11.8%	12.6%	13.1%	13.5%	13.7%	13.7%	13.6%	13.4%
Target Allocation (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%



CASH FLOW PROJECTIONS

Private Markets Projected Capital Calls & Distributions





APPENDIX



PRIVATE MARKETS INVESTING

BEST PRACTICES

- **Pacing plans are a critical portfolio management and risk management tool**
 - Pacing plans are designed to provide discipline in private markets portfolio management
 - Conduct a pacing plan each year and stick to it.....**provided** the pool has adequate liquidity
 - Set up liquidity guardrails and review regularly

- **Private markets funds are long-term investments and should not be used to make tactical investment decisions**
 - Vintage year diversification matters
 - The GP holds a call option to find opportunities and adjust to the market
 - Strong vintage year returns and illiquidity premia have been generated in environments like today
 - A consistent annual commitment pace is the best way to mitigate timing and illiquidity risks and smooth the J-curve

- **Re-up with strong managers**
 - If liquidity is constrained, reduce check size but still show up, lest you lose access to the GP permanently

- **Ensure pool has allocation to highly liquid funding sources to meet calls and spending**



PRIVATE MARKETS ASSET PROJECTIONS

Projection Summary

Description	Mar 2023	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Net Asset Value (NAV)	\$92.7	\$96.2	\$94.0	\$99.1	\$104.2	\$108.3	\$111.0	\$112.2	\$113.1	\$115.6	\$120.3
Uncalled Capital	\$61.7	\$50.6	\$50.7	\$52.6	\$55.8	\$57.7	\$62.0	\$65.1	\$67.5	\$69.2	\$70.3
NAV + Uncalled Capital	\$154.4	\$146.8	\$144.7	\$151.8	\$160.0	\$166.0	\$173.0	\$177.2	\$180.6	\$184.8	\$190.7
Target NAV	\$81.8	\$84.9	\$88.2	\$91.6	\$95.1	\$98.8	\$102.6	\$106.6	\$110.7	\$115.0	\$119.4
OverCommitment Pace	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x	1.5x
OverCommitment Target NAV	\$122.6	\$127.4	\$132.3	\$137.4	\$142.7	\$148.2	\$153.9	\$159.9	\$166.0	\$172.4	\$179.1
NAV (%)	13.6%	13.6%	12.8%	13.0%	13.1%	13.2%	13.0%	12.6%	12.3%	12.1%	12.1%
Uncalled Capital (%)	9.1%	7.1%	6.9%	6.9%	7.0%	7.0%	7.2%	7.3%	7.3%	7.2%	7.1%
NAV + Uncalled Capital (%)	22.7%	20.7%	19.7%	19.9%	20.2%	20.2%	20.2%	20.0%	19.6%	19.3%	19.2%
Target Allocation (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Plan NAV	\$681.3	\$707.6	\$734.9	\$763.3	\$792.7	\$823.3	\$855.1	\$888.1	\$922.4	\$958.0	\$995.0



REAL ESTATE ASSET PROJECTIONS

Projection Summary

Description	Mar 2023	Mar 2024	Mar 2025	Mar 2026	Mar 2027	Mar 2028	Mar 2029	Mar 2030	Mar 2031	Mar 2032	Mar 2033
Net Asset Value (NAV)	\$69.3	\$71.6	\$71.8	\$76.8	\$85.6	\$94.7	\$103.0	\$109.5	\$114.6	\$118.7	\$122.2
Uncalled Capital	\$3.7	\$6.5	\$10.6	\$13.0	\$14.3	\$13.4	\$12.4	\$11.8	\$11.4	\$11.2	\$11.2
NAV + Uncalled Capital	\$73.0	\$78.1	\$82.4	\$89.8	\$99.9	\$108.1	\$115.3	\$121.2	\$126.0	\$129.9	\$133.5
Target NAV	\$81.8	\$84.9	\$88.2	\$91.6	\$95.1	\$98.8	\$102.6	\$106.6	\$110.7	\$115.0	\$119.4
OverCommitment Pace	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x	1.4x
OverCommitment Target NAV	\$114.5	\$118.9	\$123.5	\$128.2	\$133.2	\$138.3	\$143.7	\$149.2	\$155.0	\$160.9	\$167.2
NAV (%)	10.2%	10.1%	9.8%	10.1%	10.8%	11.5%	12.0%	12.3%	12.4%	12.4%	12.3%
Uncalled Capital (%)	0.5%	0.9%	1.4%	1.7%	1.8%	1.6%	1.4%	1.3%	1.2%	1.2%	1.1%
NAV + Uncalled Capital (%)	10.7%	11.0%	11.2%	11.8%	12.6%	13.1%	13.5%	13.7%	13.7%	13.6%	13.4%
Target Allocation (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Plan NAV	\$681.3	\$707.6	\$734.9	\$763.3	\$792.7	\$823.3	\$855.1	\$888.1	\$922.4	\$958.0	\$995.0



PACING PLAN DISCLAIMERS

- **NEPC's private markets pacing analysis projects a potential level of future assets and cash flows for a single scenario based on a series of assumptions. This analysis is intended to help estimate future exposure levels. It is not a guarantee of future cash flows, appreciation or returns.**
- **The timing and amounts of projected future cash flows and market values of investments could vary significantly from the amounts projected in this pacing analysis due to manager-specific and industry-wide macroeconomic factors.**
- **Estimates of projected cash flows and market values for existing private markets commitments were made at the Fund level and do not incorporate any underlying portfolio company projections or analysis.**
- **The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
- **Data used to prepare this report was obtained directly from the investment managers and other third parties. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.**
- **This report may contain confidential or proprietary information and is intended only for the designated recipient(s). If you are not a designated recipient, you may not copy or distribute this document.**



ALTERNATIVE INVESTMENT DISCLOSURES

It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager's realm of expertise or contemplated investment strategy





Q2 2023 INVESTMENT REPORT

MWRA EMPLOYEES' RETIREMENT SYSTEM

AUGUST 31, 2023

Sebastian Grzejka, CAIA, Principal
Alexandra Sollers, CFA, Consultant
Francesca LoVerde, Sr. Consulting Analyst



GOALS & OBJECTIVES

Investment Return Objective

“Its primary goal is to provide promised benefits to participants and beneficiaries of the MWRA Employees’ Retirement system. Plan assets should be equal to or greater than the present value of the projected benefit obligations (“fully funded”). When Plan assets are less than the present value of projected benefit obligations, a schedule will be established, and a plan will be in place to meet a fully funded status. When achieving return objectives required to fully fund the system, the Board is intent on controlling risk. Consistency of returns and risk of loss are primary considerations. The Board has also determined that the annual performance of plan assets should not vary substantially from returns achieved by other public pension funds with similar goals and objectives.”

Return Expectations

The investment growth should be maintained in such a manner that the minimum nominal rate of return does not cause a negative real rate of return over a full market cycle:

Time Horizon: Return assumptions will be based on a ten-year time horizon with a detailed review and analysis to be made at least annually to monitor allocations and assumptions. Should a manager deviate from proscribed mandate or expected risk and return profile by a consequential degree, that manager may be reevaluated at any time

Liquidity Needs: Presently contributions exceed plan withdrawals to provide benefits, payouts, and/or plan expenses. Portfolio liquidity will be managed based on the cash flow needs of the System.

Regulatory Considerations: Assets of this Fund shall be invested in a manner consistent with the fiduciary standards established under Code of Massachusetts Regulations 840 (“840 CMR”). The Board shall also use as precedent the Employee Retirement Income Security Act (ERISA).



TABLE OF CONTENTS

	<u>Page</u>
Market Review	4
Second Quarter Plan Performance	22





MARKET REVIEW



PROPRIETARY & CONFIDENTIAL

CURRENT MARKET OUTLOOK



Mega-cap outperformance relative to the broader market is near levels seen during the height of the pandemic



Look to reduce S&P 500 and U.S. mega-cap equity exposure while maintaining U.S. large-cap value positions



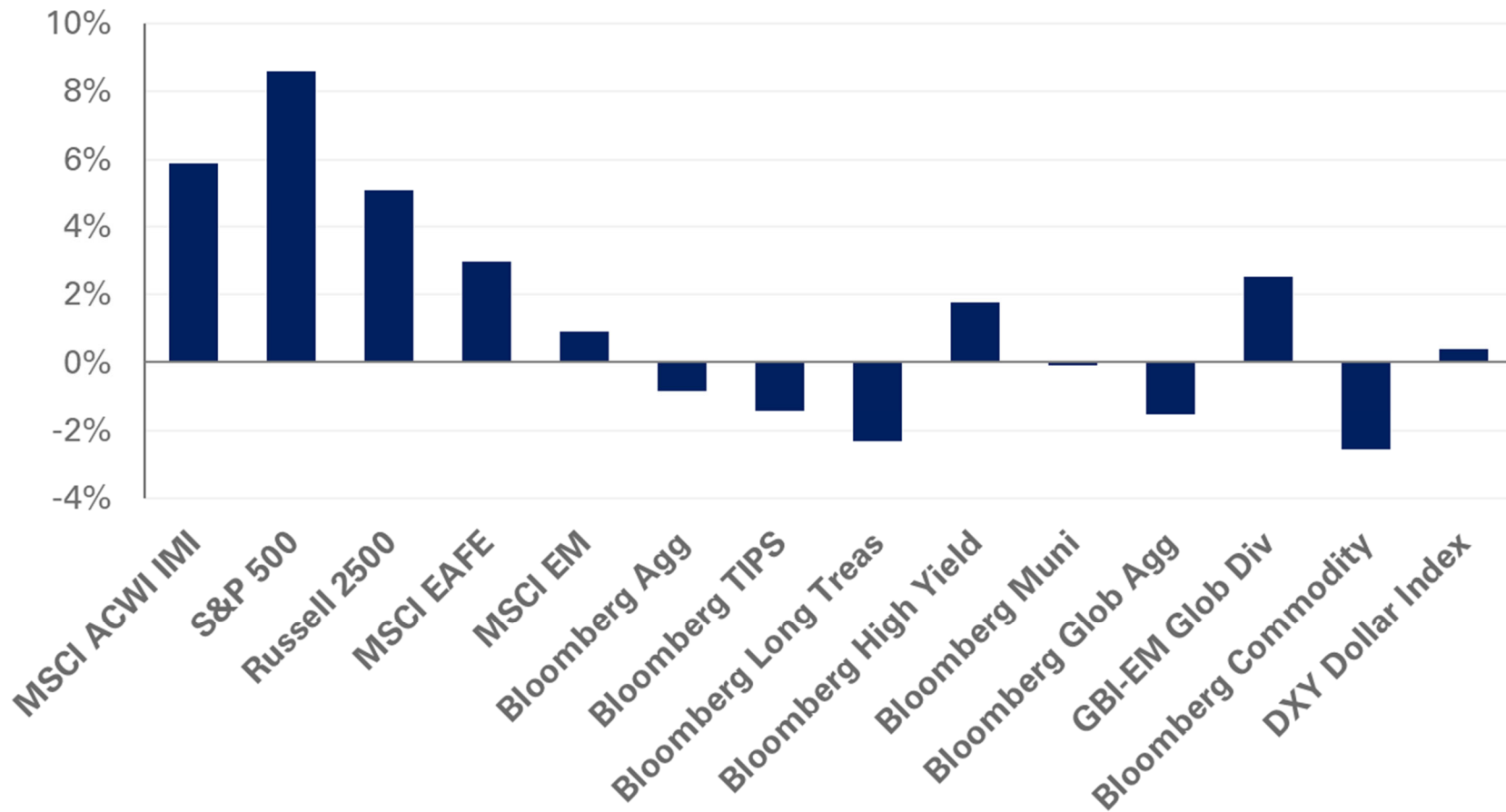
We believe U.S. high yield offers a greater return vs. U.S. large-cap equity and we recommend increasing exposure



Look to hold greater levels of cash within safe-haven fixed income and maintain greater levels of portfolio liquidity

U.S. EQUITIES OUTPERFORMED

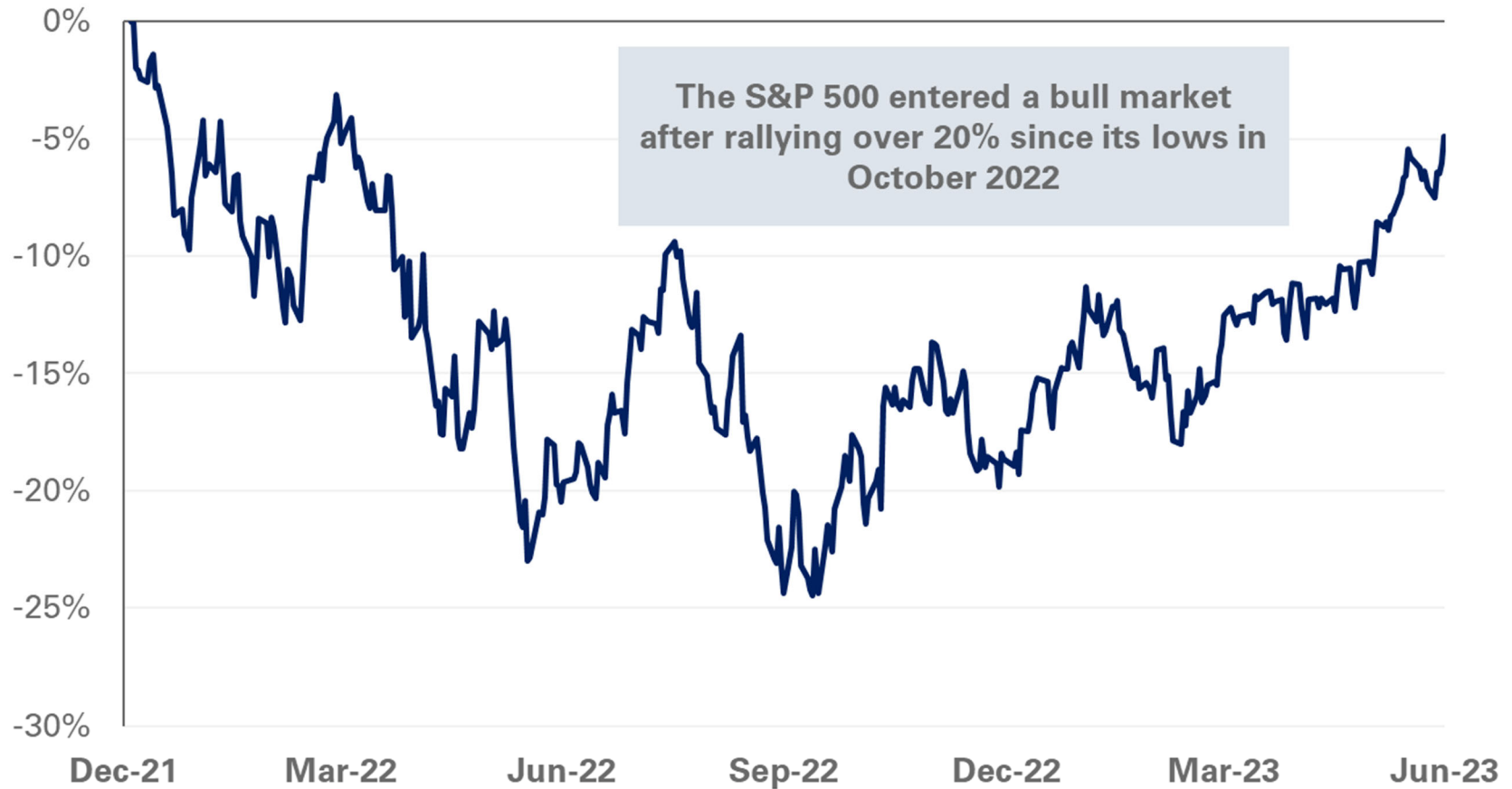
QUARTERLY TOTAL RETURNS



Sources: MSCI, S&P, Russell, MSCI, Bloomberg, JPM, DXY, FactSet

THE S&P 500 REBOUNDED OFF OCTOBER LOWS

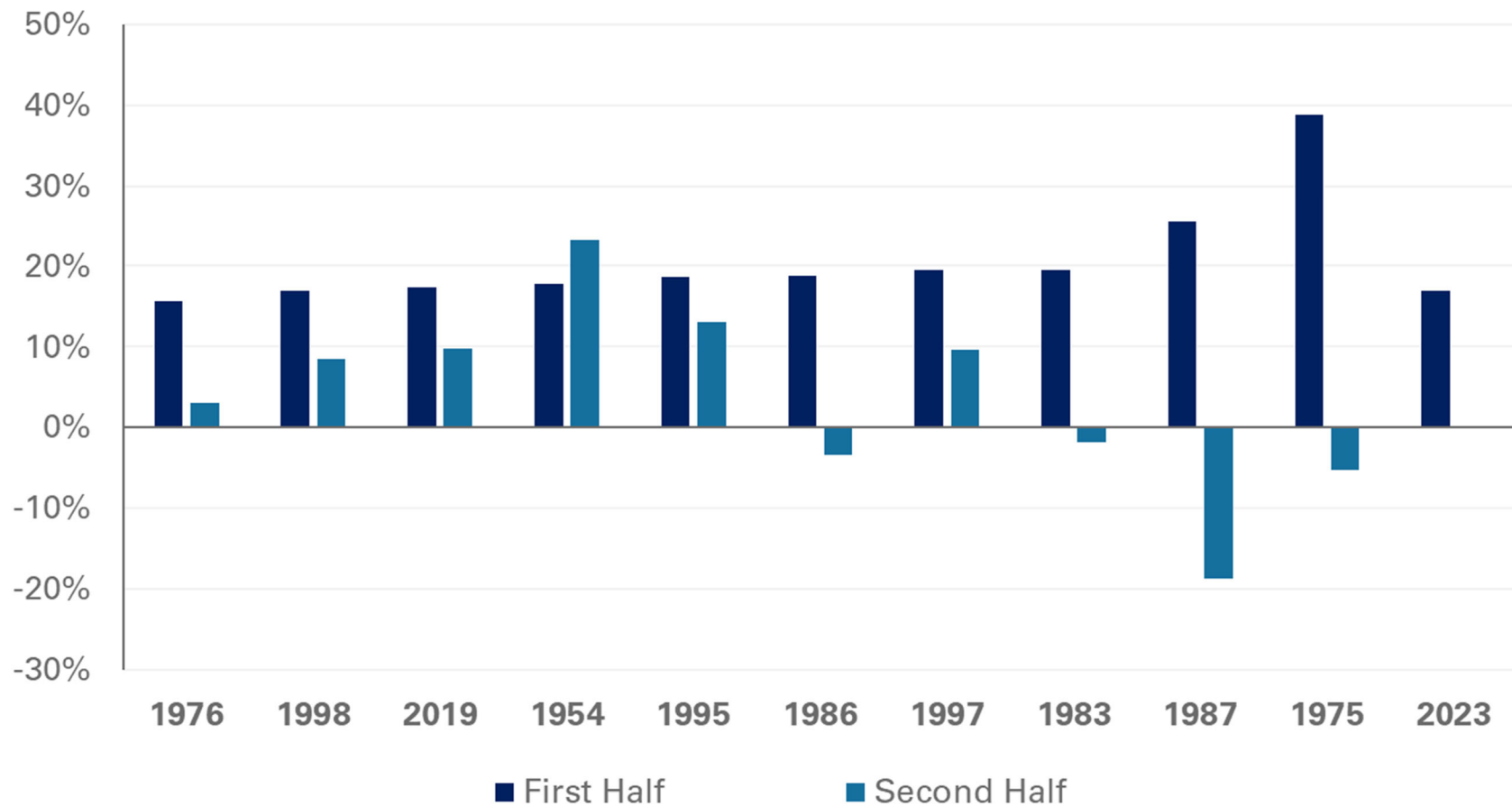
CUMULATIVE TOTAL RETURN



Source: S&P, FactSet

WILL THE S&P 500 CONTINUE TO RALLY?

S&P 500 RETURNS EXCEEDING 15% IN THE FIRST HALF OF YEAR

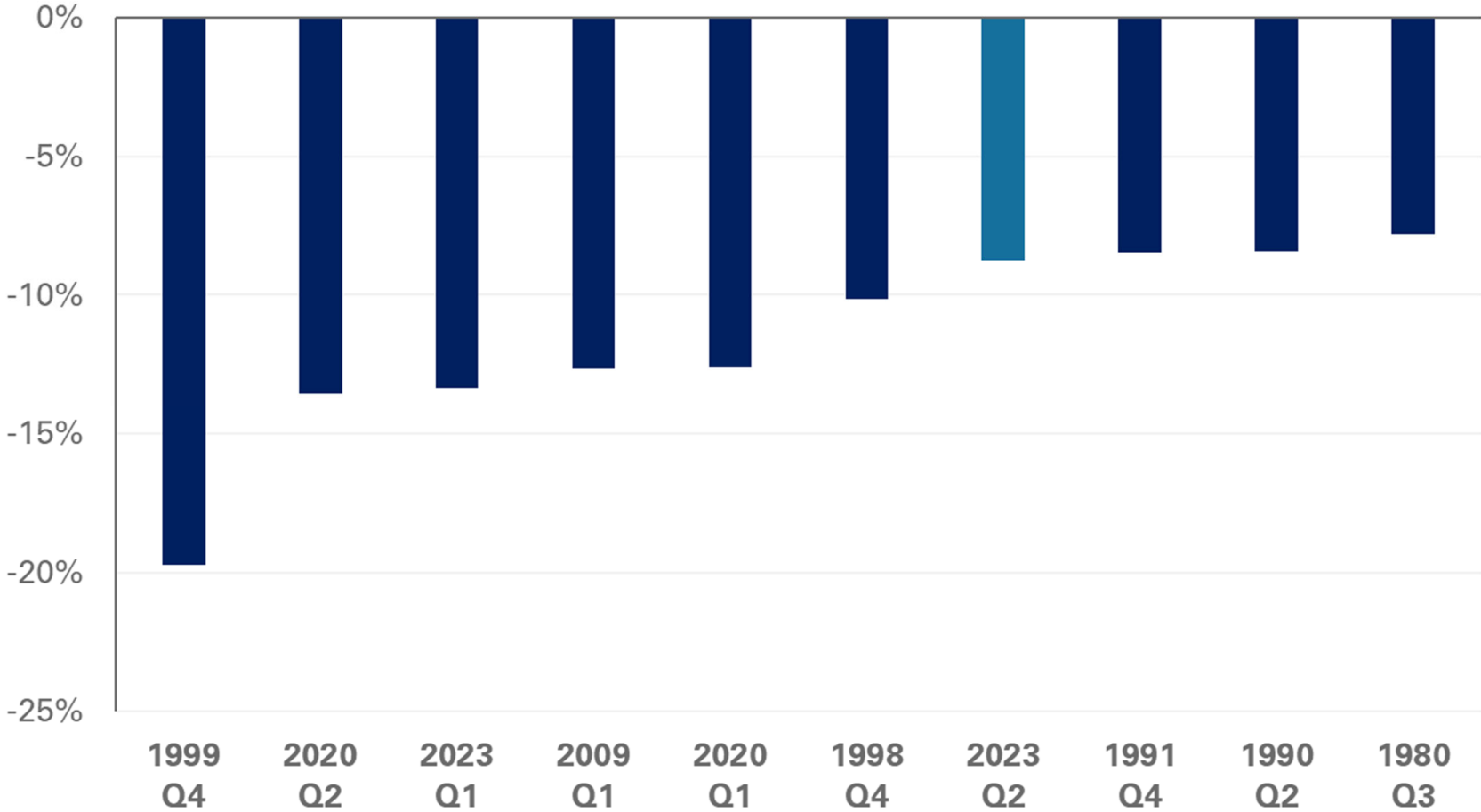


Calculation based on data since 12/31/1953
Source: S&P, FactSet



GROWTH OUTPERFORMED VALUE

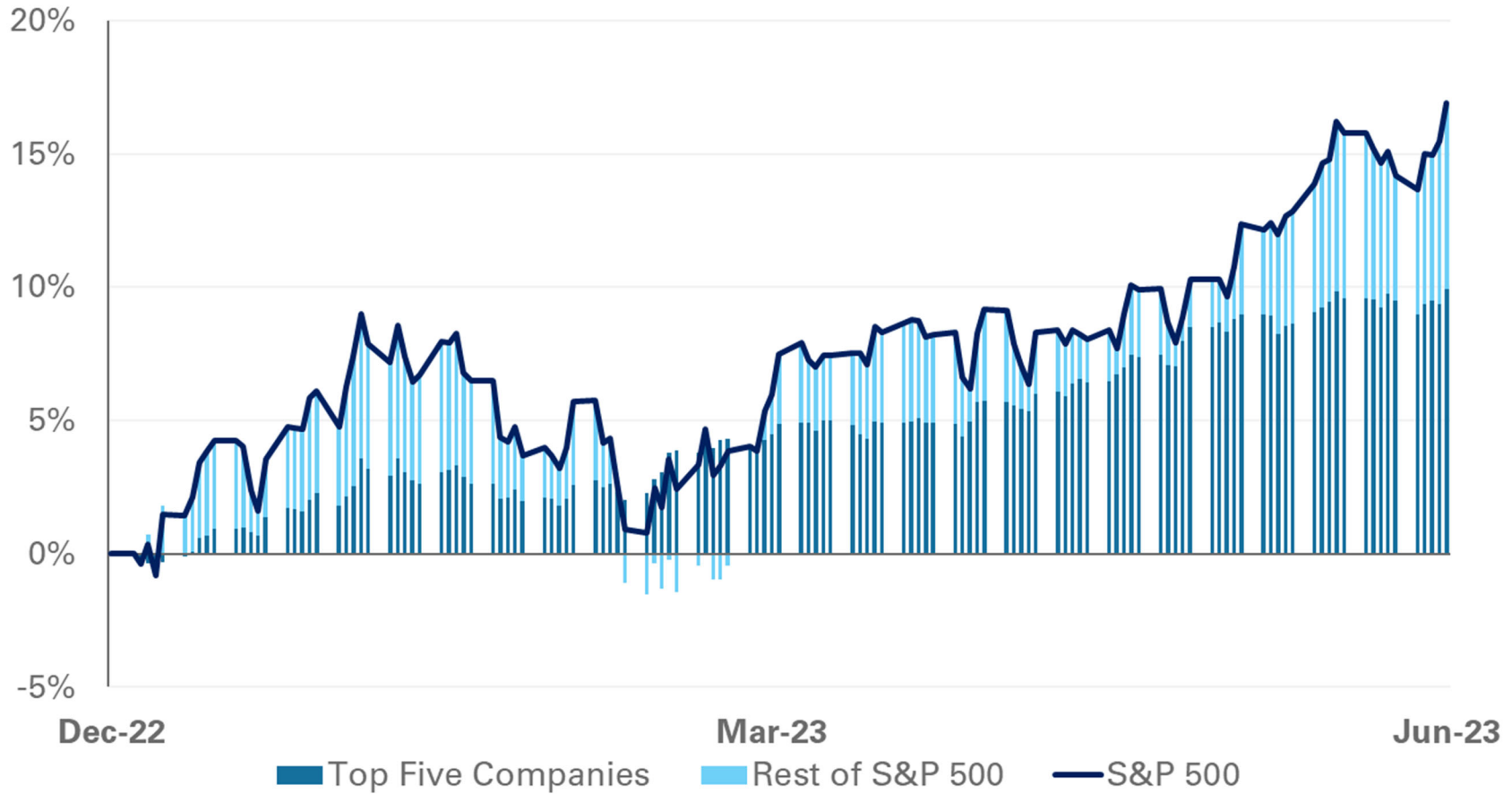
TOP 10: RUSSELL 1000 VALUE – GROWTH QUARTERLY RETURNS



Source: Russell, FactSet

TOP FIVE COMPANIES LED THE S&P 500 HIGHER

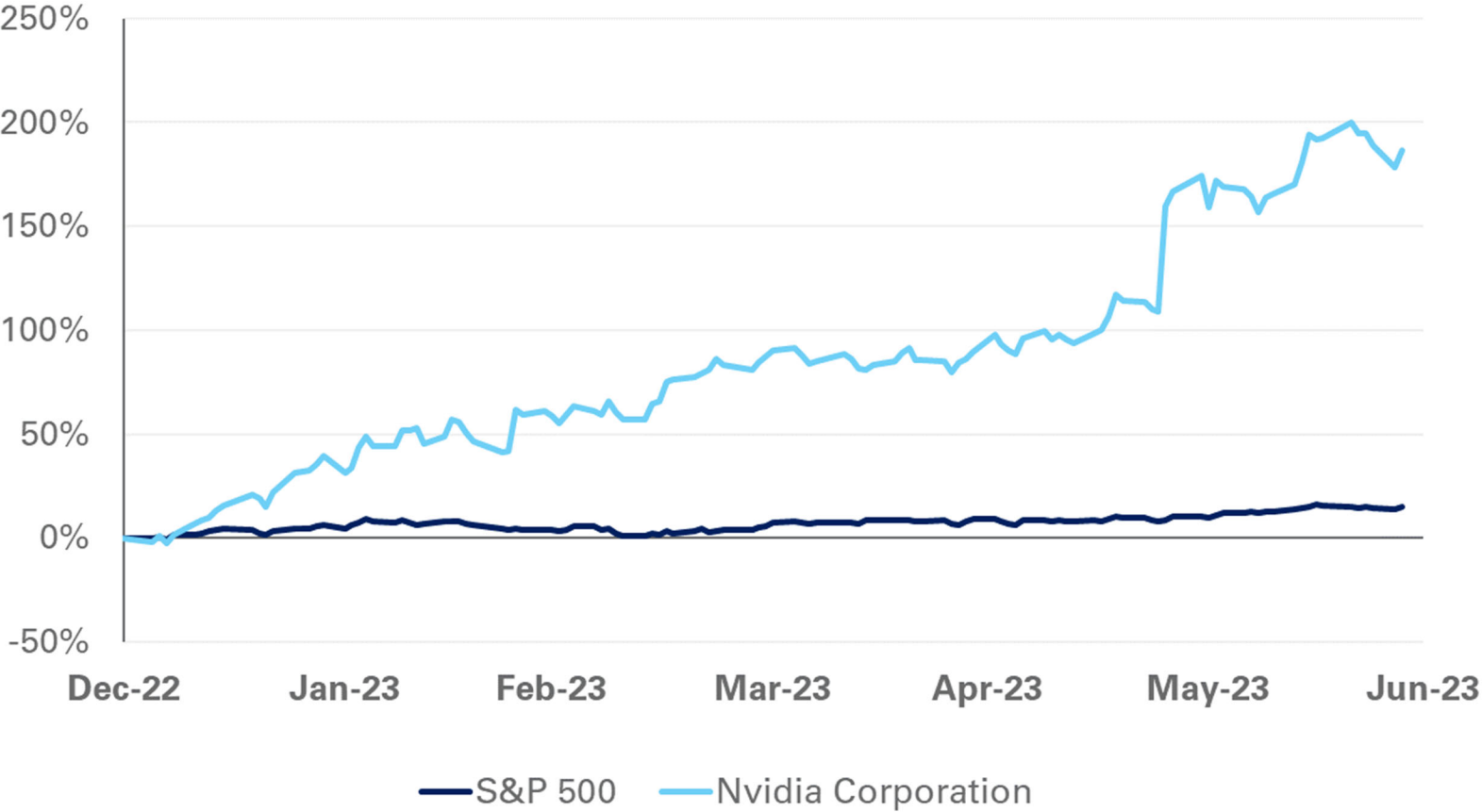
CUMULATIVE TOTAL RETURNS



Top Five Companies represent Apple, Amazon, Alphabet, Microsoft, and NVidia,
Source: FactSet

NVIDIA RALLIED ON GENERATIVE AI OUTLOOK

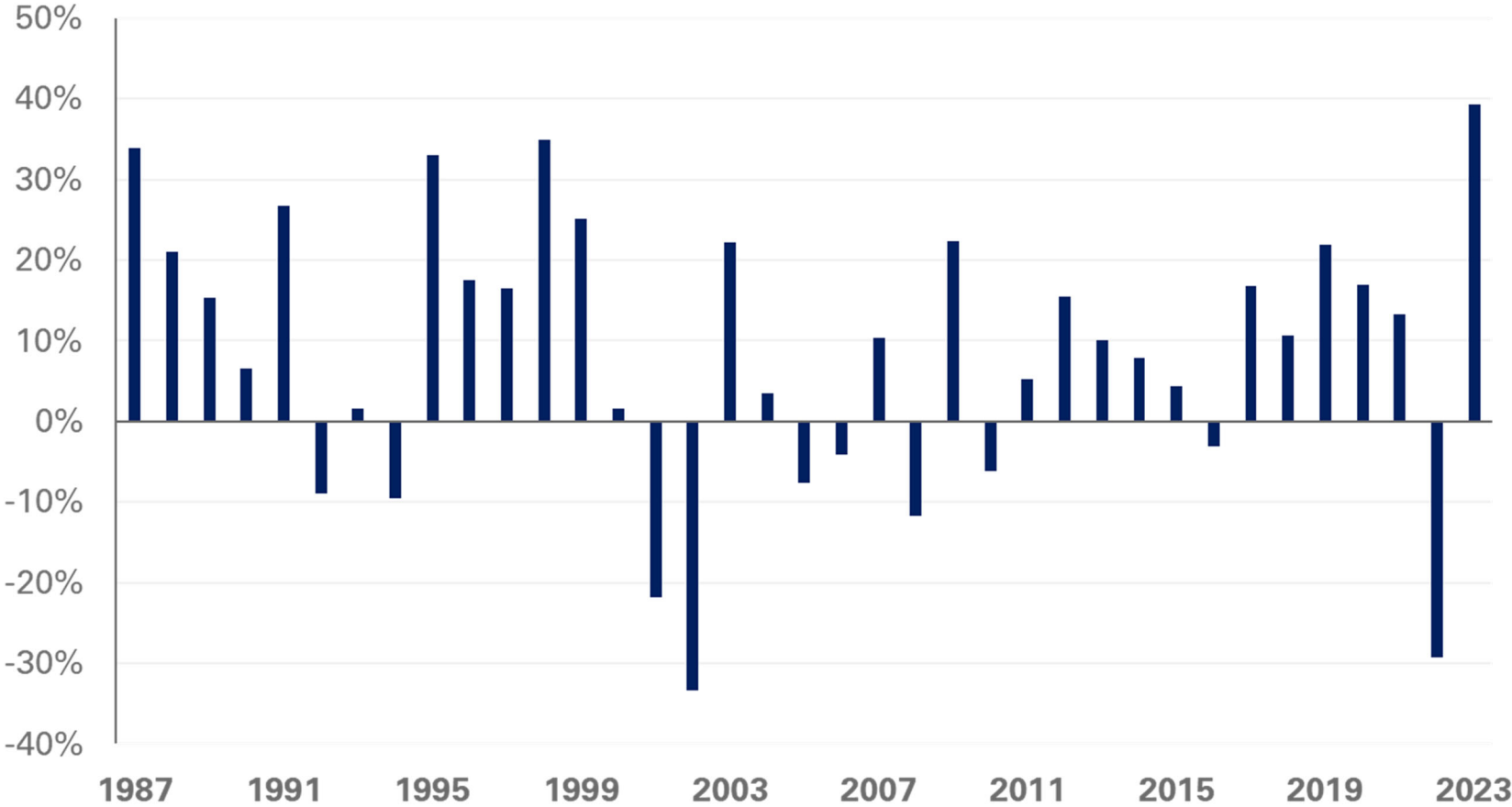
CUMULATIVE TOTAL RETURN



Source: S&P, FactSet

BEST START FOR THE NASDAQ 100

NASDAQ 100 FIRST SIX-MONTH RETURN



Source: Nasdaq, FactSet

LARGE-CAP TECH NEARING PEAK VALUATIONS

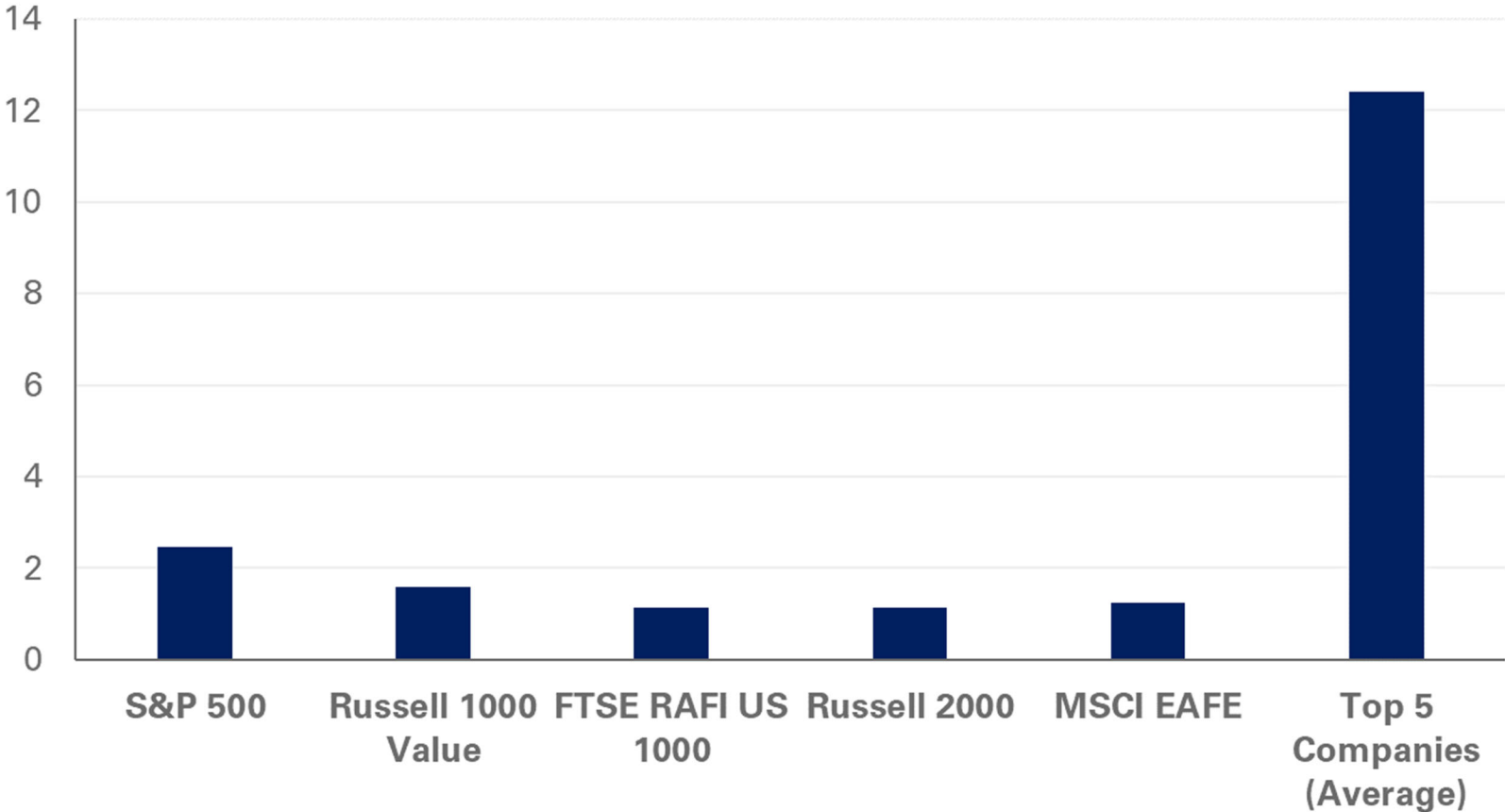
MARKET CAPITALIZATION: NASDAQ 100 VERSUS RUSSELL 2000



Source: Nasdaq, Russell, FactSet

S&P 500 AND MEGA-CAPS APPEAR EXPENSIVE

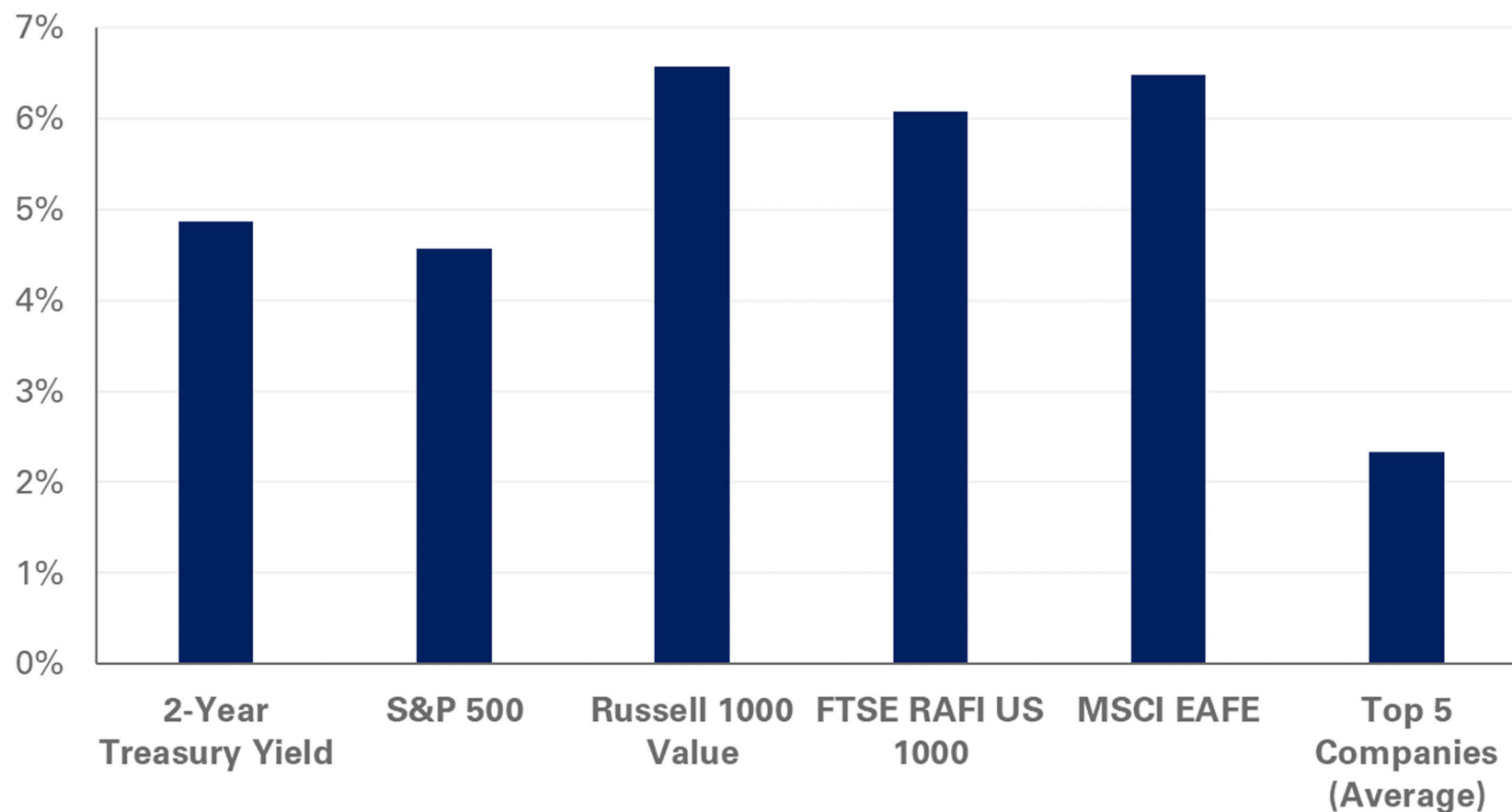
PRICE TO SALES: LAST TWELVE MONTHS



Source: S&P, Russell, MSCI, FactSet

S&P 500 AND MEGA-CAP YIELDS ARE LOW

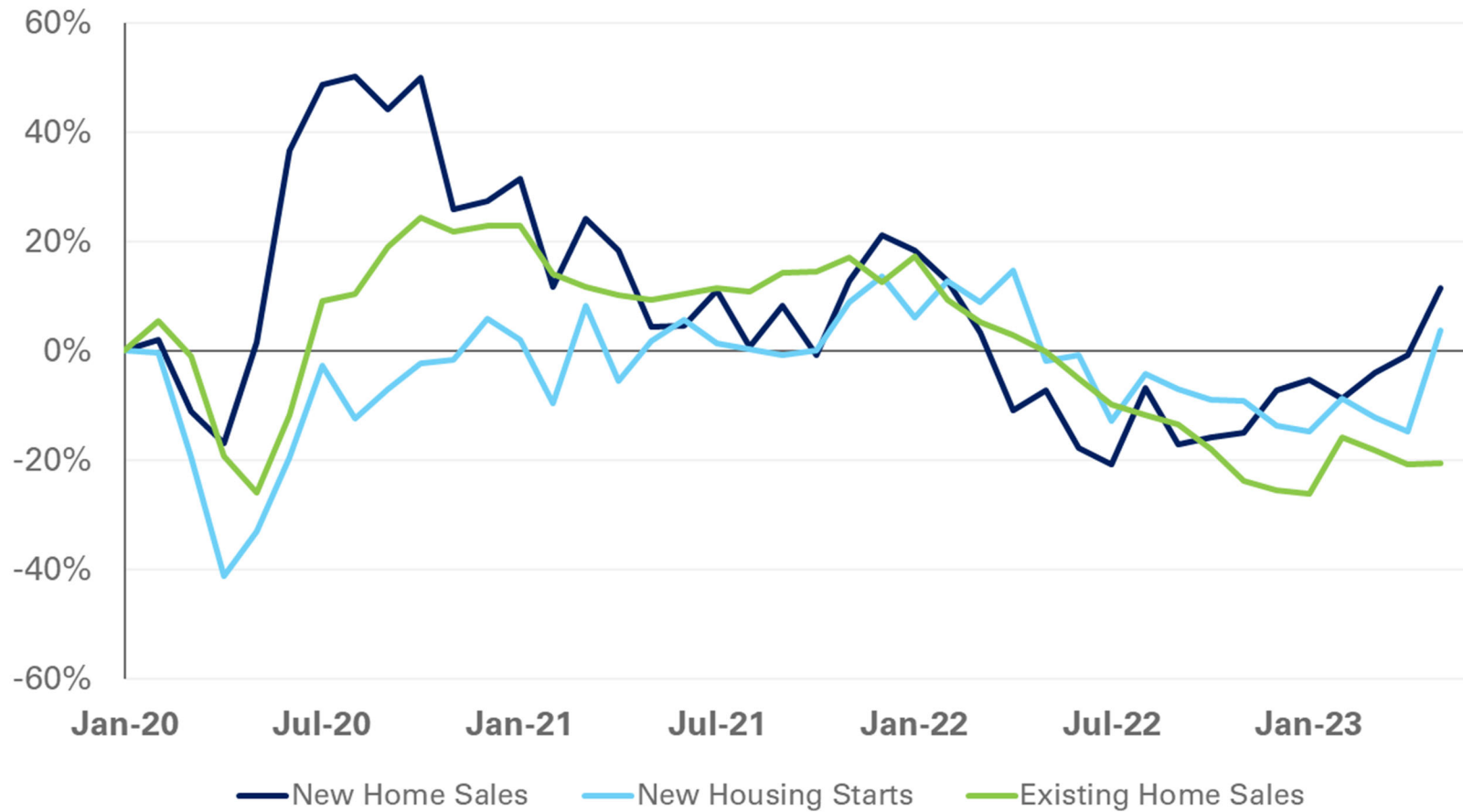
10-YEAR U.S. TREASURY YIELD VERSUS EARNING YIELDS



Source: S&P, Russel, MSCI, FactSet

U.S. RESIDENTIAL REAL ESTATE RECOVERED

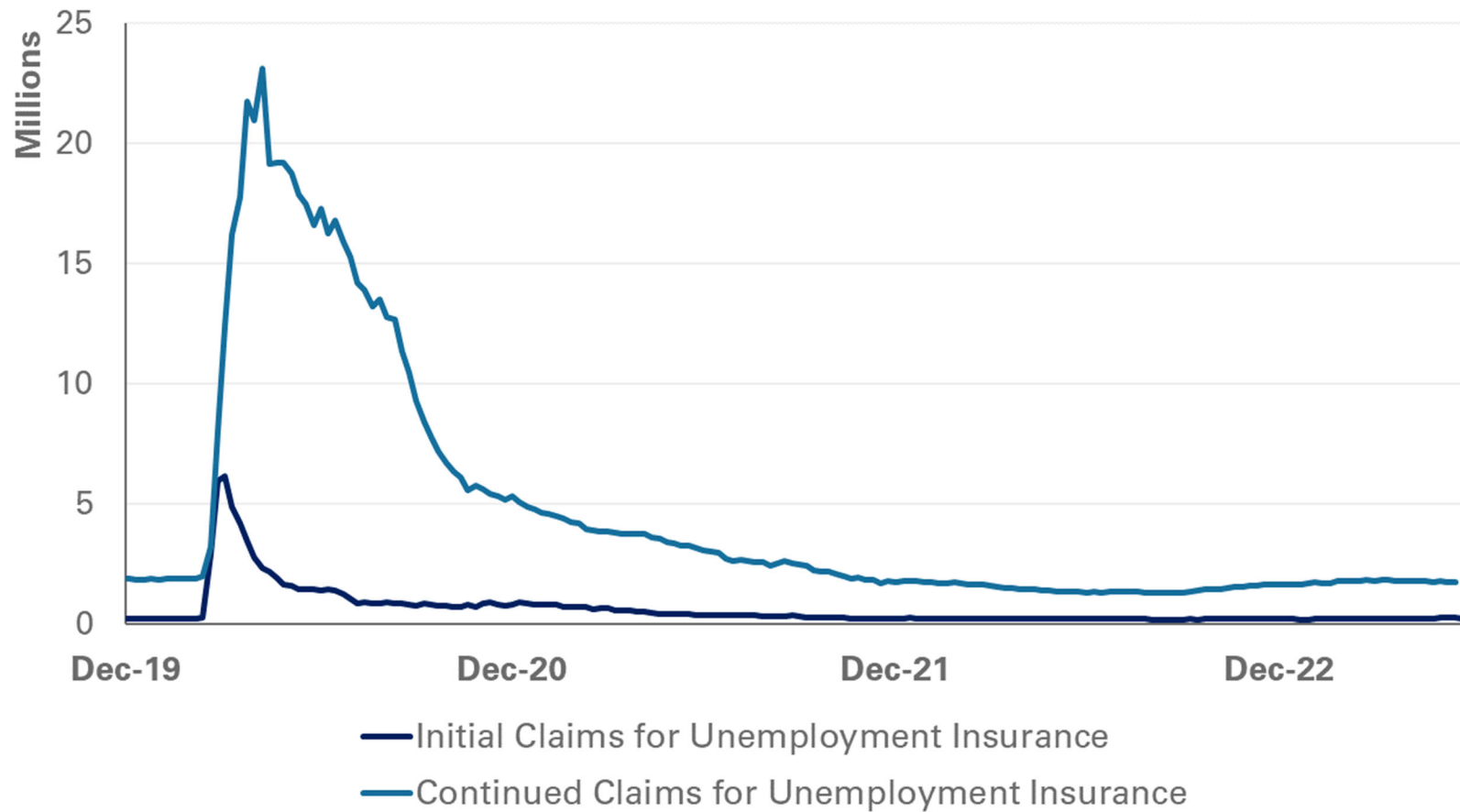
CUMULATIVE CHANGE IN NEW AND EXISTING HOME SALES



Changes relative to 12/31/2019
Source: FactSet

THE LABOR MARKET REMAINED RESILIENT

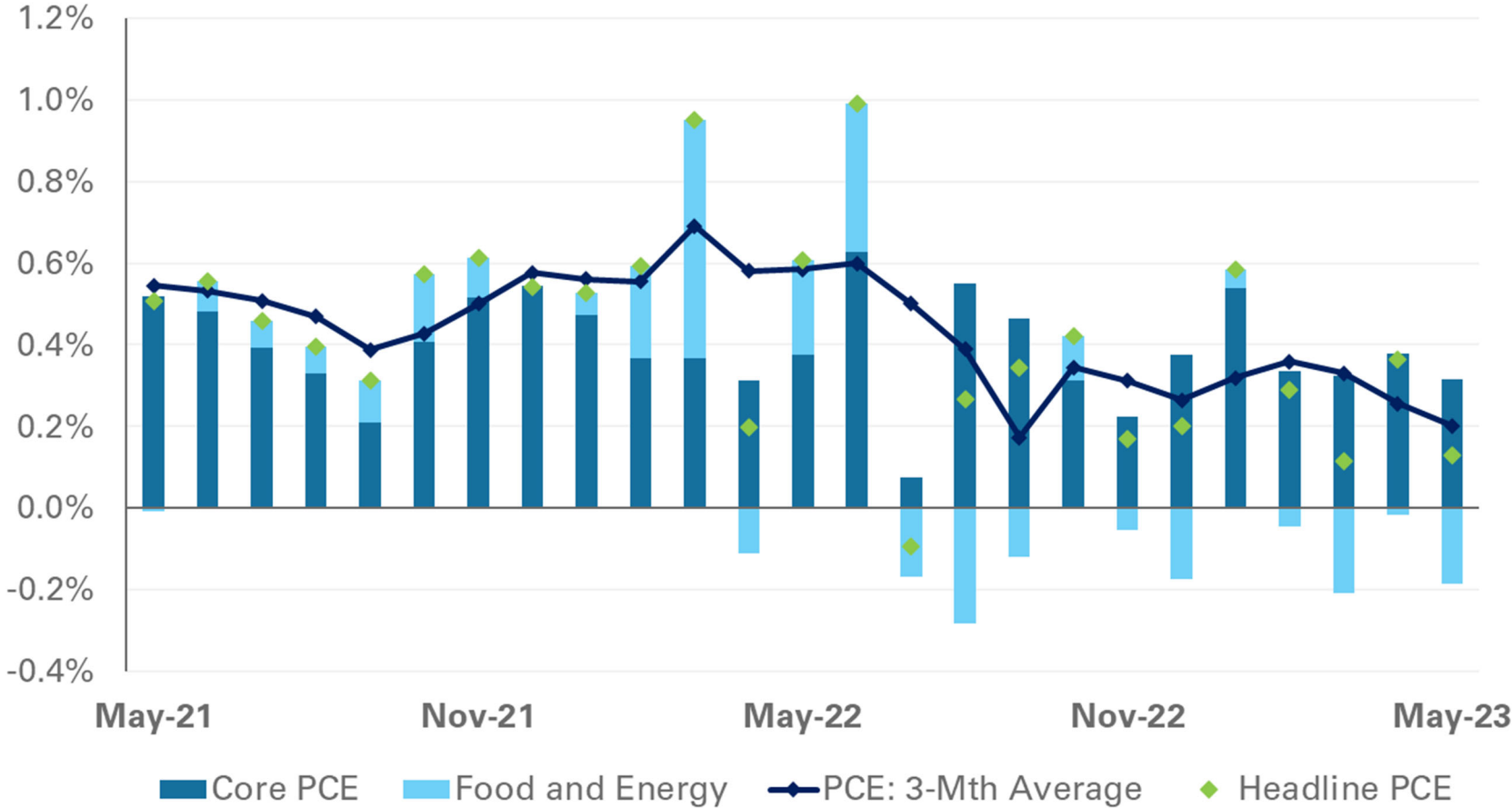
INITIAL AND CONTINUED CLAIMS FOR UNEMPLOYMENT



Source: Department of Labor, FactSet

CORE INFLATION REMAINED ELEVATED

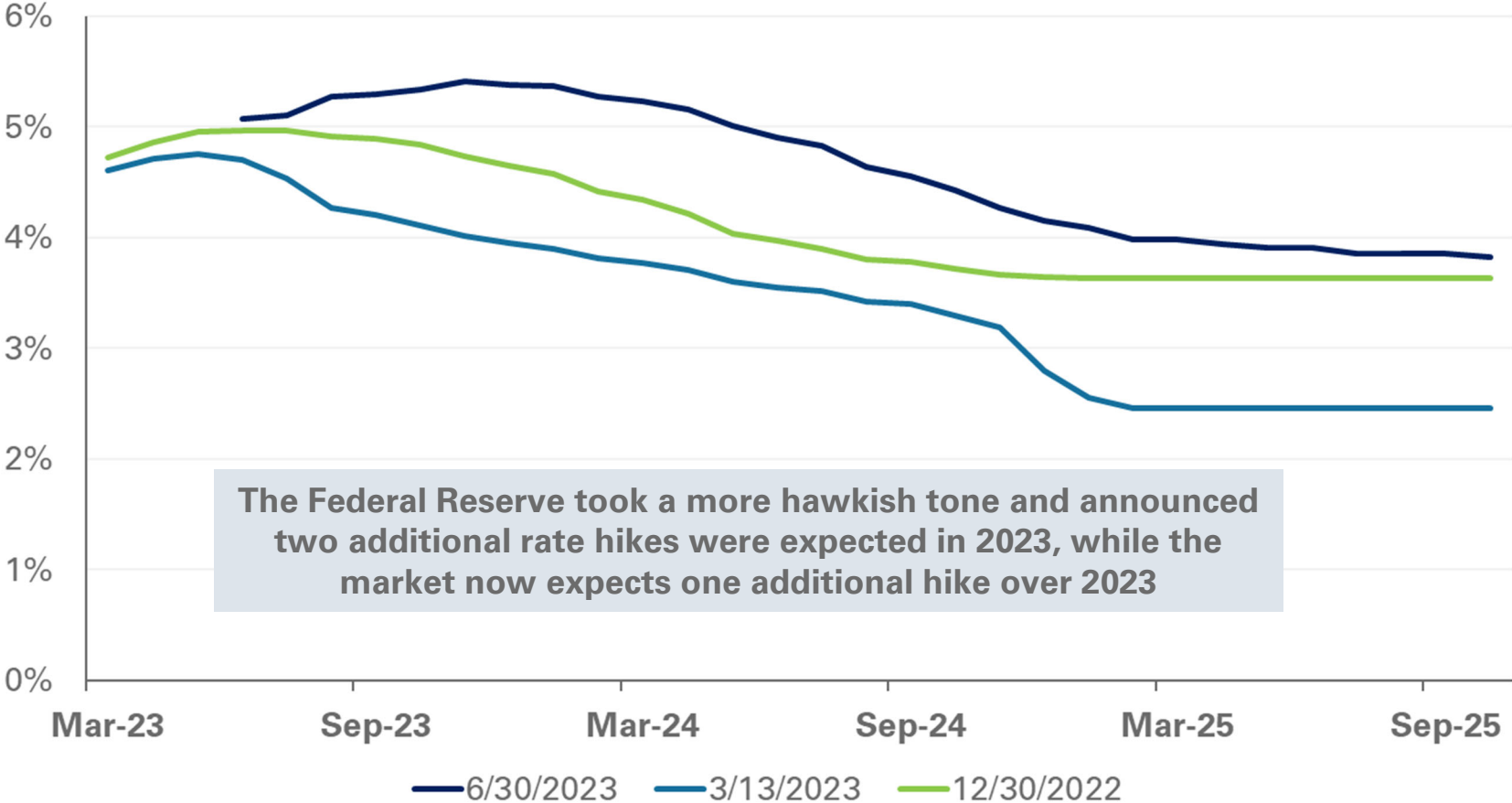
MONTHLY U.S. PCE PRICE INDEX CHANGES



Sources: Bureau of Economic Analysis, FactSet

MARKET RATE HIKE EXPECTATIONS ROSE

FEDERAL FUNDS FUTURES



3/13/2023 represents the Monday after the collapse of Silicon Valley Bank
Source: FactSet

THE YIELD CURVE FURTHER INVERTED

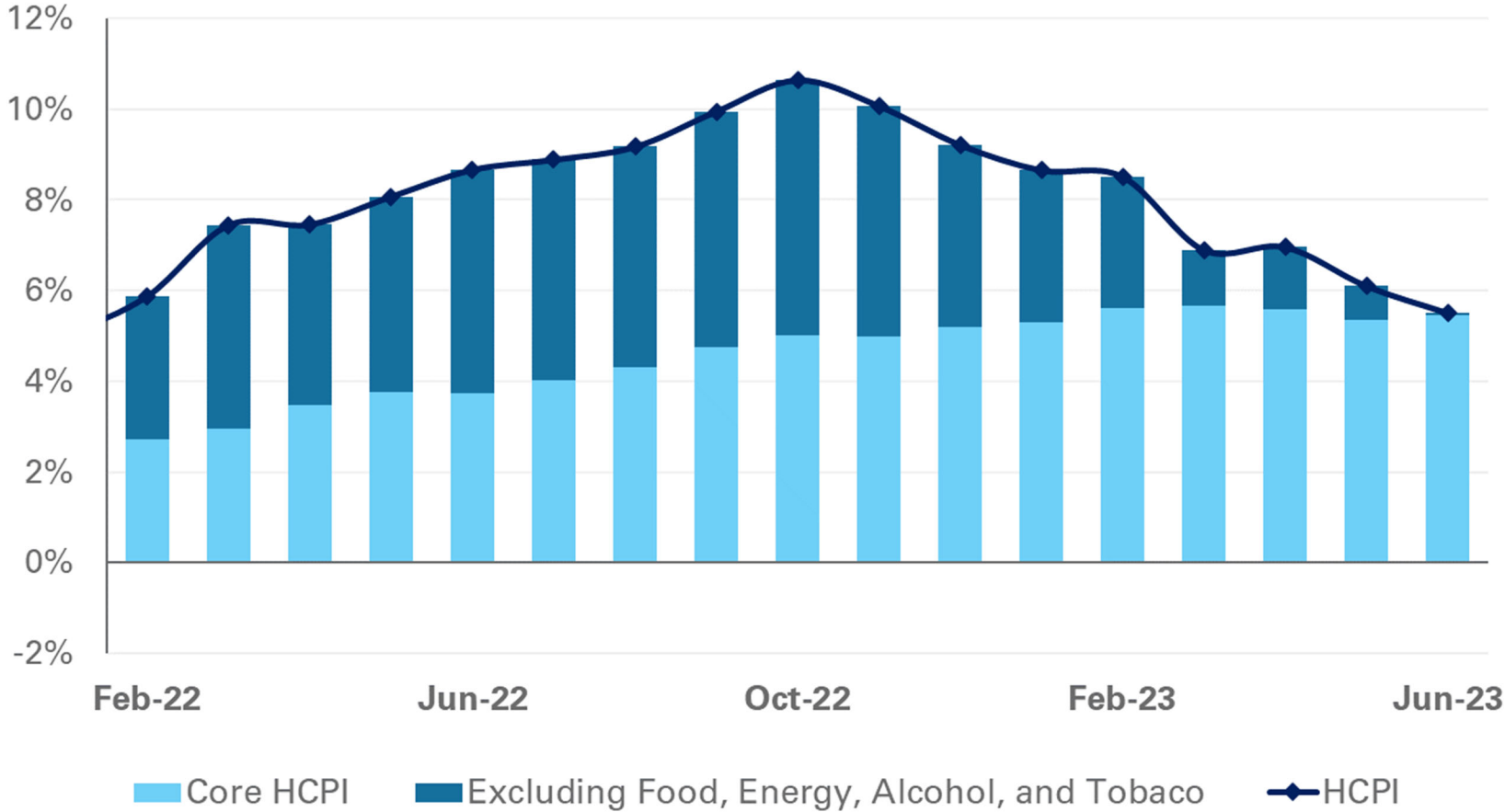
10-2 U.S. TREASURY YIELD SPREAD




Source: FactSet

EUROZONE CORE INFLATION REMAINED ELEVATED

ANNUAL CHANGE IN EUROZONE HARMONIZED CPI



Source: Eurostat, FactSet



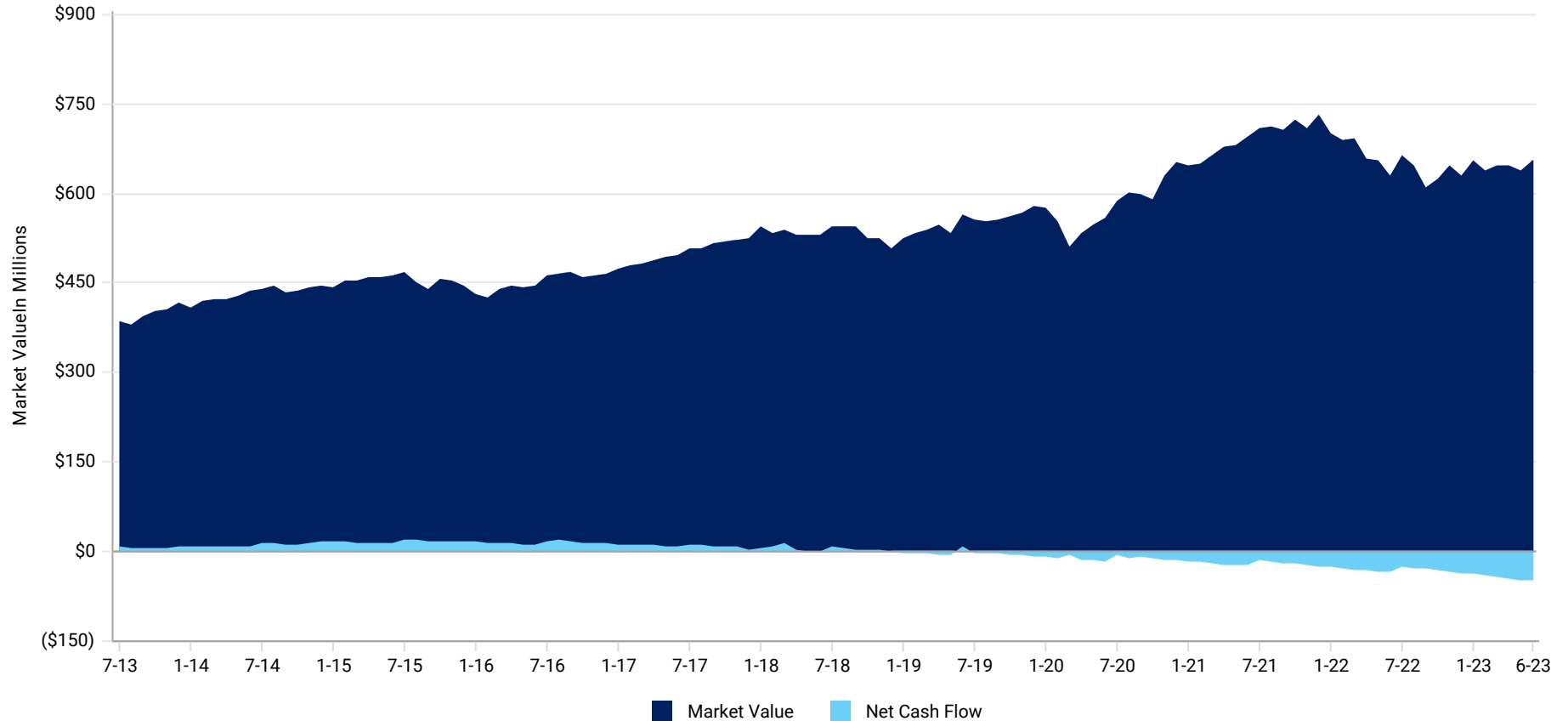
SECOND QUARTER PLAN PERFORMANCE



PROPRIETARY & CONFIDENTIAL

TOTAL FUND ASSET GROWTH SUMMARY

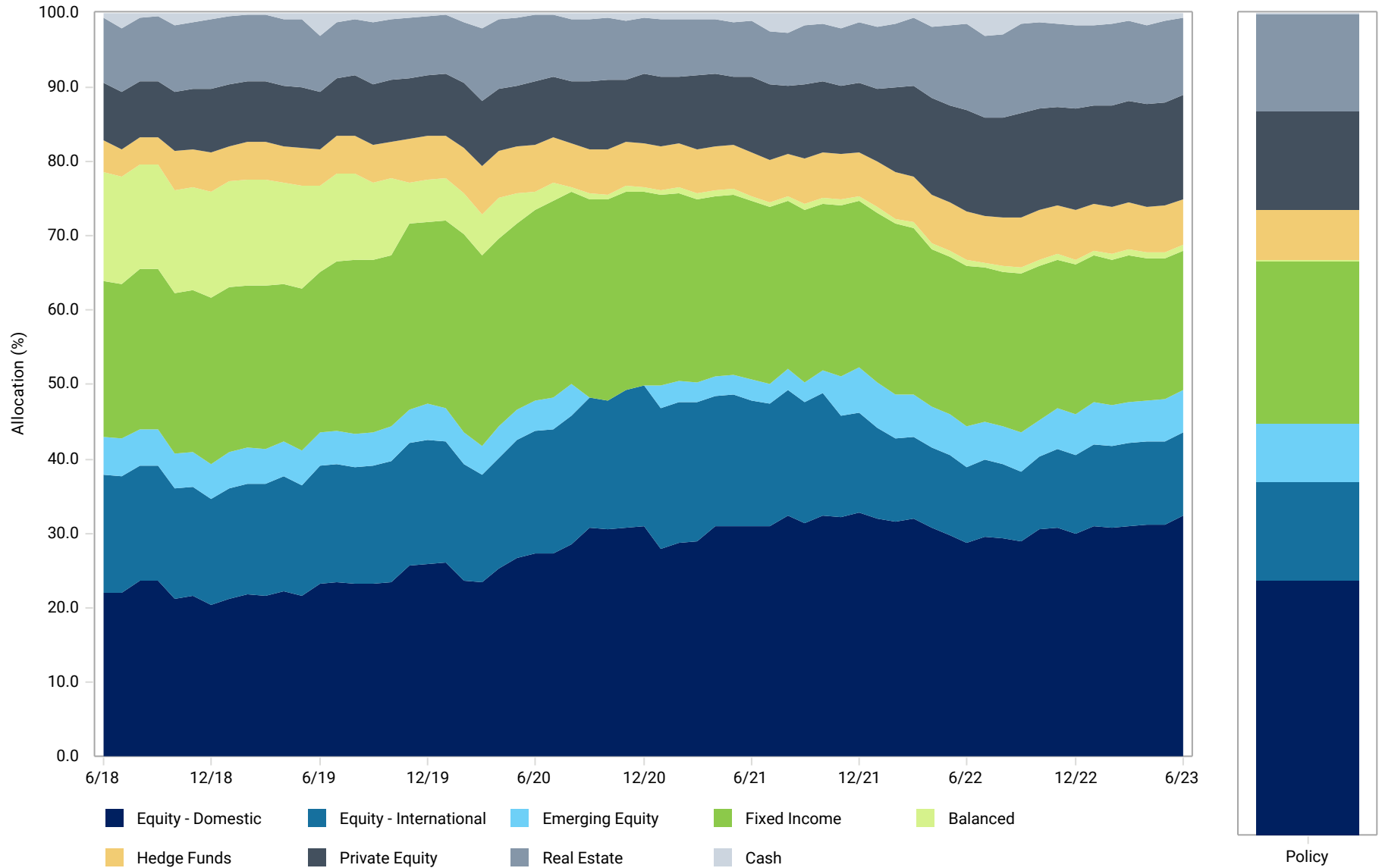
10 Years Ending June 30, 2023



	1 Quarter	Year To Date	1 Year	3 Years	5 Years	7 Years	10 Years
Beginning Market Value	648,212,374	629,983,324	630,236,151	558,856,818	530,589,542	446,720,089	367,797,405
Net Cash Flow	-6,902,888	-13,858,358	-13,948,367	-32,478,857	-49,382,210	-62,096,527	-49,383,881
Net Investment Change	14,345,373	39,529,893	39,367,074	129,276,898	174,447,527	271,031,298	337,241,336
Ending Market Value	655,654,859	655,654,859	655,654,859	655,654,859	655,654,859	655,654,859	655,654,859
Net Change	7,442,485	25,671,535	25,418,708	96,798,041	125,065,317	208,934,771	287,857,455

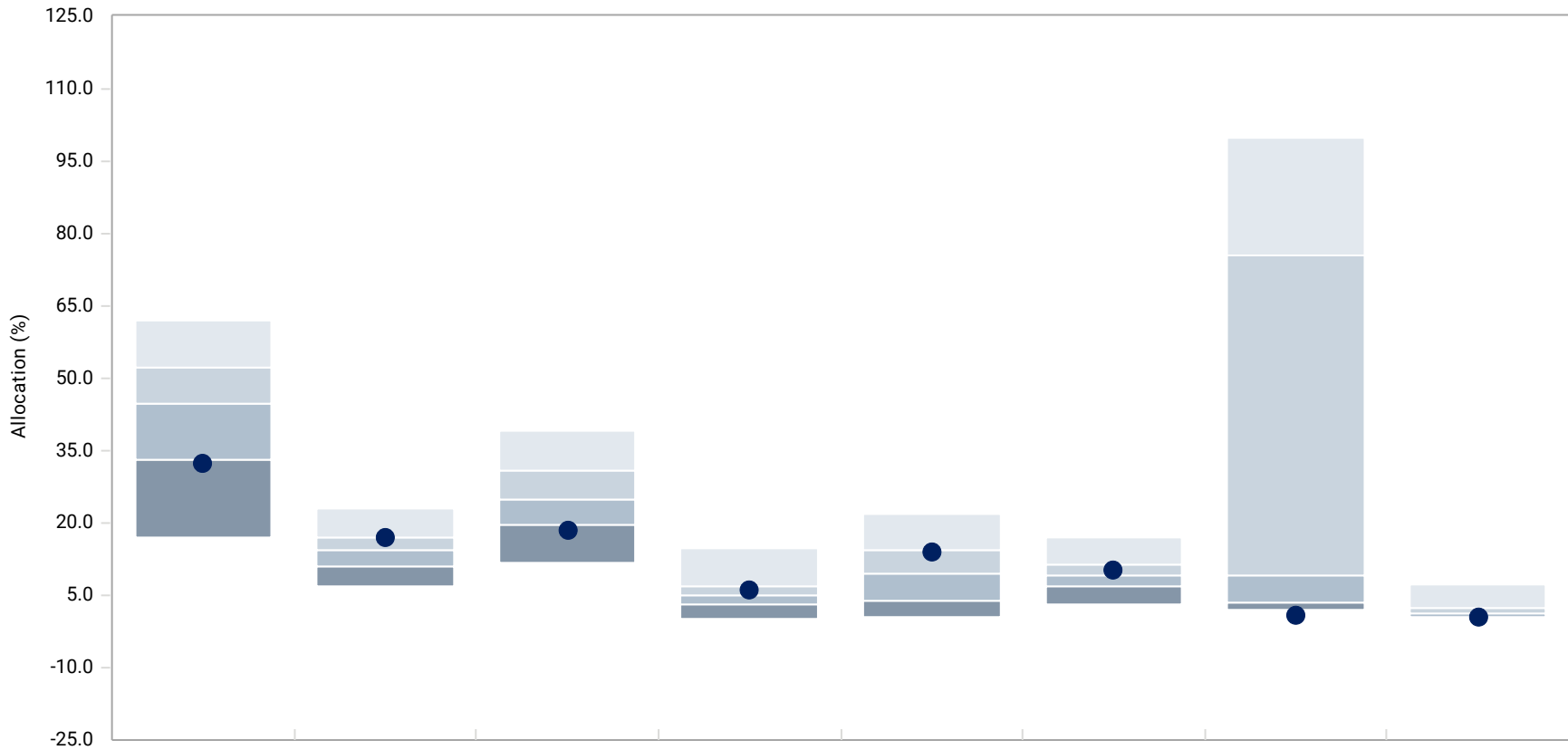
TOTAL FUND ASSET ALLOCATION HISTORY

Historical Asset Allocation



TOTAL FUND ALLOCATIONS VS. PEER UNIVERSE

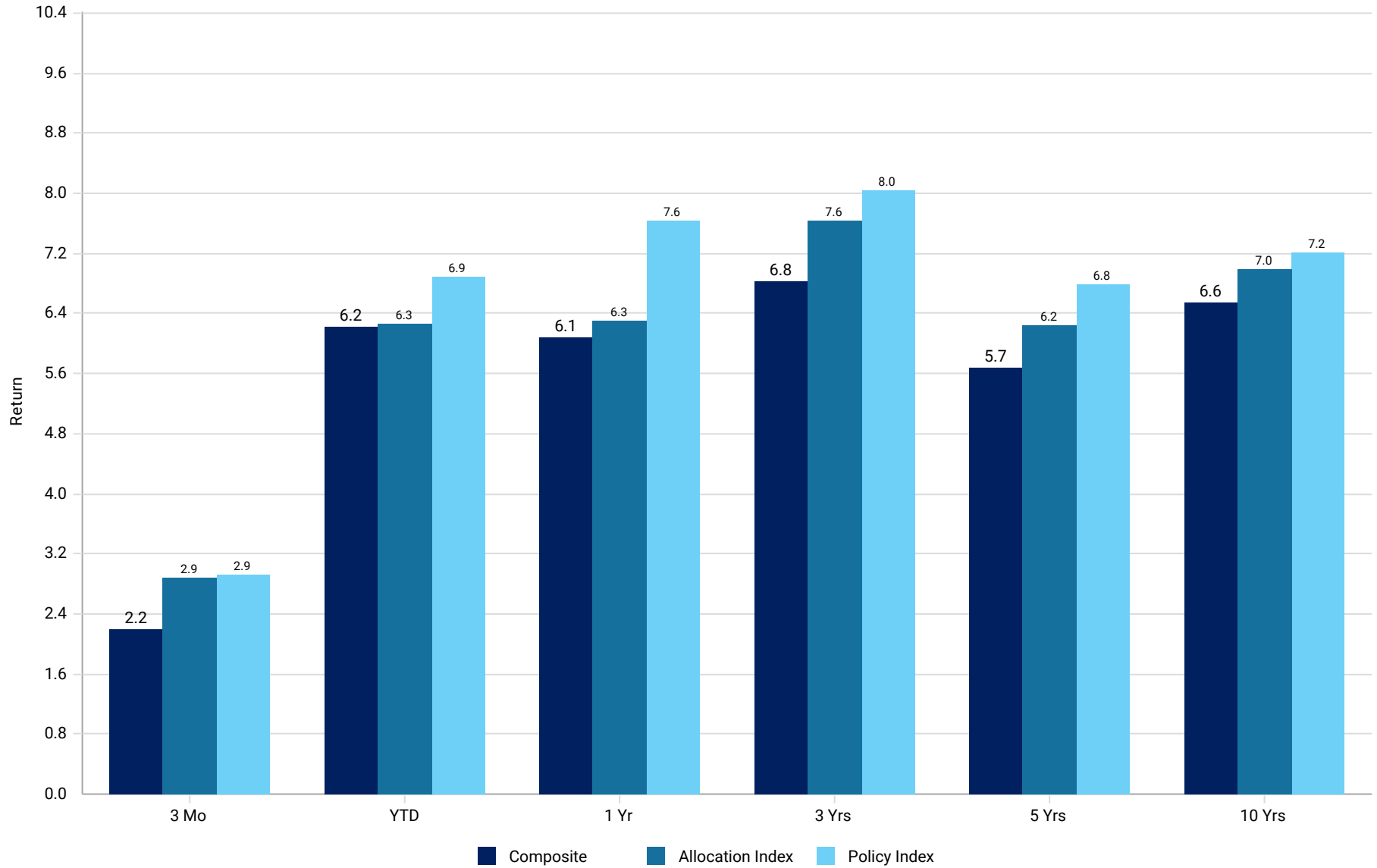
Total Fund Allocation vs. All Public DB Plans



	US Equity	Global ex-US Equity	Total Fixed Income	Hedge Funds	Private Equity	Real Estate - Private	Balanced	Cash & Equivalents
● Composite	32.3 (76)	17.0 (25)	18.6 (79)	6.2 (31)	14.0 (26)	10.4 (36)	0.8 (100)	0.5 (77)
5th Percentile	61.9	23.1	39.3	14.7	22.1	16.9	100.0	7.3
1st Quartile	52.1	16.9	30.9	7.0	14.4	11.6	75.4	2.3
Median	44.8	14.3	24.8	5.2	9.5	9.3	9.0	1.2
3rd Quartile	33.0	11.1	19.8	3.0	3.8	6.9	3.5	0.6
95th Percentile	17.1	6.8	11.9	0.1	0.5	3.3	1.9	0.1
Population	530	499	561	105	171	318	35	477

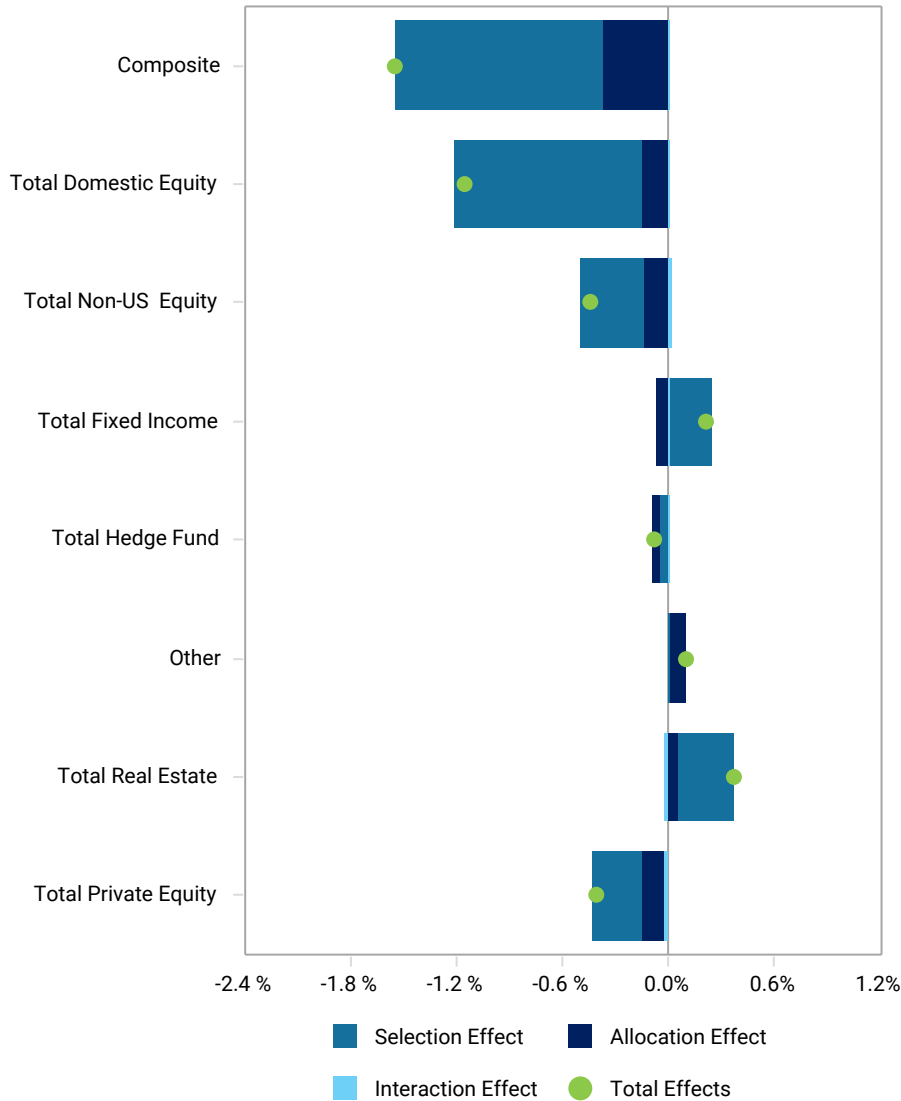
TOTAL FUND RETURN SUMMARY

Return Summary (net of fees)



TOTAL FUND ATTRIBUTION

Attribution Effects
1 Year Ending June 30, 2023



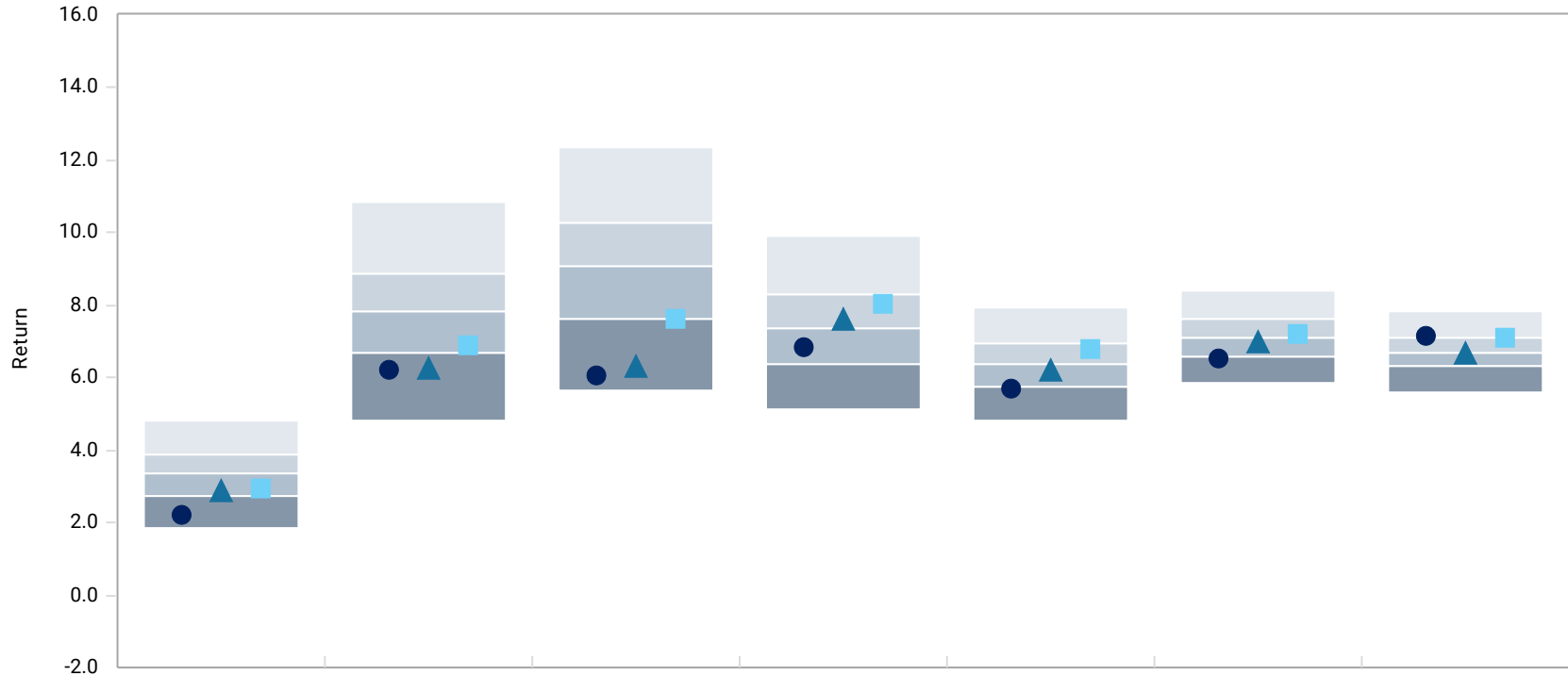
Attribution Summary
1 Year Ending June 30, 2023

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effects (%)
Total Domestic Equity	14.6	18.0	-3.4	-1.1	-0.1	0.0	-1.2
Total Non-US Equity	8.9	10.9	-2.0	-0.4	-0.1	0.0	-0.4
Total Fixed Income	0.7	-0.6	1.3	0.2	-0.1	0.0	0.2
Total Hedge Fund	3.2	3.7	-0.4	0.0	0.0	0.0	-0.1
Other	3.8	3.6	0.2	0.0	0.1	0.0	0.1
Total Real Estate	-4.0	-6.6	2.6	0.3	0.1	0.0	0.4
Total Private Equity	2.4	4.3	-1.9	-0.3	-0.1	0.0	-0.4
Composite	6.1	7.6	-1.6	-1.2	-0.4	0.0	-1.6

*Total Actual and Index returns are weighted average calculations.

TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Composite vs. All Public DB Plans

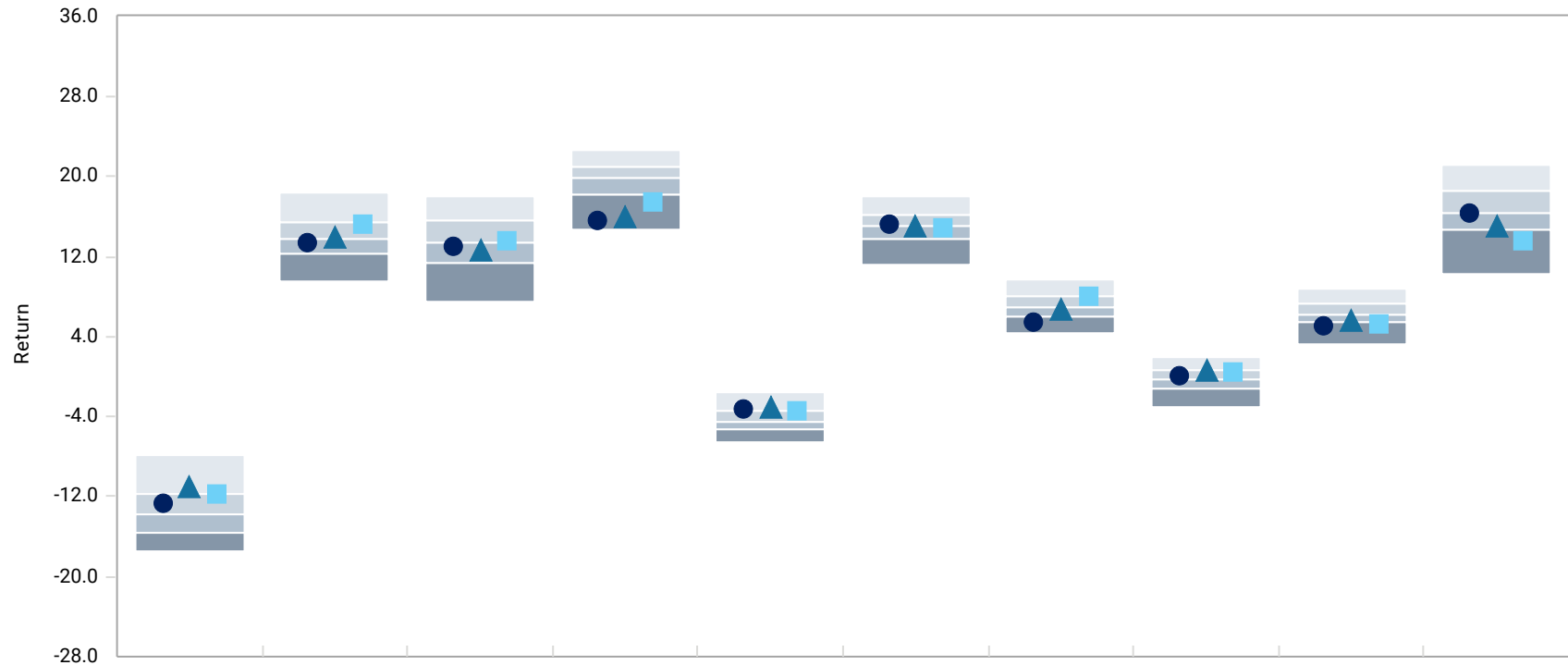


	3 Mo	YTD	1 Year	3 Years	5 Years	10 Years	20 Years
● Composite	2.2 (90)	6.2 (84)	6.1 (92)	6.8 (67)	5.7 (77)	6.6 (77)	7.1 (23)
▲ Allocation Index	2.9 (70)	6.3 (83)	6.3 (90)	7.6 (44)	6.2 (59)	7.0 (56)	6.7 (50)
■ Policy Index	2.9 (68)	6.9 (70)	7.6 (75)	8.0 (32)	6.8 (33)	7.2 (43)	7.1 (25)
5th Percentile	4.8	10.8	12.4	9.9	7.9	8.4	7.8
1st Quartile	3.9	8.9	10.3	8.3	7.0	7.6	7.1
Median	3.3	7.8	9.1	7.4	6.4	7.1	6.7
3rd Quartile	2.7	6.7	7.6	6.4	5.7	6.6	6.3
95th Percentile	1.9	4.8	5.6	5.1	4.8	5.9	5.6

Population	614	605	596	578	563	475	240
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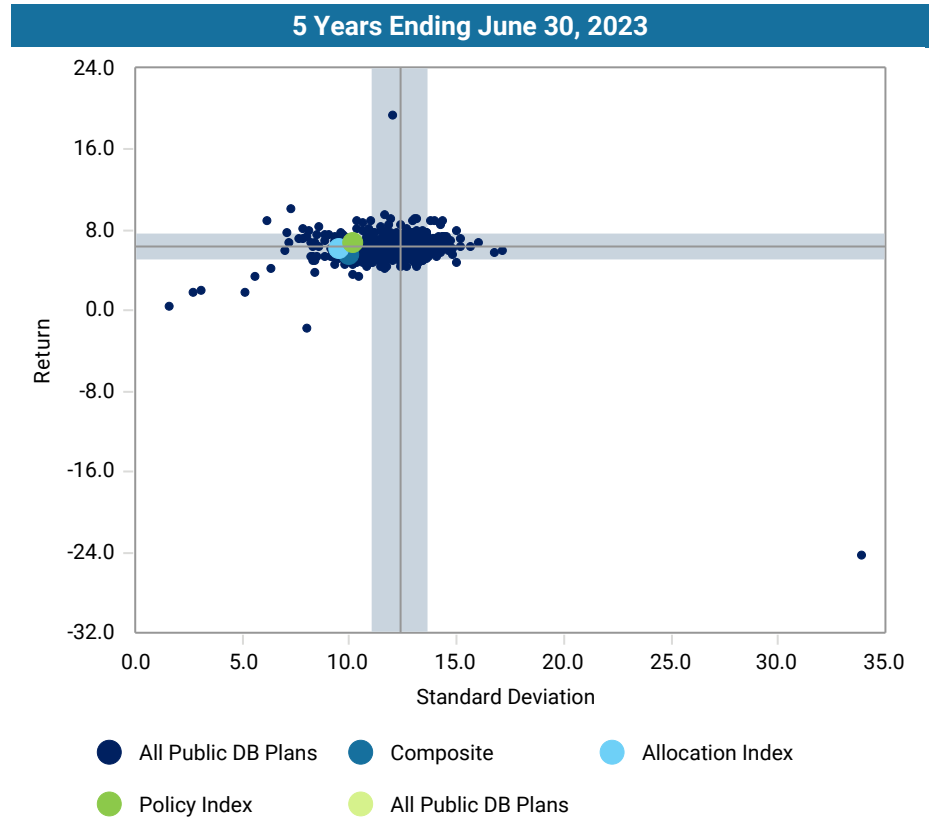
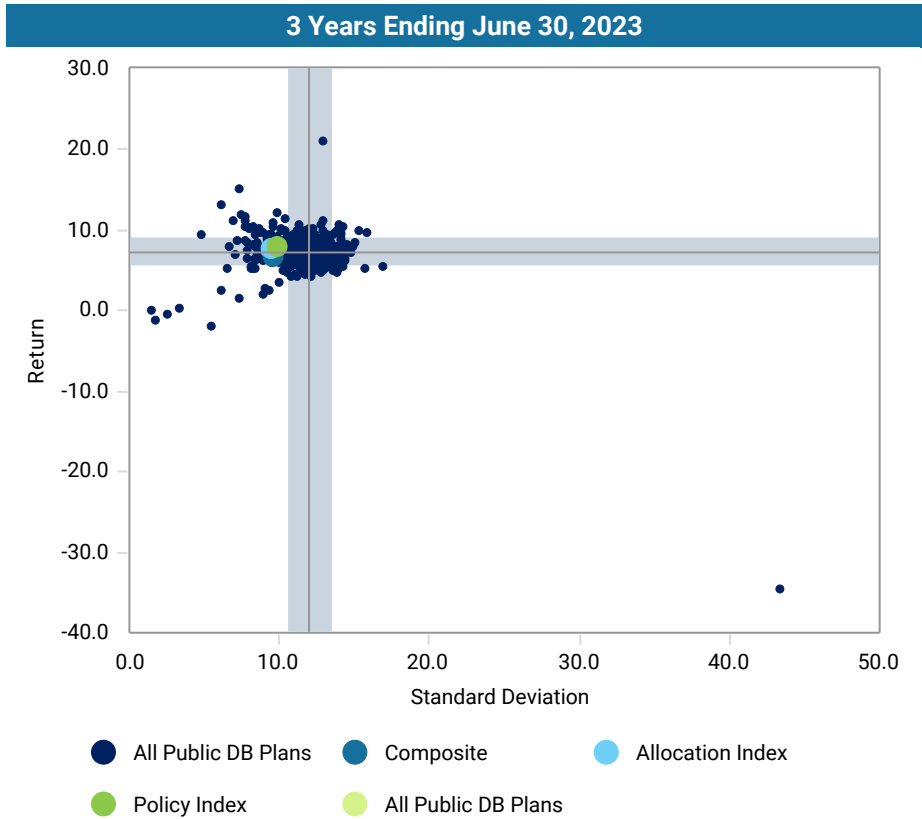
TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE

Composite vs. All Public DB Plans



	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
● Composite	-12.6 (35)	13.5 (55)	13.1 (54)	15.6 (92)	-3.2 (22)	15.3 (49)	5.5 (86)	0.1 (42)	5.0 (82)	16.3 (52)
▲ Allocation Index	-11.0 (17)	14.0 (46)	12.6 (59)	16.1 (90)	-3.0 (18)	15.1 (51)	6.8 (55)	0.6 (26)	5.6 (69)	15.2 (72)
■ Policy Index	-11.7 (24)	15.3 (29)	13.7 (47)	17.4 (83)	-3.3 (25)	14.8 (57)	8.0 (27)	0.6 (28)	5.2 (80)	13.6 (84)
5th Percentile	-7.8	18.4	18.0	22.6	-1.6	18.1	9.8	1.9	8.8	21.1
1st Quartile	-11.8	15.6	15.6	21.0	-3.4	16.2	8.1	0.6	7.3	18.6
Median	-13.8	13.8	13.3	19.9	-4.5	15.2	7.0	-0.2	6.3	16.5
3rd Quartile	-15.6	12.4	11.3	18.2	-5.3	13.8	6.1	-1.2	5.4	14.7
95th Percentile	-17.5	9.6	7.6	14.8	-6.5	11.3	4.3	-2.9	3.3	10.3
Population	775	939	989	736	727	710	704	652	624	610

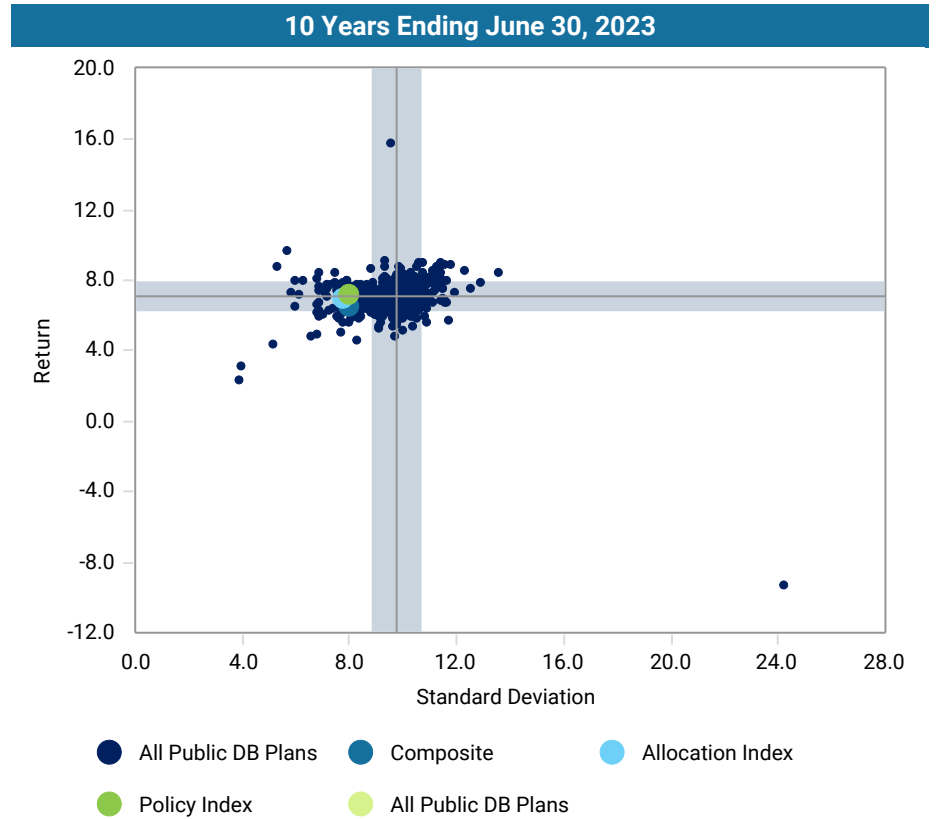
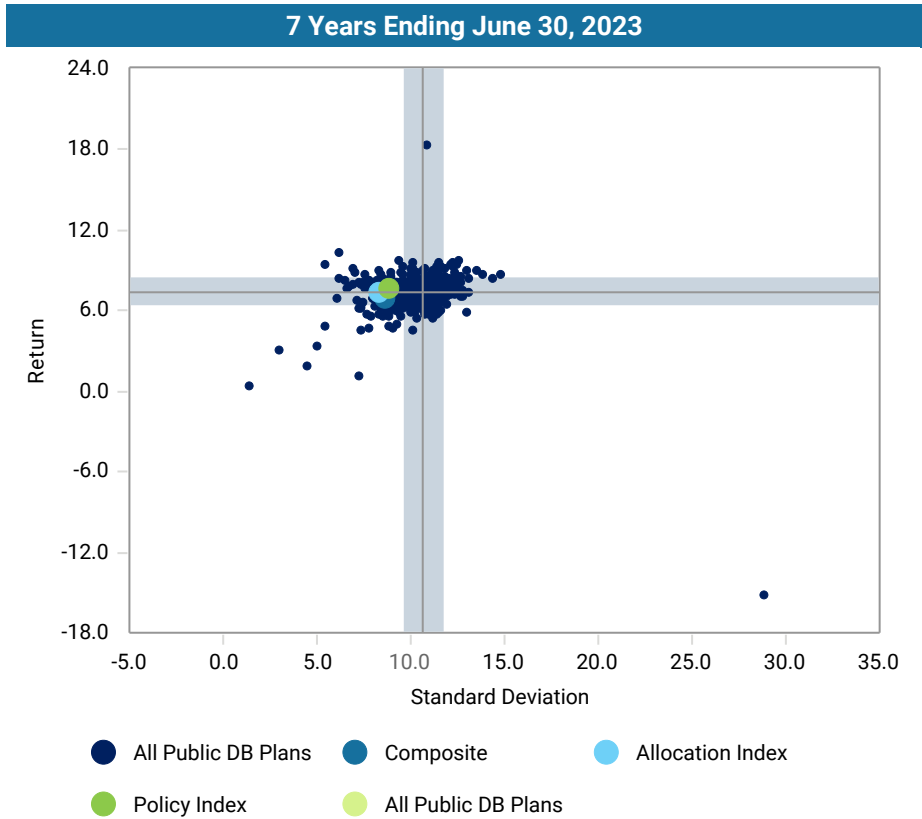
TOTAL FUND RISK/RETURN - 3 YEARS & 5 YEARS



3 Years Ending June 30, 2023			
	Return	Standard Deviation	Sharpe Ratio
Composite	6.8 (67)	9.6 (12)	0.6 (35)
Allocation Index	7.6 (44)	9.4 (11)	0.7 (17)
Policy Index	8.0 (32)	9.9 (15)	0.7 (16)
Population	578	578	578

5 Years Ending June 30, 2023			
	Return	Standard Deviation	Sharpe Ratio
Composite	5.7 (77)	9.9 (11)	0.4 (44)
Allocation Index	6.2 (59)	9.5 (8)	0.5 (16)
Policy Index	6.8 (33)	10.2 (13)	0.5 (13)
Population	563	563	563

TOTAL FUND RISK/RETURN - 7 YEARS & 10 YEARS



7 Years Ending June 30, 2023			
	Return	Standard Deviation	Sharpe Ratio
Composite	7.0 (69)	8.6 (11)	0.7 (23)
Allocation Index	7.3 (56)	8.3 (8)	0.7 (11)
Policy Index	7.7 (37)	8.8 (12)	0.7 (11)
Population	543	543	543

10 Years Ending June 30, 2023			
	Return	Standard Deviation	Sharpe Ratio
Composite	6.6 (77)	8.0 (11)	0.7 (24)
Allocation Index	7.0 (56)	7.8 (9)	0.8 (11)
Policy Index	7.2 (43)	8.0 (11)	0.8 (10)
Population	475	475	475

TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)								Inception Date
	Market Value (\$)	% of Portfolio	Policy(%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)		
Composite	655,654,859	100.0	100.0	2.2 (90)	6.2 (84)	6.1 (92)	6.8 (67)	5.7 (77)	6.6 (77)	6.7 (93)	Jan-86	
Allocation Index				2.9 (70)	6.3 (83)	6.3 (90)	7.6 (44)	6.2 (59)	7.0 (56)			
Policy Index				2.9 (68)	6.9 (70)	7.6 (75)	8.0 (32)	6.8 (33)	7.2 (43)			
All Public DB Plans Median				3.3	7.8	9.1	7.4	6.4	7.1	7.9		
Total Balanced	5,180,105	0.8	0.0	2.8	6.6	5.7	9.5	5.8	5.1	4.8	Dec-10	
PRIT Core Fund	5,180,105	0.8	0.0	2.8	6.6	5.7	9.6	7.3	8.0	6.9	Apr-99	
60% S&P 500 / 40% Bloomberg Aggregate				4.9	10.8	11.2	7.1	7.9	8.5	6.2		
Total Domestic Equity	212,026,202	32.3	31.0	5.8 (45)	12.0 (42)	14.6 (55)	11.2 (69)	9.8 (39)	11.1 (39)	7.5 (73)	May-99	
Russell 3000 Index				8.4 (24)	16.2 (25)	19.0 (30)	13.9 (46)	11.4 (23)	12.3 (23)	7.3 (78)		
eV All US Equity Median				5.4	10.0	15.4	13.6	8.7	10.3	8.5		
Large Cap	165,191,219	25.2	24.0	6.5 (60)	13.2 (47)	14.9 (62)	10.6 (87)	11.0 (50)	11.8 (50)	12.3 (49)	Dec-10	
eV US Large Cap Core Equity Median				7.3	12.9	16.6	13.4	10.9	11.7	12.3		
Rhumblin Advisors S&P 500 Index Fund	70,156,588	10.7	10.0	8.7 (23)	16.8 (21)	19.5 (25)	14.5 (28)	12.2 (23)	12.8 (18)	9.0 (52)	Apr-97	
S&P 500 Index				8.7 (23)	16.9 (21)	19.6 (24)	14.6 (27)	12.3 (22)	12.9 (16)	9.0 (53)		
eV US Large Cap Core Equity Median				7.3	12.9	16.6	13.4	10.9	11.7	9.1		
Coho Relative Value Equity	48,599,487	7.4	7.0	0.2 (96)	-0.8 (95)	6.0 (92)	9.6 (98)	8.4 (53)		9.8 (75)	Mar-16	
Russell 1000 Value Index				4.1 (45)	5.1 (45)	11.5 (51)	14.3 (58)	8.1 (63)		10.2 (62)		
eV US Large Cap Value Equity Median				3.9	4.5	11.6	14.7	8.5		10.7		
Polen Focused Growth	46,435,144	7.1	7.0	10.5 (62)	26.1 (48)	18.4 (83)	5.3 (93)	11.4 (66)		13.6 (74)	Feb-16	
Russell 1000 Growth Index				12.8 (34)	29.0 (30)	27.1 (26)	13.7 (17)	15.1 (9)		17.0 (9)		
eV US Large Cap Growth Equity Median				11.6	25.6	24.2	10.5	12.3		14.4		
Small Cap	46,834,983	7.1	7.0	3.4 (56)	7.7 (32)	13.5 (40)	13.3 (87)	6.5 (28)	9.5 (22)	10.8 (17)	Dec-10	
eV US Small Cap Value Equity Median				3.8	5.6	11.2	16.9	5.6	8.2	9.6		
Loomis Sayles Small Cap Growth	23,330,353	3.6	3.5	4.7 (68)	9.5 (77)	18.9 (29)	8.4 (42)	7.2 (53)	10.6 (42)	6.7 (99)	Jan-97	
Russell 2000 Growth Index				7.1 (25)	13.6 (36)	18.5 (30)	6.1 (61)	4.2 (89)	8.8 (89)	6.7 (99)		
eV US Small Cap Growth Equity Median				5.5	12.6	16.1	7.4	7.5	10.3	9.4		
Mesirow Small Cap Value Equity CIT - Founders Class	23,504,630	3.6	3.5	2.2 (74)						2.2 (74)	Apr-23	
Russell 2000 Value Index				3.2 (62)						3.2 (62)		
eV US Small Cap Value Equity Median				3.8						3.8		

Since inception return is 8.3% gross of fees. Prior to 1999, performance history does not capture separate net and gross returns.

In November 2019, Loomis Sayles and Schroders transitioned from a mutual fund to a CIT structure. Performance prior to the transition to the CIT investment vehicle is linked to mutual fund performance history.

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TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)								
	Market Value (\$)	% of Portfolio	Policy(%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
Total Non-US Equity	111,766,563	17.0	19.0	1.3 (80)	9.4 (69)	8.9 (90)	3.0 (85)	1.2 (92)	3.5 (95)	3.9 (99)	Mar-99	
<i>eV All ACWI ex-US Equity Median</i>				2.7	10.8	14.8	7.4	4.0	5.7	6.2		
International Equity	74,091,339	11.3	12.0	1.4 (74)	11.8 (38)	14.5 (67)	5.4 (83)	3.2 (64)	4.7 (82)	3.6 (95)	Sep-05	
<i>eV All EAFE Equity Median</i>				2.6	10.9	16.6	8.6	3.9	5.6	5.0		
SEG Baxter Street	31,092,801	4.7	5.0	1.6 (76)	10.7 (52)	11.8 (77)	3.0 (85)	3.9 (54)		6.5 (49)	May-16	
<i>MSCI AC World ex USA (Net)</i>				2.4 (56)	9.5 (67)	12.7 (69)	7.2 (54)	3.5 (63)		5.7 (70)		
<i>eV All ACWI ex-US Equity Median</i>				2.7	10.8	14.8	7.4	4.0		6.4		
Schroder International Alpha Trust Class 1	28,787,264	4.4	4.0	1.9 (70)	12.3 (34)	17.5 (28)	9.5 (32)	6.7 (10)	6.8 (24)	6.6 (30)	Mar-12	
<i>MSCI AC World ex USA (Net)</i>				2.4 (56)	9.5 (67)	12.7 (69)	7.2 (54)	3.5 (63)	4.7 (84)	4.5 (88)		
<i>eV All ACWI ex-US Equity Median</i>				2.7	10.8	14.8	7.4	4.0	5.7	5.8		
Baillie Gifford International Growth Fund Class K	14,211,274	2.2	3.0	0.1 (93)	13.4 (22)	14.6 (53)				-7.2 (98)	Oct-20	
<i>MSCI AC World ex USA (Net)</i>				2.4 (56)	9.5 (67)	12.7 (69)				5.5 (49)		
<i>eV All ACWI ex-US Equity Median</i>				2.7	10.8	14.8				5.5		
Emerging Markets Equity	37,675,224	5.7	7.0	1.0 (69)	4.6 (83)	-1.2 (92)				-13.4 (84)	Mar-21	
<i>eV Emg Mkts Equity Median</i>				2.2	7.1	6.1				-7.9		
Axiom Emerging Markets Trust Class 2	17,998,282	2.7	7.0	-1.4 (95)	2.3 (93)	-6.9 (99)				-16.4 (96)	Mar-21	
<i>MSCI Emerging Markets (Net)</i>				0.9 (72)	4.9 (77)	1.7 (79)				-9.8 (61)		
<i>eV Emg Mkts Equity Median</i>				2.2	7.1	6.1				-7.9		
ABS Emerging Markets MA Fund	19,676,942	3.0		3.2 (35)	6.6 (56)	4.3 (63)				-10.6 (68)	Dec-21	
<i>MSCI Emerging Markets (Net)</i>				0.9 (72)	4.9 (77)	1.7 (79)				-9.5 (61)		
<i>eV Emg Mkts Equity Median</i>				2.2	7.1	6.1				-7.9		

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TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fixed Income	122,059,636	18.6	20.0	-0.6 (33)	2.7 (19)	0.7 (8)	-1.5 (2)	1.9 (2)	2.7 (2)	5.6 (1)	Mar-99
<i>eV US Core Fixed Inc Median</i>				-0.7	2.3	-0.5	-3.6	1.0	1.7	4.1	
Garcia Hamilton Fixed Income Aggregate	32,382,721	4.9	6.0	-1.4 (98)	2.1 (69)	-1.8 (98)	-3.6 (52)	0.6 (91)		0.6 (80)	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.8 (72)	2.1 (74)	-0.9 (75)	-4.0 (85)	0.8 (78)		0.7 (77)	
<i>eV US Core Fixed Inc Median</i>				-0.7	2.3	-0.5	-3.6	1.0		0.9	
Lord Abbett Core Fixed Income	35,070,098	5.3	4.0	-0.9 (76)	2.4 (44)	-0.9 (69)	-3.3 (31)	1.0 (59)		0.9 (60)	Apr-18
<i>Blmbg. U.S. Aggregate Index</i>				-0.8 (72)	2.1 (74)	-0.9 (75)	-4.0 (85)	0.8 (78)		0.7 (77)	
<i>eV US Core Fixed Inc Median</i>				-0.7	2.3	-0.5	-3.6	1.0		0.9	
Loomis Sayles Multisector Full Discretion Trust	45,054,669	6.9	8.0	-0.5 (26)	2.7 (11)	1.9 (2)	-1.4 (2)	2.3 (1)	3.3 (1)	6.7 (1)	Mar-99
<i>Blmbg. U.S. Aggregate Index</i>				-0.8 (72)	2.1 (74)	-0.9 (75)	-4.0 (85)	0.8 (78)	1.5 (78)	3.9 (75)	
<i>Blmbg. U.S. Corp: High Yield Index</i>				1.7 (1)	5.4 (1)	9.1 (1)	3.1 (1)	3.4 (1)	4.4 (1)	6.1 (1)	
<i>eV US Core Fixed Inc Median</i>				-0.7	2.3	-0.5	-3.6	1.0	1.7	4.1	
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	9,536,836	1.5	2.0	2.6 (1)	5.3 (1)	8.8 (1)	4.6 (1)			3.3 (1)	Aug-19
<i>Credit Suisse Leveraged Loan</i>				3.1 (1)	6.3 (1)	10.1 (1)	6.2 (1)			3.9 (1)	
<i>eV US Core Fixed Inc Median</i>				-0.7	2.3	-0.5	-3.6			-0.7	
Invesco Mortgage Recovery Loans Feeder Fund	15,311	0.0		0.0 (11)	-0.1 (100)	0.1 (52)	-0.2 (6)	0.9 (81)	5.8 (1)	9.6 (1)	Apr-10
<i>Blmbg. U.S. Aggregate Index</i>				-0.8 (80)	2.1 (87)	-0.9 (84)	-4.0 (95)	0.8 (90)	1.5 (97)	2.2 (98)	
<i>eV US Core Plus Fixed Inc Median</i>				-0.5	2.6	0.2	-2.9	1.3	2.1	3.0	
Total Hedge Fund	40,922,150	6.2	6.0	1.1	3.1	3.2	5.9	3.8	3.4	3.4	Oct-06
PRIM Portfolio Completion Strategies	13,494,948	2.1		1.9	3.5	4.4	6.5	3.2	4.0	3.8	Oct-06
Corbin Pinehurst Partners	13,140,244	2.0		1.7	4.4	6.5	5.4			4.7	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				1.5	2.3	3.7	5.0			4.2	
UBS Neutral Alpha Strategies	14,232,225	2.2		0.0	1.5	4.3	7.5			6.2	Nov-18
<i>HFRI Fund of Funds Composite Index</i>				1.5	2.3	3.7	5.0			4.2	
Entrust Peru Wind Down	54,734	0.0		-1.3	-17.3	-92.6	-58.1	-42.1		-38.9	Dec-17
<i>HFRI Fund of Funds Composite Index</i>				1.5	2.3	3.7	5.0	3.3		3.3	
Other	3,532,355	0.5	0.0	1.4	2.4	3.8	1.3	1.6	1.1	0.9	Dec-10
Cash Account	3,532,355	0.5		1.4	2.4	3.8	1.3	1.6	1.1	1.8	Feb-00
<i>90 Day U.S. Treasury Bill</i>				1.2	2.3	3.6	1.3	1.6	1.0	1.7	

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TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Real Estate	68,423,517	10.4	12.0	-1.2	-2.1	-4.0	10.6	8.6	9.9	8.1	Apr-99
<i>NCREIF Property Index</i>											
Morgan Stanley Prime Property (\$2.8m commitment in '95)	25,082,213	3.8		-2.0	-3.8	-6.6	6.8	5.9	7.8	8.4	
TA Realty Core Property Fund, LP (\$15m commitment in '19)	25,752,509	3.9		-1.2	-1.9	-6.1	13.0	6.8	9.3	8.5	Sep-95
Invesco Mortgage Recovery II (\$3M commitment in '15)	858,992	0.1		0.0	-3.6	-22.8	-26.3	-13.2		-4.7	Oct-15
Landmark VI (\$2m commitment in '11)	5,866	0.0		-0.7	-9.3	-13.4	-7.7	-10.3	-1.8	1.3	Jul-11
Landmark VIII (\$4m commitment in '17)	2,168,367	0.3		1.6	1.3	3.5	20.5	12.9		17.7	Nov-17
StepStone Real Estate Fund II (\$2m commitment in '11)	362,477	0.1		0.0	1.6	-2.0	0.2	-2.3	3.6	1.9	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	479,669	0.1		3.9	1.7	12.4	21.1	15.8	14.9	14.6	May-13
TA Realty Fund X LP (\$3.5m commitment in '12)	682	0.0		-29.7	-30.7	-22.5	-6.4	-0.5	5.0	4.8	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,622,319	0.2		0.0	0.7	18.6	9.6	9.0		10.7	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,623,884	0.6		0.0	-1.2	2.6	9.2	9.8		9.5	Nov-17
TerraCap Partners V, LP (\$8m commitment in '22)	8,466,539	1.3		0.0	-0.5	5.4				8.5	Jun-22
Total Private Equity and Debt	91,744,330	14.0	12.0	2.0	3.6	2.4	21.1	13.5	14.3	10.3	Apr-99
<i>CIA US All PE</i>											
				0.0	2.4	4.3	20.4	14.8	14.3	13.0	
<i>NASDAQ W/O Income</i>											
				12.8	31.7	25.0	11.1	12.9	15.0	7.4	
PRIM Vintage Year 2008 (\$3m commitment in '08)	874,648	0.1		5.7	15.0	9.1	27.6	15.5	18.8	10.5	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	63,552	0.0		0.6	-8.5	-24.6	36.5	26.4	23.9	13.0	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	410,054	0.1		-12.6	-8.9	-24.5	18.8	12.8	16.6	9.7	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	779,750	0.1		2.9	0.9	-6.4	33.1	22.7	22.1	9.6	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	470,703	0.1		2.8	2.1	-12.7	14.1	12.3	13.2	-8.8	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,101,432	0.3		0.9	0.8	-3.2	26.0	21.1		8.1	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	2,586,598	0.4		2.0	3.9	1.6	30.2	18.3		15.6	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	4,103,595	0.6		1.5	1.0	-3.9	18.6			14.4	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	3,548,280	0.5		1.8	4.1	-5.2				0.7	Dec-20
PRIM Vintage Year 2022 (\$7.5m commitment in '22)	1,569,831	0.2		2.2	3.2	0.1				-2.2	Apr-22
PRIM Vintage Year 2023 (\$10m commitment in '23)	212,049	0.0								-0.3	May-23
Alcentra European DLF (\$5m commitment in '14)	208,684	0.0		0.0	4.9	6.8	27.8	13.6		11.9	Jan-15
Ascent Fund IV-B (\$1m commitment in '16)	20,394	0.0		0.0	-0.6	-49.4	-30.6	-29.7		-21.9	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,269,470	0.2		0.0	0.6	-5.9	2.9	-1.9	2.2	3.8	Oct-08
Ascent VI (\$3m commitment in '15)	3,249,972	0.5		0.0	-0.2	-9.3	2.7	0.1		1.0	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	5,030,865	0.8		0.0	1.9	6.1	11.2	6.5		6.3	Dec-17
Invesco Fund VI (\$5m commitment in '13)	603,938	0.1		0.0	-21.5	-39.7	8.5	8.7	11.9	11.9	Jul-13

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TOTAL FUND PERFORMANCE DETAIL (NET)

	Allocation			Performance (%)							
	Market Value (\$)	% of Portfolio	Policy(%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Kayne Energy Fund VII (\$5m commitment in '15)	2,711,638	0.4		3.7	-5.1	-20.0	23.7	-18.0		-4.7	Jan-16
Foundry 2007 (\$3m commitment in '07)	205,925	0.0		-0.3	-0.6	-57.5	3.2	-14.2	2.3	12.8	Dec-07
Foundry 2010 (\$3m commitment in '10)	5,882,837	0.9		0.0	-0.3	-2.8	34.4	20.4	13.4	13.5	Feb-11
Foundry 2010 Annex (\$0.4m commitment in '15)	1,100,130	0.2		0.0	0.0	-1.3	89.5	54.7		38.8	Sep-15
Pinebridge PEP V (\$6m commitment in '07)	439,074	0.1		0.0	0.4	-7.8	5.1	3.4	7.6	7.4	Dec-10
Pinebridge (AIG) PEP V Asia (\$.55m commitment)	31,731	0.0		0.0	0.0	-6.4	-8.8			-13.2	Oct-18
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)	88,883	0.0		0.0	0.1	-15.5	13.2			5.1	Oct-18
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)	17,219	0.0		0.0	5.3	-3.6	-14.3			106.3	Oct-18
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)	83,015	0.0		0.0	2.0	0.5	8.5			7.9	Oct-18
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)	67,760	0.0		0.0	-1.0	-11.8	-2.6			-5.7	Oct-18
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)	20,143	0.0		0.0	-4.2	-15.9	-13.4	-14.4		-11.3	Jan-17
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)	91,163	0.0		0.0	1.8	3.0	7.7			14.3	Oct-18
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)	39,160	0.0		0.0	-1.8	-16.8	-3.3			-6.2	Oct-18
Landmark XV (\$3m commitment in '13)	619,449	0.1		-0.8	-2.1	-19.3	9.3	4.2		9.8	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	2,252,064	0.3		27.1	27.9	34.9	42.3	42.8		39.2	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	4,606,965	0.7		0.0	7.5	9.9	20.3	22.8		19.4	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,806,289	0.4		0.0	2.5	6.8	7.2	8.2		6.9	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	1,568,254	0.2		0.0	5.2	10.8	12.3			11.7	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	6,909,762	1.1		0.0	1.5	2.5	29.6			52.9	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	7,635,026	1.2		0.0	1.2	3.5	28.8			28.8	Jul-20
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)	12,377,930	1.9		0.0	1.9	-0.6				2.6	Nov-21
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)	4,107,601	0.6		0.0	4.6	1.1					Jan-22
JFL Equity Investors V, L.P. (\$9m commitment in '20)	11,417,570	1.7		9.6	14.6	32.3				10.6	Sep-20

NOTES

- 1 - Results for periods longer than one year are annualized.
- 2 - Total Balances, Large Cap, Small Cap, and Other Composite performance starts 12/1/2010.
- 3 - Preliminary Total Composite net of fee since inception return is 6.7% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.3% for the current month.
- 5 - Targets, Allocation Index, and Policy Index have been updated to reflect new allocation of 02/01/2022.
- 6 - Policy Index changed from Nasdaq to Cambridge All PE to reflect as of 5/1/2012.
- 7 - Policy Index Consists of: 24% S&P 500, 7% Russell 2000, 12% MSCI ACWI IMI, 7% MSCI Emerging Markets, 12% Bloomberg US Aggregate TR, 8% Bloomberg US Universal TR, 6% HFRI Fund of Funds Composite Index, 12% NCREIF Property Index, 12% CJA US All PE.
- 8 - Allocation index consists of: Weighted index of underlying managers to their respective benchmark.
- 9 - All Private Market managers are final as of 3/31/23, except for Cerberus IREP III which is final as of 6/30/23.

DISCLAIMER

Information Disclaimer

- Past performance is no guarantee of future results.
- All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.
- NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.
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Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.
- Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.
- For managers funded in the middle of a month, the "since inception" return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.
- This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.



QUARTERLY PERFORMANCE REPORT

MWRA Employees' Retirement System

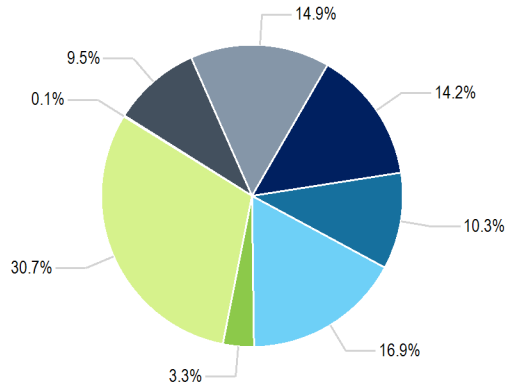
March 31, 2023



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

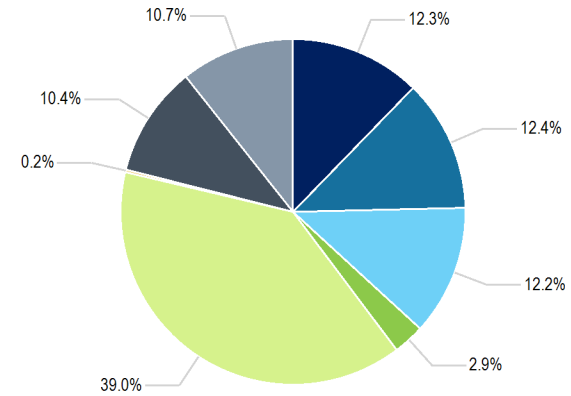
MWRA Employees' Retirement System ANALYSIS BY STRATEGY

Private Markets Valuation by Strategy



■ Buyout
 ■ Distressed
 ■ Fund of Funds
 ■ Secondaries
 ■ Venture Capital
■ Co-Investments
 ■ Energy
 ■ Growth Equity

Private Markets Fund Exposure by Strategy



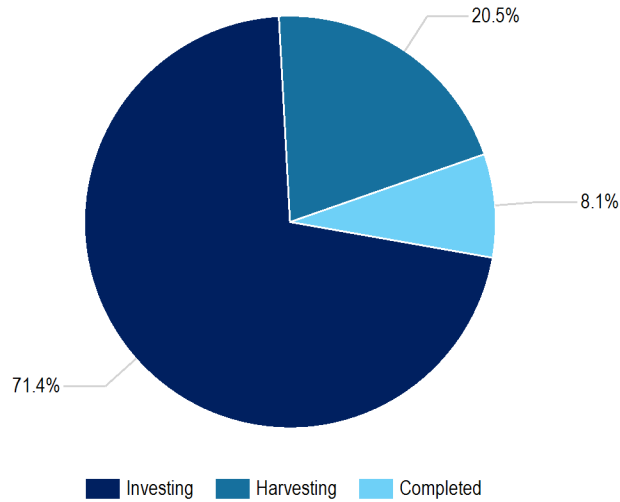
■ Buyout
 ■ Distressed
 ■ Fund of Funds
 ■ Secondaries
 ■ Venture Capital
■ Co-Investments
 ■ Energy
 ■ Growth Equity

Investment Strategy	Investments			Commitments			Contributions & Distributions			Valuations				Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI	IRR			
Total Buyout	\$18,385,304	\$2,731,164	0.85	\$15,654,140	\$122,604	\$17,310,926	\$11,184,440	\$28,495,366	\$12,718,622	\$13,915,604	1.10	1.81	15.10%			
Total Co-Investments	\$12,900,000	\$5,901,485	0.54	\$6,998,515	\$46,833	\$3,375,610	\$8,129,065	\$11,504,675	\$4,459,327	\$14,030,550	0.48	1.63	12.23%			
Total Distressed	\$12,000,000	\$491,768	0.96	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	\$13,814,920	0.00	1.14	12.14%			
Total Energy	\$5,000,000	\$709,658	0.86	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	\$3,323,686	0.27	0.88	-2.76%			
Total Fund of Funds	\$46,000,000	\$20,031,795	0.56	\$25,968,205	\$217,107	\$28,413,080	\$24,170,319	\$52,583,400	\$26,398,087	\$44,202,114	1.09	2.01	16.27%			
Total Growth Equity	\$900,000	\$185,690	0.79	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	\$276,853	1.80	1.93	9.66%			
Total Secondaries	\$12,600,000	\$4,325,539	0.66	\$8,274,461	\$14,362	\$5,254,614	\$7,447,707	\$12,702,321	\$4,413,498	\$11,773,246	0.63	1.53	16.57%			
Total Venture Capital	\$20,123,012	\$356,279	0.98	\$19,766,733	\$64,437	\$27,193,119	\$11,767,716	\$38,960,836	\$19,129,666	\$12,123,996	1.37	1.96	12.13%			
Total	\$127,908,316	\$34,733,379	0.73	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	\$113,460,970	0.90	1.73	13.41%			

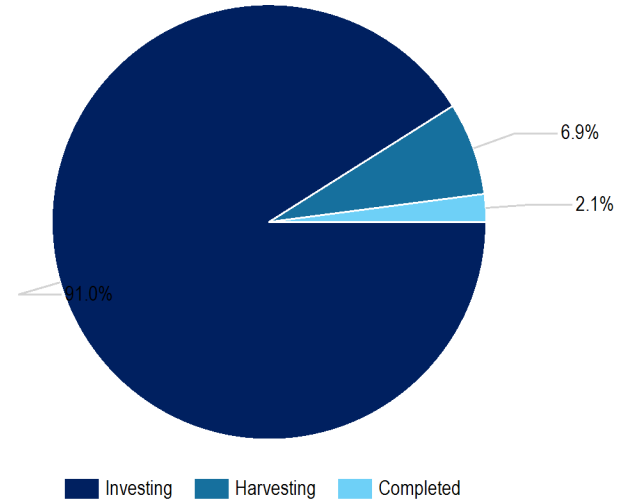


MWRA Employees' Retirement System ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Unfunded Commitment by Lifecycle



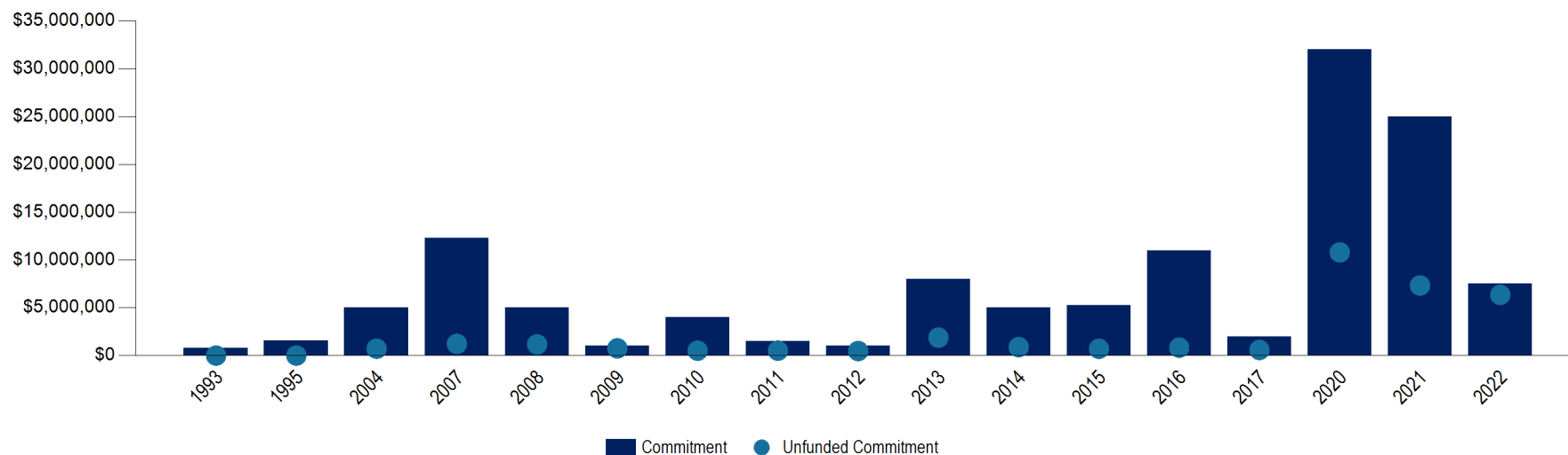
Lifecycle	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing	\$91,268,205	\$31,622,981	0.65	\$59,645,224	\$174,452	\$30,562,091	\$65,292,518	\$95,854,608	\$36,034,932	0.51	1.60	17.72%
Total Harvesting	\$26,265,304	\$2,393,164	0.91	\$23,872,140	\$167,216	\$43,044,355	\$13,435,074	\$56,479,428	\$32,440,072	1.79	2.35	17.92%
Total Completed	\$10,374,807	\$717,234	0.93	\$9,657,573	\$283,694	\$10,352,801	\$0	\$10,352,801	\$411,534	1.04	1.04	1.12%
Total	\$127,908,316	\$34,733,379	0.73	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



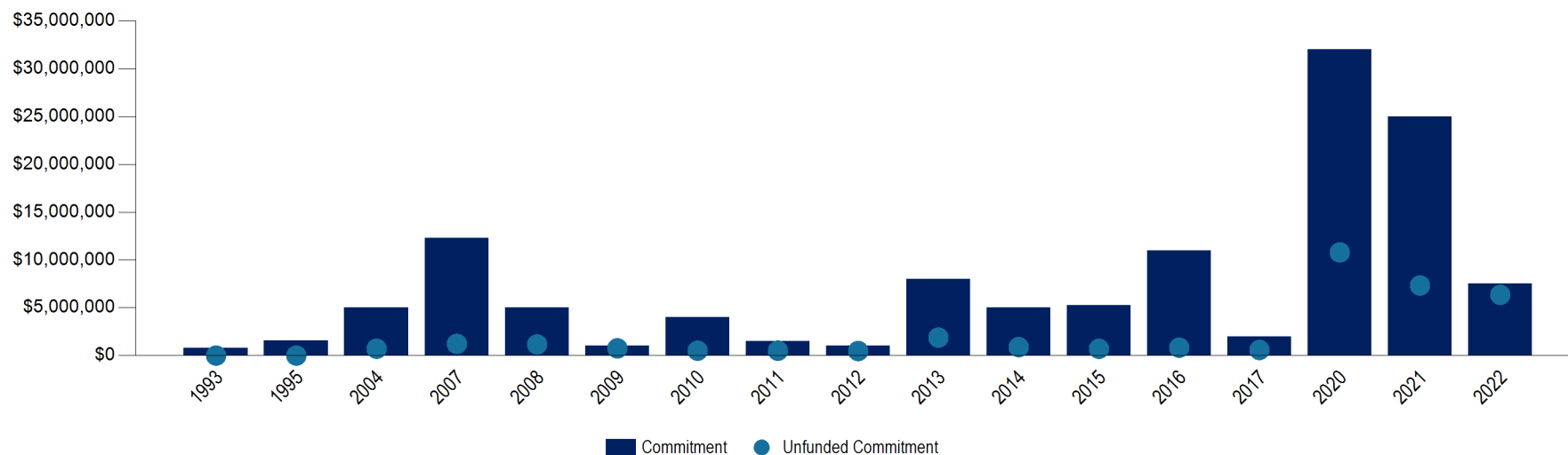
Vintage Year	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 1993	\$800,000	\$0	1.00	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Total 1995	\$1,574,807	\$0	1.00	\$1,574,807	\$0	\$3,116,593	\$0	\$3,116,593	\$1,541,786	1.98	1.98	13.46%
Total 2004	\$5,000,000	\$717,234	0.86	\$4,282,766	\$232,198	\$5,184,010	\$0	\$5,184,010	\$669,046	1.15	1.15	2.13%
Total 2007	\$12,265,304	\$1,222,905	0.90	\$11,042,399	\$158,583	\$22,683,422	\$645,565	\$23,328,987	\$12,128,004	2.03	2.08	14.27%
Total 2008	\$5,000,000	\$1,166,681	0.77	\$3,833,319	\$2,212	\$5,745,568	\$2,134,724	\$7,880,293	\$4,044,761	1.50	2.05	11.80%
Total 2009	\$1,000,000	\$756,252	0.24	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%
Total 2010	\$4,000,000	\$511,645	0.87	\$3,488,355	\$180	\$4,448,862	\$6,351,116	\$10,799,978	\$7,311,443	1.28	3.10	14.77%
Total 2011	\$1,500,000	\$512,774	0.66	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
Total 2012	\$1,000,000	\$478,328	0.52	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
Total 2013	\$8,000,000	\$1,877,803	0.77	\$6,122,197	-\$9,117	\$15,483,066	\$1,228,603	\$16,711,669	\$10,598,589	2.53	2.73	19.28%
Total 2014	\$5,000,000	\$888,458	0.82	\$4,111,542	\$0	\$1,517,712	\$5,367,500	\$6,885,212	\$2,773,671	0.37	1.67	10.85%
Total 2015	\$5,268,205	\$709,658	0.87	\$4,558,547	-\$40,917	\$1,551,955	\$3,714,341	\$5,266,296	\$748,666	0.34	1.17	3.44%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Vintage Year	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 2016	\$11,000,000	\$827,605	0.92	\$10,172,395	\$83,313	\$16,895,513	\$6,916,460	\$23,811,973	\$13,556,265	1.65	2.32	27.98%
Total 2017	\$2,000,000	\$584,496	0.71	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
Total 2020	\$32,000,000	\$10,795,564	0.66	\$21,204,436	-\$11,619	\$2,167,992	\$27,682,290	\$29,850,282	\$8,657,465	0.10	1.41	23.08%
Total 2021	\$25,000,000	\$7,331,903	0.71	\$17,668,097	\$210,190	\$0	\$19,544,134	\$19,544,134	\$1,665,847	0.00	1.09	9.26%
Total 2022	\$7,500,000	\$6,352,073	0.15	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Total	\$127,908,316	\$34,733,379	0.73	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



APPENDIX

MWRA Employees' Retirement System

March 31, 2023



MWRA Employees' Retirement System

RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
AIG PEP V Asia, L.P.	2007	\$549,557	-0.02%	-0.02%	-11.31%	-4.94%	-15.34%	-0.84%	1.19%	6.47%	0.78	MSCI ACWI
AIG PEP V Co-Investment, L.P.	2007	\$900,000	0.13%	0.13%	-7.79%	17.06%	0.42%	10.75%	0.95%	7.94%	0.65	MSCI ACWI
AIG PEP V Europe, L.P.	2007	\$1,612,186	5.34%	5.34%	-11.27%	208.40%	5.57%	12.55%	2.31%	6.15%	0.80	MSCI ACWI
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	1.97%	1.97%	-2.81%	38.67%	13.60%	13.86%	7.59%	-0.45%	1.26	MSCI ACWI
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-0.99%	-0.99%	-27.43%	18.66%	-1.89%	17.86%	10.93%	8.71%	1.13	MSCI ACWI
AIG PEP V Secondary, L.P.	2007	\$600,000	-4.23%	-4.23%	-18.79%	-14.03%	-15.36%	1.77%	6.42%	9.17%	0.89	MSCI ACWI
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	1.84%	1.84%	0.91%	28.39%	15.93%	13.99%	9.66%		1.41	MSCI ACWI
AIG PEP V US Venture, L.P.	2007	\$480,000	-1.81%	-1.81%	-19.08%	6.31%	0.12%	21.39%	12.96%		1.58	MSCI ACWI
Ascent Venture Partners II, L.P.	1995	\$774,807							26.71%			
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	-0.64%	-0.64%	-46.77%	-42.60%	-28.65%		-4.31%	6.60%	0.73	MSCI ACWI
Ascent Venture Partners IV, L.P.	2004	\$2,000,000							-27.17%	7.76%	0.13	MSCI ACWI
Ascent Venture Partners V, L.P.	2008	\$2,000,000	0.57%	0.57%	-13.44%	4.00%	-1.27%	4.20%	6.38%	8.86%	0.85	MSCI ACWI
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	-0.24%	-0.24%	-5.05%	2.17%	1.15%		2.17%	7.82%	0.75	MSCI ACWI
Boston Capital Venture Fund III, L.P.	1993	\$800,000							8.87%			
Castile Ventures III, L.P.	2007	\$3,000,000							-36.97%	6.52%	0.27	MSCI ACWI
Dover Street X, L.P.	2020	\$9,000,000	1.50%	1.50%	0.73%	28.60%			37.14%	3.83%	1.50	MSCI ACWI
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	-0.28%	-0.28%	-57.32%	1.71%	0.47%	45.29%	42.74%	9.42%	3.63	MSCI ACWI
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	-0.02%	-0.02%	-1.30%	93.96%	65.94%		34.76%	11.36%	3.32	MSCI ACWI
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	-0.35%	-0.35%	-1.36%	37.49%	21.66%	12.98%	14.27%	9.19%	1.49	MSCI ACWI
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	1.20%	1.20%	3.36%				26.43%	1.54%	1.43	MSCI ACWI
HarbourVest Partners Co-Investment Fund VI L.P.	2021	\$8,000,000	5.55%	5.55%	7.07%				7.95%	10.10%	0.99	MSCI ACWI
Invesco Fund IV, L.P.	2004	\$3,000,000							10.33%		1.36	MSCI ACWI
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	-21.51%	-21.51%	-48.75%	72.23%	30.62%		20.62%	13.54%	1.67	MSCI ACWI
Ironsides Co-Investment Fund VI, LP	2021	\$12,000,000	1.86%	1.86%	1.66%				12.14%	-5.97%	1.20	MSCI ACWI
JFL Equity Investors IV, L.P.	2016	\$6,000,000	0.66%	0.66%	15.71%	45.39%	48.15%		37.88%	20.98%	1.80	MSCI ACWI
JFL Equity Investors V, L.P.	2020	\$9,000,000	4.61%	4.61%	24.25%				15.72%	0.94%	1.26	MSCI ACWI
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	-8.52%	-8.52%	-14.76%	22.54%	-12.31%		-2.76%	9.41%	0.68	MSCI ACWI
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	-1.32%	-1.32%	-12.20%	10.38%	9.34%		11.82%	8.43%	1.09	MSCI ACWI
Mass PRIM AIVY 2008	2008	\$3,000,000	8.82%	8.82%	3.62%	15.30%	12.71%	19.31%	17.39%	10.25%	1.48	MSCI ACWI
Mass PRIM AIVY 2009	2009	\$1,000,000	-9.05%	-9.05%	-27.90%	54.94%	44.02%	23.27%	20.73%	11.14%	1.79	MSCI ACWI



MWRA Employees' Retirement System

RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
Mass PRIM AIVY 2010	2010	\$1,000,000	4.24%	4.24%	-26.21%	31.66%	18.10%	19.60%	17.91%	9.90%	1.65	MSCI ACWI
Mass PRIM AIVY 2011	2011	\$1,500,000	-1.97%	-1.97%	-12.87%	33.50%	22.79%	21.73%	20.34%	10.35%	1.79	MSCI ACWI
Mass PRIM AIVY 2012	2012	\$1,000,000	-0.58%	-0.58%	-24.54%	17.28%	14.50%	17.75%	17.60%	8.94%	1.59	MSCI ACWI
Mass PRIM AIVY 2014	2014	\$2,000,000	-0.14%	-0.14%	-8.33%	22.72%	22.92%		23.45%	9.69%	1.94	MSCI ACWI
Mass PRIM AIVY 2017	2017	\$2,000,000	1.91%	1.91%	-0.84%	24.25%	21.52%		23.00%	7.11%	1.59	MSCI ACWI
Mass PRIM AIVY 2020	2020	\$5,000,000	-0.46%	-0.46%	-4.76%	9.67%			9.67%	-1.14%	1.15	MSCI ACWI
Mass PRIM AIVY 2021	2021	\$5,000,000	2.31%	2.31%	-5.17%				-1.33%	-3.63%	1.02	MSCI ACWI
Mass PRIM AIVY 2022	2022	\$7,500,000	0.97%	0.97%	10.02%				9.38%	8.68%	1.00	MSCI ACWI
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	7.47%	7.47%	8.43%	26.22%	24.67%		22.68%	9.18%	1.54	MSCI ACWI
Ticonderoga Concord Partners III, L.P.	1995	\$800,000							-8.06%			
Total		\$127,908,316	1.39%	1.39%	-0.01%	26.45%	17.37%	16.59%	13.41%			



MWRA Employees' Retirement System

ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
AIG PEP V Asia, L.P.	2007	\$549,557	\$116,665	\$432,892	\$11,622	\$446,362	\$31,731	\$478,093	\$33,579	1.00	1.08	1.19%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$88,883	\$974,069	\$63,948	0.97	1.07	0.95%
AIG PEP V Europe, L.P.	2007	\$1,612,186	\$526,852	\$1,085,334	\$25,194	\$1,292,083	\$17,219	\$1,309,302	\$198,774	1.16	1.18	2.31%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$125,336	\$594,664	-\$11,616	\$935,635	\$83,015	\$1,018,650	\$435,602	1.60	1.75	7.59%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-\$42,778	\$546,339	\$28,158	\$1,036,752	\$67,760	\$1,104,512	\$530,015	1.80	1.92	10.93%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$181,881	\$418,119	\$17,277	\$572,819	\$20,143	\$592,962	\$157,566	1.32	1.36	6.42%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$185,690	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	1.80	1.93	9.66%
AIG PEP V US Venture, L.P.	2007	\$480,000	\$61,615	\$418,385	\$12,941	\$857,246	\$39,160	\$896,406	\$465,080	1.99	2.08	12.96%
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$804,995	\$20,394	\$825,389	-\$142,446	0.83	0.85	-4.31%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$339,208	\$0	\$339,208	-\$1,660,792	0.17	0.17	-27.17%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,822,712	\$1,269,470	\$3,092,183	\$1,152,183	0.94	1.59	6.38%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$90,000	\$2,910,000	\$0	\$0	\$3,249,972	\$3,249,972	\$339,972	0.00	1.12	2.17%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Dover Street X, L.P.	2020	\$9,000,000	\$3,307,500	\$5,692,500	\$6,202	\$2,146,438	\$6,802,899	\$8,949,337	\$3,250,635	0.38	1.57	37.14%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,537,348	\$206,491	\$14,743,839	\$11,788,839	4.92	4.99	42.74%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$407,252	\$1,100,313	\$1,507,565	\$1,239,360	1.52	5.62	34.76%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$3,255,566	\$5,881,916	\$9,137,482	\$6,204,982	1.11	3.12	14.27%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$4,036,882	\$4,963,118	-\$17,882	\$0	\$7,783,871	\$7,783,871	\$2,838,635	0.00	1.57	26.43%
HarbourVest Partners Co-Investment Fund VI L.P.	2021	\$8,000,000	\$5,200,000	\$2,800,000	\$0	\$0	\$2,907,601	\$2,907,601	\$107,601	0.00	1.04	7.95%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,844,802	\$0	\$4,844,802	\$2,329,837	1.93	1.93	10.33%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$12,947,709	\$603,938	\$13,551,647	\$9,593,292	3.27	3.42	20.62%
Ironsides Co-Investment Fund VI, LP	2021	\$12,000,000	\$491,768	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	0.00	1.14	12.14%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$116,600	\$5,883,400	\$69,246	\$13,600,094	\$1,763,485	\$15,363,579	\$9,410,933	2.28	2.58	37.88%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$1,888,489	\$7,111,511	\$0	\$0	\$9,221,230	\$9,221,230	\$2,109,719	0.00	1.30	15.72%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$709,658	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	0.27	0.88	-2.76%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$836,158	\$2,163,842	-\$9,117	\$2,535,357	\$624,665	\$3,160,022	\$1,005,297	1.18	1.47	11.82%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,922,856	\$865,254	\$4,788,110	\$2,892,578	2.07	2.53	17.39%
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,252	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%



MWRA Employees' Retirement System

ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Mass PRIM AIVY 2010	2010	\$1,000,000	\$444,145	\$555,855	\$180	\$1,193,297	\$469,200	\$1,662,496	\$1,106,461	2.15	2.99	17.91%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$512,774	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
Mass PRIM AIVY 2012	2012	\$1,000,000	\$478,328	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$798,458	\$1,201,542	\$0	\$1,517,712	\$2,117,528	\$3,635,240	\$2,433,698	1.26	3.03	23.45%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$584,496	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$1,562,693	\$3,437,307	\$61	\$21,554	\$3,874,290	\$3,895,844	\$458,476	0.01	1.13	9.67%
Mass PRIM AIVY 2021	2021	\$5,000,000	\$1,640,135	\$3,359,865	\$0	\$0	\$3,313,381	\$3,313,381	-\$46,484	0.00	0.99	-1.33%
Mass PRIM AIVY 2022	2022	\$7,500,000	\$6,352,073	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$678,841	\$3,321,159	\$14,068	\$2,490,424	\$5,132,581	\$7,623,005	\$4,287,778	0.75	2.29	22.68%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
Total		\$127,908,316	\$34,733,379	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



MWRA Employees' Retirement System

ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Investing												
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$804,995	\$20,394	\$825,389	-\$142,446	0.83	0.85	-4.31%
Dover Street X, L.P.	2020	\$9,000,000	\$3,307,500	\$5,692,500	\$6,202	\$2,146,438	\$6,802,899	\$8,949,337	\$3,250,635	0.38	1.57	37.14%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$407,252	\$1,100,313	\$1,507,565	\$1,239,360	1.52	5.62	34.76%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$4,036,882	\$4,963,118	-\$17,882	\$0	\$7,783,871	\$7,783,871	\$2,838,635	0.00	1.57	26.43%
HarbourVest Partners Co-Investment Fund VI L.P.	2021	\$8,000,000	\$5,200,000	\$2,800,000	\$0	\$0	\$2,907,601	\$2,907,601	\$107,601	0.00	1.04	7.95%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$12,947,709	\$603,938	\$13,551,647	\$9,593,292	3.27	3.42	20.62%
Ironsides Co-Investment Fund VI, LP	2021	\$12,000,000	\$491,768	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	0.00	1.14	12.14%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$1,888,489	\$7,111,511	\$0	\$0	\$9,221,230	\$9,221,230	\$2,109,719	0.00	1.30	15.72%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$709,658	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	0.27	0.88	-2.76%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,922,856	\$865,254	\$4,788,110	\$2,892,578	2.07	2.53	17.39%
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,252	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$444,145	\$555,855	\$180	\$1,193,297	\$469,200	\$1,662,496	\$1,106,461	2.15	2.99	17.91%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$512,774	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
Mass PRIM AIVY 2012	2012	\$1,000,000	\$478,328	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$798,458	\$1,201,542	\$0	\$1,517,712	\$2,117,528	\$3,635,240	\$2,433,698	1.26	3.03	23.45%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$584,496	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$1,562,693	\$3,437,307	\$61	\$21,554	\$3,874,290	\$3,895,844	\$458,476	0.01	1.13	9.67%
Mass PRIM AIVY 2021	2021	\$5,000,000	\$1,640,135	\$3,359,865	\$0	\$0	\$3,313,381	\$3,313,381	-\$46,484	0.00	0.99	-1.33%
Mass PRIM AIVY 2022	2022	\$7,500,000	\$6,352,073	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$678,841	\$3,321,159	\$14,068	\$2,490,424	\$5,132,581	\$7,623,005	\$4,287,778	0.75	2.29	22.68%
Total Investing		\$91,268,205	\$31,622,981	\$59,645,224	\$174,452	\$30,562,091	\$65,292,518	\$95,854,608	\$36,034,932	0.51	1.60	17.72%
Harvesting												
AIG PEP V Asia, L.P.	2007	\$549,557	\$116,665	\$432,892	\$11,622	\$446,362	\$31,731	\$478,093	\$33,579	1.00	1.08	1.19%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$88,883	\$974,069	\$63,948	0.97	1.07	0.95%
AIG PEP V Europe, L.P.	2007	\$1,612,186	\$526,852	\$1,085,334	\$25,194	\$1,292,083	\$17,219	\$1,309,302	\$198,774	1.16	1.18	2.31%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$125,336	\$594,664	-\$11,616	\$935,635	\$83,015	\$1,018,650	\$435,602	1.60	1.75	7.59%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-\$42,778	\$546,339	\$28,158	\$1,036,752	\$67,760	\$1,104,512	\$530,015	1.80	1.92	10.93%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$181,881	\$418,119	\$17,277	\$572,819	\$20,143	\$592,962	\$157,566	1.32	1.36	6.42%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$185,690	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	1.80	1.93	9.66%
AIG PEP V US Venture, L.P.	2007	\$480,000	\$61,615	\$418,385	\$12,941	\$857,246	\$39,160	\$896,406	\$465,080	1.99	2.08	12.96%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,822,712	\$1,269,470	\$3,092,183	\$1,152,183	0.94	1.59	6.38%



MWRA Employees' Retirement System

ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$90,000	\$2,910,000	\$0	\$0	\$3,249,972	\$3,249,972	\$339,972	0.00	1.12	2.17%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,537,348	\$206,491	\$14,743,839	\$11,788,839	4.92	4.99	42.74%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$3,255,566	\$5,881,916	\$9,137,482	\$6,204,982	1.11	3.12	14.27%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$116,600	\$5,883,400	\$69,246	\$13,600,094	\$1,763,485	\$15,363,579	\$9,410,933	2.28	2.58	37.88%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$836,158	\$2,163,842	-\$9,117	\$2,535,357	\$624,665	\$3,160,022	\$1,005,297	1.18	1.47	11.82%
Total Harvesting		\$26,265,304	\$2,393,164	\$23,872,140	\$167,216	\$43,044,355	\$13,435,074	\$56,479,428	\$32,440,072	1.79	2.35	17.92%
Completed												
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$339,208	\$0	\$339,208	-\$1,660,792	0.17	0.17	-27.17%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,844,802	\$0	\$4,844,802	\$2,329,837	1.93	1.93	10.33%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
Total Completed		\$10,374,807	\$717,234	\$9,657,573	\$283,694	\$10,352,801	\$0	\$10,352,801	\$411,534	1.04	1.04	1.12%
Total		\$127,908,316	\$34,733,379	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
1993												
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Total 1993		\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
1995												
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
Total 1995		\$1,574,807	\$0	\$1,574,807	\$0	\$3,116,593	\$0	\$3,116,593	\$1,541,786	1.98	1.98	13.46%
2004												
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$339,208	\$0	\$339,208	-\$1,660,792	0.17	0.17	-27.17%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,844,802	\$0	\$4,844,802	\$2,329,837	1.93	1.93	10.33%
Total 2004		\$5,000,000	\$717,234	\$4,282,766	\$232,198	\$5,184,010	\$0	\$5,184,010	\$669,046	1.15	1.15	2.13%
2007												
AIG PEP V Asia, L.P.	2007	\$549,557	\$116,665	\$432,892	\$11,622	\$446,362	\$31,731	\$478,093	\$33,579	1.00	1.08	1.19%
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$88,883	\$974,069	\$63,948	0.97	1.07	0.95%
AIG PEP V Europe, L.P.	2007	\$1,612,186	\$526,852	\$1,085,334	\$25,194	\$1,292,083	\$17,219	\$1,309,302	\$198,774	1.16	1.18	2.31%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$125,336	\$594,664	-\$11,616	\$935,635	\$83,015	\$1,018,650	\$435,602	1.60	1.75	7.59%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-\$42,778	\$546,339	\$28,158	\$1,036,752	\$67,760	\$1,104,512	\$530,015	1.80	1.92	10.93%
AIG PEP V Secondary, L.P.	2007	\$600,000	\$181,881	\$418,119	\$17,277	\$572,819	\$20,143	\$592,962	\$157,566	1.32	1.36	6.42%
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$185,690	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	1.80	1.93	9.66%
AIG PEP V US Venture, L.P.	2007	\$480,000	\$61,615	\$418,385	\$12,941	\$857,246	\$39,160	\$896,406	\$465,080	1.99	2.08	12.96%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,537,348	\$206,491	\$14,743,839	\$11,788,839	4.92	4.99	42.74%
Total 2007		\$12,265,304	\$1,222,905	\$11,042,399	\$158,583	\$22,683,422	\$645,565	\$23,328,987	\$12,128,004	2.03	2.08	14.27%
2008												
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,822,712	\$1,269,470	\$3,092,183	\$1,152,183	0.94	1.59	6.38%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,922,856	\$865,254	\$4,788,110	\$2,892,578	2.07	2.53	17.39%
Total 2008		\$5,000,000	\$1,166,681	\$3,833,319	\$2,212	\$5,745,568	\$2,134,724	\$7,880,293	\$4,044,761	1.50	2.05	11.80%
2009												
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,252	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%
Total 2009		\$1,000,000	\$756,252	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
2010												
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$3,255,566	\$5,881,916	\$9,137,482	\$6,204,982	1.11	3.12	14.27%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$444,145	\$555,855	\$180	\$1,193,297	\$469,200	\$1,662,496	\$1,106,461	2.15	2.99	17.91%
Total 2010		\$4,000,000	\$511,645	\$3,488,355	\$180	\$4,448,862	\$6,351,116	\$10,799,978	\$7,311,443	1.28	3.10	14.77%
2011												
Mass PRIM AIVY 2011	2011	\$1,500,000	\$512,774	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
Total 2011		\$1,500,000	\$512,774	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
2012												
Mass PRIM AIVY 2012	2012	\$1,000,000	\$478,328	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
Total 2012		\$1,000,000	\$478,328	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
2013												
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$12,947,709	\$603,938	\$13,551,647	\$9,593,292	3.27	3.42	20.62%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$836,158	\$2,163,842	-\$9,117	\$2,535,357	\$624,665	\$3,160,022	\$1,005,297	1.18	1.47	11.82%
Total 2013		\$8,000,000	\$1,877,803	\$6,122,197	-\$9,117	\$15,483,066	\$1,228,603	\$16,711,669	\$10,598,589	2.53	2.73	19.28%
2014												
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$90,000	\$2,910,000	\$0	\$0	\$3,249,972	\$3,249,972	\$339,972	0.00	1.12	2.17%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$798,458	\$1,201,542	\$0	\$1,517,712	\$2,117,528	\$3,635,240	\$2,433,698	1.26	3.03	23.45%
Total 2014		\$5,000,000	\$888,458	\$4,111,542	\$0	\$1,517,712	\$5,367,500	\$6,885,212	\$2,773,671	0.37	1.67	10.85%
2015												
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$407,252	\$1,100,313	\$1,507,565	\$1,239,360	1.52	5.62	34.76%
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$709,658	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	0.27	0.88	-2.76%
Total 2015		\$5,268,205	\$709,658	\$4,558,547	-\$40,917	\$1,551,955	\$3,714,341	\$5,266,296	\$748,666	0.34	1.17	3.44%
2016												
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$804,995	\$20,394	\$825,389	-\$142,446	0.83	0.85	-4.31%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$116,600	\$5,883,400	\$69,246	\$13,600,094	\$1,763,485	\$15,363,579	\$9,410,933	2.28	2.58	37.88%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$678,841	\$3,321,159	\$14,068	\$2,490,424	\$5,132,581	\$7,623,005	\$4,287,778	0.75	2.29	22.68%
Total 2016		\$11,000,000	\$827,605	\$10,172,395	\$83,313	\$16,895,513	\$6,916,460	\$23,811,973	\$13,556,265	1.65	2.32	27.98%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
2017												
Mass PRIM AIVY 2017	2017	\$2,000,000	\$584,496	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
Total 2017		\$2,000,000	\$584,496	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
2020												
Dover Street X, L.P.	2020	\$9,000,000	\$3,307,500	\$5,692,500	\$6,202	\$2,146,438	\$6,802,899	\$8,949,337	\$3,250,635	0.38	1.57	37.14%
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$4,036,882	\$4,963,118	-\$17,882	\$0	\$7,783,871	\$7,783,871	\$2,838,635	0.00	1.57	26.43%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$1,888,489	\$7,111,511	\$0	\$0	\$9,221,230	\$9,221,230	\$2,109,719	0.00	1.30	15.72%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$1,562,693	\$3,437,307	\$61	\$21,554	\$3,874,290	\$3,895,844	\$458,476	0.01	1.13	9.67%
Total 2020		\$32,000,000	\$10,795,564	\$21,204,436	-\$11,619	\$2,167,992	\$27,682,290	\$29,850,282	\$8,657,465	0.10	1.41	23.08%
2021												
HarbourVest Partners Co-Investment Fund VI L.P.	2021	\$8,000,000	\$5,200,000	\$2,800,000	\$0	\$0	\$2,907,601	\$2,907,601	\$107,601	0.00	1.04	7.95%
Ironsides Co-Investment Fund VI, LP	2021	\$12,000,000	\$491,768	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	0.00	1.14	12.14%
Mass PRIM AIVY 2021	2021	\$5,000,000	\$1,640,135	\$3,359,865	\$0	\$0	\$3,313,381	\$3,313,381	-\$46,484	0.00	0.99	-1.33%
Total 2021		\$25,000,000	\$7,331,903	\$17,668,097	\$210,190	\$0	\$19,544,134	\$19,544,134	\$1,665,847	0.00	1.09	9.26%
2022												
Mass PRIM AIVY 2022	2022	\$7,500,000	\$6,352,073	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Total 2022		\$7,500,000	\$6,352,073	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Total		\$127,908,316	\$34,733,379	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



MWRA Employees' Retirement System

ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Buyout												
AIG PEP V Asia, L.P.	2007	\$549,557	\$116,665	\$432,892	\$11,622	\$446,362	\$31,731	\$478,093	\$33,579	1.00	1.08	1.19%
AIG PEP V Europe, L.P.	2007	\$1,612,186	\$526,852	\$1,085,334	\$25,194	\$1,292,083	\$17,219	\$1,309,302	\$198,774	1.16	1.18	2.31%
AIG PEP V Large Market U.S. Buyout, L.P.	2007	\$720,000	\$125,336	\$594,664	-\$11,616	\$935,635	\$83,015	\$1,018,650	\$435,602	1.60	1.75	7.59%
AIG PEP V Preferred Participation Fund, L.P.	2007	\$503,561	-\$42,778	\$546,339	\$28,158	\$1,036,752	\$67,760	\$1,104,512	\$530,015	1.80	1.92	10.93%
JFL Equity Investors IV, L.P.	2016	\$6,000,000	\$116,600	\$5,883,400	\$69,246	\$13,600,094	\$1,763,485	\$15,363,579	\$9,410,933	2.28	2.58	37.88%
JFL Equity Investors V, L.P.	2020	\$9,000,000	\$1,888,489	\$7,111,511	\$0	\$0	\$9,221,230	\$9,221,230	\$2,109,719	0.00	1.30	15.72%
Total Buyout		\$18,385,304	\$2,731,164	\$15,654,140	\$122,604	\$17,310,926	\$11,184,440	\$28,495,366	\$12,718,622	1.10	1.81	15.10%
Co-Investments												
AIG PEP V Co-Investment, L.P.	2007	\$900,000	\$22,644	\$877,356	\$32,765	\$885,186	\$88,883	\$974,069	\$63,948	0.97	1.07	0.95%
HarbourVest Partners Co-Investment Fund VI L.P.	2021	\$8,000,000	\$5,200,000	\$2,800,000	\$0	\$0	\$2,907,601	\$2,907,601	\$107,601	0.00	1.04	7.95%
Private Advisors Small Co Coinvestment Fund, L.P.	2016	\$4,000,000	\$678,841	\$3,321,159	\$14,068	\$2,490,424	\$5,132,581	\$7,623,005	\$4,287,778	0.75	2.29	22.68%
Total Co-Investments		\$12,900,000	\$5,901,485	\$6,998,515	\$46,833	\$3,375,610	\$8,129,065	\$11,504,675	\$4,459,327	0.48	1.63	12.23%
Distressed												
Ironsides Co-Investment Fund VI, LP	2021	\$12,000,000	\$491,768	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	0.00	1.14	12.14%
Total Distressed		\$12,000,000	\$491,768	\$11,508,232	\$210,190	\$0	\$13,323,152	\$13,323,152	\$1,604,730	0.00	1.14	12.14%
Energy												
Kayne Anderson Energy Fund VII, L.P.	2015	\$5,000,000	\$709,658	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	0.27	0.88	-2.76%
Total Energy		\$5,000,000	\$709,658	\$4,290,342	-\$40,917	\$1,144,703	\$2,614,028	\$3,758,731	-\$490,694	0.27	0.88	-2.76%
Fund of Funds												
Hamilton Lane Secondary Fund V, L.P.	2020	\$9,000,000	\$4,036,882	\$4,963,118	-\$17,882	\$0	\$7,783,871	\$7,783,871	\$2,838,635	0.00	1.57	26.43%
Invesco Fund IV, L.P.	2004	\$3,000,000	\$717,234	\$2,282,766	\$232,198	\$4,844,802	\$0	\$4,844,802	\$2,329,837	1.93	1.93	10.33%
Invesco Partnership Fund VI, L.P.	2013	\$5,000,000	\$1,041,645	\$3,958,355	\$0	\$12,947,709	\$603,938	\$13,551,647	\$9,593,292	3.27	3.42	20.62%
Mass PRIM AIVY 2008	2008	\$3,000,000	\$1,106,681	\$1,893,319	\$2,212	\$3,922,856	\$865,254	\$4,788,110	\$2,892,578	2.07	2.53	17.39%
Mass PRIM AIVY 2009	2009	\$1,000,000	\$756,252	\$243,748	\$109	\$692,802	\$63,160	\$755,962	\$512,105	2.84	3.10	20.73%
Mass PRIM AIVY 2010	2010	\$1,000,000	\$444,145	\$555,855	\$180	\$1,193,297	\$469,200	\$1,662,496	\$1,106,461	2.15	2.99	17.91%
Mass PRIM AIVY 2011	2011	\$1,500,000	\$512,774	\$987,226	\$159	\$2,222,536	\$793,027	\$3,015,563	\$2,028,178	2.25	3.05	20.34%
Mass PRIM AIVY 2012	2012	\$1,000,000	\$478,328	\$521,672	\$44	\$872,965	\$461,317	\$1,334,282	\$812,566	1.67	2.56	17.60%
Mass PRIM AIVY 2014	2014	\$2,000,000	\$798,458	\$1,201,542	\$0	\$1,517,712	\$2,117,528	\$3,635,240	\$2,433,698	1.26	3.03	23.45%
Mass PRIM AIVY 2017	2017	\$2,000,000	\$584,496	\$1,415,504	\$26	\$176,848	\$2,613,266	\$2,790,113	\$1,374,583	0.12	1.97	23.00%
Mass PRIM AIVY 2020	2020	\$5,000,000	\$1,562,693	\$3,437,307	\$61	\$21,554	\$3,874,290	\$3,895,844	\$458,476	0.01	1.13	9.67%



MWRA Employees' Retirement System

ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Mass PRIM AIVY 2021	2021	\$5,000,000	\$1,640,135	\$3,359,865	\$0	\$0	\$3,313,381	\$3,313,381	-\$46,484	0.00	0.99	-1.33%
Mass PRIM AIVY 2022	2022	\$7,500,000	\$6,352,073	\$1,147,927	\$0	\$0	\$1,212,088	\$1,212,088	\$64,161	0.00	1.06	9.38%
Total Fund of Funds		\$46,000,000	\$20,031,795	\$25,968,205	\$217,107	\$28,413,080	\$24,170,319	\$52,583,400	\$26,398,087	1.09	2.01	16.27%
Growth Equity												
AIG PEP V Small-Mid Market U.S. Buyout, L.P.	2007	\$900,000	\$185,690	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	1.80	1.93	9.66%
Total Growth Equity		\$900,000	\$185,690	\$714,310	-\$9,254	\$1,267,194	\$91,163	\$1,358,357	\$653,301	1.80	1.93	9.66%
Secondaries												
AIG PEP V Secondary, L.P.	2007	\$600,000	\$181,881	\$418,119	\$17,277	\$572,819	\$20,143	\$592,962	\$157,566	1.32	1.36	6.42%
Dover Street X, L.P.	2020	\$9,000,000	\$3,307,500	\$5,692,500	\$6,202	\$2,146,438	\$6,802,899	\$8,949,337	\$3,250,635	0.38	1.57	37.14%
Landmark Equity Partners XV, L.P.	2013	\$3,000,000	\$836,158	\$2,163,842	-\$9,117	\$2,535,357	\$624,665	\$3,160,022	\$1,005,297	1.18	1.47	11.82%
Total Secondaries		\$12,600,000	\$4,325,539	\$8,274,461	\$14,362	\$5,254,614	\$7,447,707	\$12,702,321	\$4,413,498	0.63	1.53	16.57%
Venture Capital												
AIG PEP V US Venture, L.P.	2007	\$480,000	\$61,615	\$418,385	\$12,941	\$857,246	\$39,160	\$896,406	\$465,080	1.99	2.08	12.96%
Ascent Venture Partners II, L.P.	1995	\$774,807	\$0	\$774,807	\$0	\$2,571,916	\$0	\$2,571,916	\$1,797,109	3.32	3.32	26.71%
Ascent Venture Partners IV(B), L.P.	2016	\$1,000,000	\$32,164	\$967,836	\$0	\$804,995	\$20,394	\$825,389	-\$142,446	0.83	0.85	-4.31%
Ascent Venture Partners IV, L.P.	2004	\$2,000,000	\$0	\$2,000,000	\$0	\$339,208	\$0	\$339,208	-\$1,660,792	0.17	0.17	-27.17%
Ascent Venture Partners V, L.P.	2008	\$2,000,000	\$60,000	\$1,940,000	\$0	\$1,822,712	\$1,269,470	\$3,092,183	\$1,152,183	0.94	1.59	6.38%
Ascent Venture Partners VI, L.P.	2014	\$3,000,000	\$90,000	\$2,910,000	\$0	\$0	\$3,249,972	\$3,249,972	\$339,972	0.00	1.12	2.17%
Boston Capital Venture Fund III, L.P.	1993	\$800,000	\$0	\$800,000	\$0	\$1,199,402	\$0	\$1,199,402	\$399,402	1.50	1.50	8.87%
Castile Ventures III, L.P.	2007	\$3,000,000	\$0	\$3,000,000	\$51,496	\$852,796	\$0	\$852,796	-\$2,198,700	0.28	0.28	-36.97%
Foundry Venture Capital 2007, L.P.	2007	\$3,000,000	\$45,000	\$2,955,000	\$0	\$14,537,348	\$206,491	\$14,743,839	\$11,788,839	4.92	4.99	42.74%
Foundry Venture Capital 2010 Annex, L.P.	2015	\$268,205	\$0	\$268,205	\$0	\$407,252	\$1,100,313	\$1,507,565	\$1,239,360	1.52	5.62	34.76%
Foundry Venture Capital 2010, L.P.	2010	\$3,000,000	\$67,500	\$2,932,500	\$0	\$3,255,566	\$5,881,916	\$9,137,482	\$6,204,982	1.11	3.12	14.27%
Ticonderoga Concord Partners III, L.P.	1995	\$800,000	\$0	\$800,000	\$0	\$544,677	\$0	\$544,677	-\$255,323	0.68	0.68	-8.06%
Total Venture Capital		\$20,123,012	\$356,279	\$19,766,733	\$64,437	\$27,193,119	\$11,767,716	\$38,960,836	\$19,129,666	1.37	1.96	12.13%
Total		\$127,908,316	\$34,733,379	\$93,174,938	\$625,362	\$83,959,247	\$78,727,591	\$162,686,838	\$68,886,538	0.90	1.73	13.41%



MWRA Employees' Retirement System

QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Ascent Venture Partners VI, L.P.	3/31/2023	90,000				90,000
Total: Ascent Venture Partners VI, L.P.		90,000				90,000
Dover Street X, L.P.	3/31/2023				-173,976	-173,976
Total: Dover Street X, L.P.					-173,976	-173,976
HarbourVest Partners Co-Investment Fund VI L.P.	3/31/2023	800,000				800,000
Total: HarbourVest Partners Co-Investment Fund VI L.P.		800,000				800,000
JFL Equity Investors IV, L.P.	2/28/2023	29,078				29,078
Total: JFL Equity Investors IV, L.P.		29,078				29,078
JFL Equity Investors V, L.P.	2/28/2023	46,667				46,667
Total: JFL Equity Investors V, L.P.		46,667				46,667
Landmark Equity Partners XV, L.P.	3/31/2023				-4,947	-4,947
Total: Landmark Equity Partners XV, L.P.					-4,947	-4,947
Mass PRIM AIVY 2008	1/31/2023				-1,705	-1,705
	2/28/2023				-4,800	-4,800
	3/31/2023				-344	-344
Total: Mass PRIM AIVY 2008					-6,849	-6,849
Mass PRIM AIVY 2009	1/31/2023				-2,263	-2,263
	2/28/2023				-1,899	-1,899
	3/31/2023	1				1
Total: Mass PRIM AIVY 2009		1			-4,162	-4,161
Mass PRIM AIVY 2010	1/31/2023				-133	-133
	2/28/2023				-9,995	-9,995
	3/31/2023	28				28
Total: Mass PRIM AIVY 2010		28			-10,128	-10,100



MWRA Employees' Retirement System

QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Mass PRIM AIVY 2011	1/31/2023				-29,418	-29,418
	2/28/2023	728				728
	3/31/2023	11				11
Total: Mass PRIM AIVY 2011		739			-29,418	-28,679
Mass PRIM AIVY 2012	1/31/2023				-4,038	-4,038
	2/28/2023				-3,331	-3,331
	3/31/2023				-756	-756
Total: Mass PRIM AIVY 2012				-8,125	-8,125	
Mass PRIM AIVY 2014	1/31/2023				-5,721	-5,721
	2/28/2023	94				94
	3/31/2023				-32,140	-32,140
Total: Mass PRIM AIVY 2014		94			-37,861	-37,767
Mass PRIM AIVY 2017	1/31/2023	17,355				17,355
	2/28/2023				-12,170	-12,170
	3/31/2023				-343	-343
Total: Mass PRIM AIVY 2017		17,355			-12,512	4,843
Mass PRIM AIVY 2020	1/31/2023	230,900				230,900
	2/28/2023	108,456				108,456
	3/31/2023	6,179				6,179
Total: Mass PRIM AIVY 2020		345,535				345,535
Mass PRIM AIVY 2021	1/31/2023	117,159				117,159
	2/28/2023	367,429				367,429
	3/31/2023	25,734				25,734
Total: Mass PRIM AIVY 2021		510,322				510,322



MWRA Employees' Retirement System

QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Mass PRIM AIVY 2022	1/31/2023	176,649				176,649
	2/28/2023	17,830				17,830
	3/31/2023	40,033				40,033
Total: Mass PRIM AIVY 2022		234,512				234,512
Grand Total		2,074,330			-287,979	1,786,352



GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
- **Paid In Capital** – The amount an investor has contributed for investments and management fees
- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program’s actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM



QUARTERLY PERFORMANCE REPORT

MWRA Employees' Retirement System

March 31, 2023

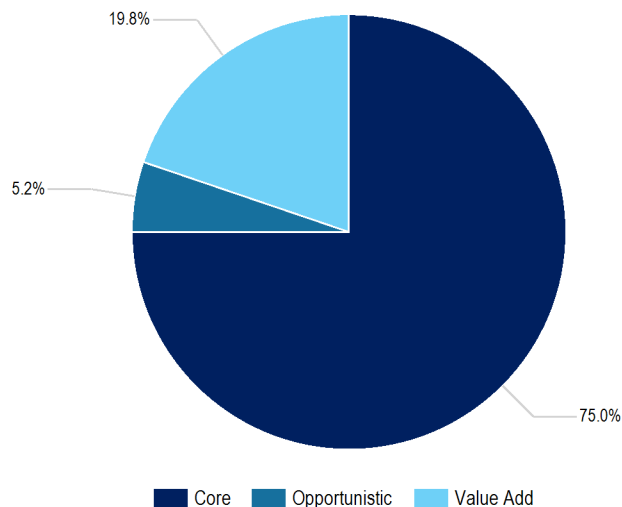


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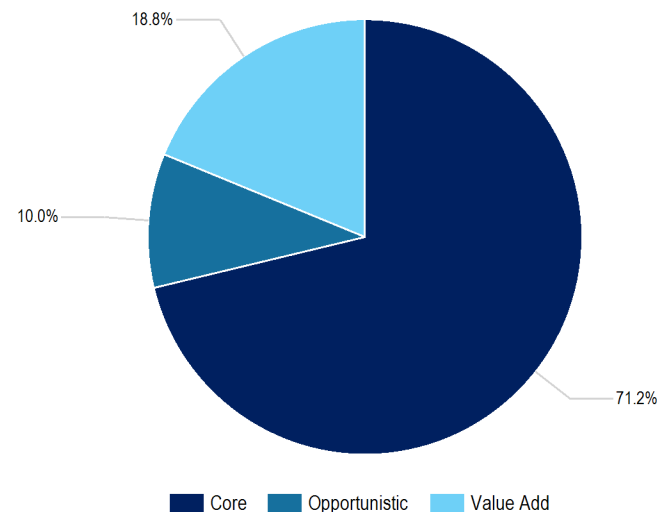
MWRA Employees' Retirement System

ANALYSIS BY STRATEGY

Private Markets Valuation by Strategy



Private Markets Fund Exposure by Strategy

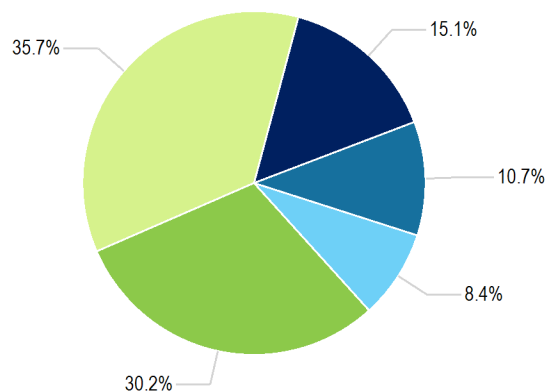


Investments	Commitments			Contributions & Distributions			Valuations				Performance		
	Investment Strategy	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI
Total Core	\$52,587,180	\$0	1.00	\$52,587,180	\$135,001	\$37,746,999	\$51,982,460	\$89,729,459	\$37,007,277	\$51,982,460	0.72	1.70	10.62%
Total Opportunistic	\$14,500,000	\$3,658,238	0.75	\$10,841,762	\$4,898	\$10,278,482	\$3,606,407	\$13,884,889	\$3,038,229	\$7,264,645	0.95	1.28	5.06%
Total Value Add	\$22,610,264	\$0	1.00	\$22,610,264	\$463,101	\$17,436,825	\$13,716,575	\$31,153,400	\$8,080,035	\$13,716,575	0.76	1.35	9.89%
Total	\$89,697,444	\$3,658,238	0.96	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	\$72,963,680	0.76	1.56	9.74%



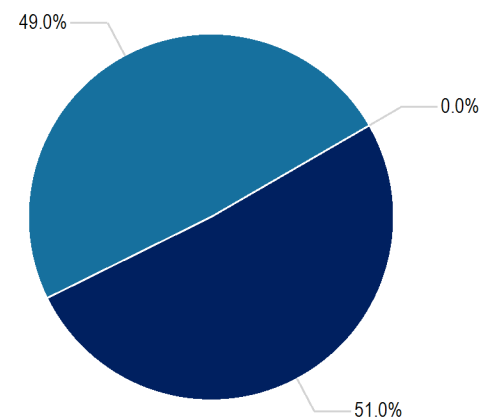
MWRA Employees' Retirement System ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Investing Harvesting Liquidating Completed Open End

Unfunded Commitment by Lifecycle



Investing Harvesting Completed

Lifecycle	Commitments			Contributions & Distributions			Valuations			Performance			
	Investments	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing		\$13,500,000	\$1,866,972	0.86	\$11,633,028	\$465,566	\$4,111,164	\$10,976,699	\$15,087,863	\$2,989,268	0.34	1.25	13.37%
Total Harvesting		\$9,610,264	\$1,791,266	0.81	\$7,818,998	-\$28,517	\$8,453,730	\$2,718,566	\$11,172,296	\$3,381,815	1.09	1.43	9.44%
Total Liquidating		\$7,500,000	\$0	1.00	\$7,500,000	\$30,950	\$7,893,619	\$3,627,717	\$11,521,336	\$3,990,385	1.05	1.53	10.89%
Total Completed		\$27,087,180	\$0	1.00	\$27,087,180	\$0	\$41,685,330	\$0	\$41,685,330	\$14,598,150	1.54	1.54	8.20%
Total Open End		\$32,000,000	\$0	1.00	\$32,000,000	\$135,001	\$3,318,463	\$51,982,460	\$55,300,923	\$23,165,921	0.10	1.72	11.92%
Total		\$89,697,444	\$3,658,238	0.96	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Vintage Year	Investments			Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR			
Total 2000	\$2,500,000	\$0	1.00	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%			
Total 2003	\$3,687,180	\$0	1.00	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%			
Total 2005	\$16,000,000	\$0	1.00	\$16,000,000	\$0	\$2,442,038	\$25,657,244	\$28,099,282	\$12,099,282	0.15	1.76	7.03%			
Total 2010	\$20,900,000	\$935,470	0.96	\$19,964,530	-\$1,167	\$31,464,733	\$368,385	\$31,833,118	\$11,869,755	1.58	1.59	10.15%			
Total 2012	\$5,000,000	\$365,369	0.93	\$4,634,631	\$10,932	\$7,455,695	\$465,486	\$7,921,181	\$3,275,618	1.60	1.71	12.70%			
Total 2015	\$5,610,264	\$855,796	0.85	\$4,754,468	-\$27,350	\$4,359,329	\$2,350,181	\$6,709,510	\$1,982,392	0.92	1.42	8.23%			
Total 2017	\$8,000,000	\$1,501,603	0.81	\$6,498,397	\$26,083	\$3,781,304	\$5,672,391	\$9,453,695	\$2,929,215	0.58	1.45	10.66%			
Total 2019	\$20,000,000	\$0	1.00	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%			
Total 2022	\$8,000,000	\$0	1.00	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%			
Total	\$89,697,444	\$3,658,238	0.96	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%			



APPENDIX

MWRA Employees' Retirement System

March 31, 2023



MWRA Employees' Retirement System

RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %						
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000							16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000							-9.85%
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	-1.89%	-1.89%	-16.02%	21.98%	14.36%		13.11%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180							9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000							-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	-3.60%	-3.60%	-24.85%	-22.85%	-4.45%		3.03%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	-8.63%	-8.63%	-0.93%	-24.61%	-15.95%	10.07%	19.33%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	-0.27%	-0.27%	4.63%	16.76%	13.78%		16.93%
Mass PRIM Real Estate 2010	2010	\$16,900,000							10.01%
Prime Property Fund, LLC	2005	\$12,000,000	-1.24%	-1.24%	-2.05%	8.62%	7.79%	9.42%	11.79%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	1.61%	1.61%	-4.19%	-0.38%	-2.19%	6.41%	5.56%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	-1.44%	-1.44%	14.35%	-0.11%	13.16%		12.51%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	-0.68%	-0.68%	0.03%	13.37%			12.23%
TerraCap Partners III, L.P.	2015	\$2,610,264	0.74%	0.74%	19.00%	8.55%	6.44%		10.55%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	-1.24%	-1.24%	1.79%	9.32%	9.40%		8.98%
TerraCap Partners V, L.P.	2022	\$8,000,000	-0.49%	-0.49%					9.40%
Total		\$89,697,444	-0.88%	-0.88%	0.45%	10.22%	9.03%	10.07%	9.74%



MWRA Employees' Retirement System

ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,851,567	\$461,653	\$2,313,220	\$1,178,589	1.63	2.04	13.11%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$855,796	\$2,144,204	\$0	\$1,635,229	\$727,862	\$2,363,091	\$218,887	0.76	1.10	3.03%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,672,727	\$5,908	\$2,678,635	\$919,676	1.52	1.52	19.33%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$1,501,603	\$2,498,397	\$6,065	\$1,491,813	\$2,048,507	\$3,540,320	\$1,035,858	0.60	1.41	16.93%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$25,657,244	\$25,657,244	\$13,657,244	0.00	2.14	11.79%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,421,675	\$362,477	\$1,784,152	\$479,748	1.09	1.37	5.56%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,604,128	\$3,833	\$5,607,961	\$2,097,029	1.60	1.60	12.51%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,724,100	\$1,622,319	\$4,346,419	\$1,763,505	1.05	1.68	10.55%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$2,289,491	\$3,623,884	\$5,913,375	\$1,893,356	0.57	1.47	8.98%
TerraCap Partners V, L.P.	2022	\$8,000,000	\$0	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%
Total		\$89,697,444	\$3,658,238	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%



MWRA Employees' Retirement System

ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Investing												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,851,567	\$461,653	\$2,313,220	\$1,178,589	1.63	2.04	13.11%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$1,501,603	\$2,498,397	\$6,065	\$1,491,813	\$2,048,507	\$3,540,320	\$1,035,858	0.60	1.41	16.93%
TerraCap Partners V, L.P.	2022	\$8,000,000	\$0	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%
Total Investing		\$13,500,000	\$1,866,972	\$11,633,028	\$465,566	\$4,111,164	\$10,976,699	\$15,087,863	\$2,989,268	0.34	1.25	13.37%
Harvesting												
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$855,796	\$2,144,204	\$0	\$1,635,229	\$727,862	\$2,363,091	\$218,887	0.76	1.10	3.03%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,672,727	\$5,908	\$2,678,635	\$919,676	1.52	1.52	19.33%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,421,675	\$362,477	\$1,784,152	\$479,748	1.09	1.37	5.56%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,724,100	\$1,622,319	\$4,346,419	\$1,763,505	1.05	1.68	10.55%
Total Harvesting		\$9,610,264	\$1,791,266	\$7,818,998	-\$28,517	\$8,453,730	\$2,718,566	\$11,172,296	\$3,381,815	1.09	1.43	9.44%
Liquidating												
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,604,128	\$3,833	\$5,607,961	\$2,097,029	1.60	1.60	12.51%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$2,289,491	\$3,623,884	\$5,913,375	\$1,893,356	0.57	1.47	8.98%
Total Liquidating		\$7,500,000	\$0	\$7,500,000	\$30,950	\$7,893,619	\$3,627,717	\$11,521,336	\$3,990,385	1.05	1.53	10.89%
Completed												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Total Completed		\$27,087,180	\$0	\$27,087,180	\$0	\$41,685,330	\$0	\$41,685,330	\$14,598,150	1.54	1.54	8.20%
Open End												
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$25,657,244	\$25,657,244	\$13,657,244	0.00	2.14	11.79%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%
Total Open End		\$32,000,000	\$0	\$32,000,000	\$135,001	\$3,318,463	\$51,982,460	\$55,300,923	\$23,165,921	0.10	1.72	11.92%
Total		\$89,697,444	\$3,658,238	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
2000												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
Total 2000		\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
2003												
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Total 2003		\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
2005												
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$25,657,244	\$25,657,244	\$13,657,244	0.00	2.14	11.79%
Total 2005		\$16,000,000	\$0	\$16,000,000	\$0	\$2,442,038	\$25,657,244	\$28,099,282	\$12,099,282	0.15	1.76	7.03%
2010												
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,672,727	\$5,908	\$2,678,635	\$919,676	1.52	1.52	19.33%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,421,675	\$362,477	\$1,784,152	\$479,748	1.09	1.37	5.56%
Total 2010		\$20,900,000	\$935,470	\$19,964,530	-\$1,167	\$31,464,733	\$368,385	\$31,833,118	\$11,869,755	1.58	1.59	10.15%
2012												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,851,567	\$461,653	\$2,313,220	\$1,178,589	1.63	2.04	13.11%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,604,128	\$3,833	\$5,607,961	\$2,097,029	1.60	1.60	12.51%
Total 2012		\$5,000,000	\$365,369	\$4,634,631	\$10,932	\$7,455,695	\$465,486	\$7,921,181	\$3,275,618	1.60	1.71	12.70%
2015												
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$855,796	\$2,144,204	\$0	\$1,635,229	\$727,862	\$2,363,091	\$218,887	0.76	1.10	3.03%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,724,100	\$1,622,319	\$4,346,419	\$1,763,505	1.05	1.68	10.55%
Total 2015		\$5,610,264	\$855,796	\$4,754,468	-\$27,350	\$4,359,329	\$2,350,181	\$6,709,510	\$1,982,392	0.92	1.42	8.23%
2017												
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$1,501,603	\$2,498,397	\$6,065	\$1,491,813	\$2,048,507	\$3,540,320	\$1,035,858	0.60	1.41	16.93%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$2,289,491	\$3,623,884	\$5,913,375	\$1,893,356	0.57	1.47	8.98%
Total 2017		\$8,000,000	\$1,501,603	\$6,498,397	\$26,083	\$3,781,304	\$5,672,391	\$9,453,695	\$2,929,215	0.58	1.45	10.66%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
2019												
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%
Total 2019		\$20,000,000	\$0	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%
2022												
TerraCap Partners V, L.P.	2022	\$8,000,000	\$0	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%
Total 2022		\$8,000,000	\$0	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%
Total		\$89,697,444	\$3,658,238	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%



MWRA Employees' Retirement System

ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Core												
Corporate Property Associates 15 Incorporated	2003	\$3,687,180	\$0	\$3,687,180	\$0	\$7,058,204	\$0	\$7,058,204	\$3,371,024	1.91	1.91	9.08%
Mass PRIM Real Estate 2010	2010	\$16,900,000	\$0	\$16,900,000	\$0	\$27,370,332	\$0	\$27,370,332	\$10,470,332	1.62	1.62	10.01%
Prime Property Fund, LLC	2005	\$12,000,000	\$0	\$12,000,000	\$0	\$0	\$25,657,244	\$25,657,244	\$13,657,244	0.00	2.14	11.79%
TA Realty Core Property Fund, L.P.	2019	\$20,000,000	\$0	\$20,000,000	\$135,001	\$3,318,463	\$26,325,216	\$29,643,679	\$9,508,677	0.16	1.47	12.23%
Total Core		\$52,587,180	\$0	\$52,587,180	\$135,001	\$37,746,999	\$51,982,460	\$89,729,459	\$37,007,277	0.72	1.70	10.62%
Opportunistic												
Cerberus Institutional Real Estate Partners III, L.P.	2012	\$1,500,000	\$365,369	\$1,134,631	\$0	\$1,851,567	\$461,653	\$2,313,220	\$1,178,589	1.63	2.04	13.11%
Intercontinental Real Estate Investment Fund IV, L.P.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,205,471	\$0	\$1,205,471	-\$794,529	0.60	0.60	-6.40%
Invesco Mortgage Recovery Fund II, L.P.	2015	\$3,000,000	\$855,796	\$2,144,204	\$0	\$1,635,229	\$727,862	\$2,363,091	\$218,887	0.76	1.10	3.03%
Landmark Real Estate Fund VI, L.P.	2010	\$2,000,000	\$245,470	\$1,754,530	\$4,429	\$2,672,727	\$5,908	\$2,678,635	\$919,676	1.52	1.52	19.33%
Landmark Real Estate Partners VIII, L.P.	2017	\$4,000,000	\$1,501,603	\$2,498,397	\$6,065	\$1,491,813	\$2,048,507	\$3,540,320	\$1,035,858	0.60	1.41	16.93%
Real Estate Global Partnership Fund II, L.P.	2010	\$2,000,000	\$690,000	\$1,310,000	-\$5,596	\$1,421,675	\$362,477	\$1,784,152	\$479,748	1.09	1.37	5.56%
Total Opportunistic		\$14,500,000	\$3,658,238	\$10,841,762	\$4,898	\$10,278,482	\$3,606,407	\$13,884,889	\$3,038,229	0.95	1.28	5.06%
Value Add												
BlackRock Apartment Value Fund II, L.P.	2000	\$2,500,000	\$0	\$2,500,000	\$0	\$4,814,756	\$0	\$4,814,756	\$2,314,756	1.93	1.93	16.26%
BlackRock Apartment Value Fund III, Inc.	2005	\$2,000,000	\$0	\$2,000,000	\$0	\$1,236,567	\$0	\$1,236,567	-\$763,433	0.62	0.62	-9.85%
TA Associates Realty Fund X, L.P.	2012	\$3,500,000	\$0	\$3,500,000	\$10,932	\$5,604,128	\$3,833	\$5,607,961	\$2,097,029	1.60	1.60	12.51%
TerraCap Partners III, L.P.	2015	\$2,610,264	\$0	\$2,610,264	-\$27,350	\$2,724,100	\$1,622,319	\$4,346,419	\$1,763,505	1.05	1.68	10.55%
TerraCap Partners IV (Institutional), L.P.	2017	\$4,000,000	\$0	\$4,000,000	\$20,018	\$2,289,491	\$3,623,884	\$5,913,375	\$1,893,356	0.57	1.47	8.98%
TerraCap Partners V, L.P.	2022	\$8,000,000	\$0	\$8,000,000	\$459,501	\$767,784	\$8,466,539	\$9,234,323	\$774,821	0.09	1.09	9.40%
Total Value Add		\$22,610,264	\$0	\$22,610,264	\$463,101	\$17,436,825	\$13,716,575	\$31,153,400	\$8,080,035	0.76	1.35	9.89%
Total		\$89,697,444	\$3,658,238	\$86,039,206	\$603,001	\$65,462,306	\$69,305,442	\$134,767,748	\$48,125,541	0.76	1.56	9.74%



MWRA Employees' Retirement System

QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
Cerberus Institutional Real Estate Partners III, L.P.	2/28/2023				-98,450	-98,450
Total: Cerberus Institutional Real Estate Partners III, L.P.					-98,450	-98,450
Cerberus Institutional Real Estate Partners III, L.P.	2/28/2023				-98,450	-98,450
Total: Cerberus Institutional Real Estate Partners III, L.P.					-98,450	-98,450
Landmark Real Estate Partners VIII, L.P.	2/28/2023				-31,107	-31,107
Total: Landmark Real Estate Partners VIII, L.P.					-31,107	-31,107
TA Realty Core Property Fund, L.P.	2/28/2023		46,854		-314,593	-267,739
Total: TA Realty Core Property Fund, L.P.			46,854		-314,593	-267,739
Grand Total			46,854		-542,601	-495,747



GLOSSARY OF TERMS

- **Commitment Amount** – The amount an investor has committed to invest with the General Partner
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- **Capital to be Funded** – The remaining amount an investor contractually has left to fund its commitments
- **Additional Fees** – Fees that are outside the capital commitment, also includes interest paid/received due from subsequent closings of the fund
- **Cumulative Distributions** – The amount an investor has received from realized and partially realized investments
- **Valuation** – Sum of the fair market value of all investments plus cash
- **Call Ratio** – Calculated by dividing Amount Funded by Capital Committed
- **DPI Ratio** - Calculated by dividing Amount Distributed by Amount Funded
- **Market Exposure** – Calculated by adding Reported Value plus Unfunded Commitments
- **Total Value** – Calculated by adding Amount Distributed and Reported Value. Represents the total amount an investor should expect to receive from their investments
- **Net Benefit** – Calculated by subtracting Total Value by Capital to be Funded plus Additional Fees
- **Total Value to Paid In Capital Ratio** – Calculated by dividing Total Value by Amount Funded. Represents the multiple of the overall cash invested that an investor is expected to receive
- **IRR** - The calculation of the IRR (Internal Rate of Return) takes into consideration the timing of cash contributions and distributions to and from the partnerships, the length of time the investments have been held and the sum of the Reported Value
- **Index Comparison Method (ICM)** – represents the hypothetical IRR of a private investment program that is computed by assuming the fund flows were invested in and out of a publicly traded index. The resulting hypothetical market value of the program is then used with the program’s actual cash flows to compute a hypothetical IRR. This hypothetical IRR can be compared with the actual IRR to determine whether the private investment program outperformed the publicly traded index
- **Valuation ICM** – The valuation equivalent that ICM calculates for the public market is called valuation ICM
- **KS PME** – The Kaplan Schoar Public Markets Equivalent is a ratio of the future value of all distributions divided by the future value of all contributions using the index return as the discount rate. The ending valuation is treated as a distribution in this method
- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM



QUARTERLY PERFORMANCE REPORT

MWRA Employees' Retirement System

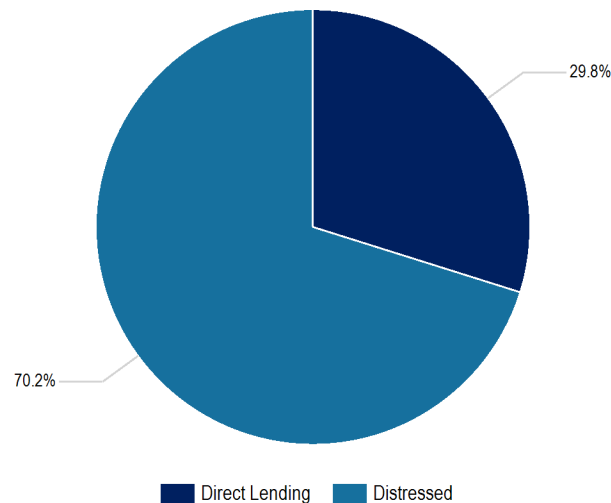
March 31, 2023



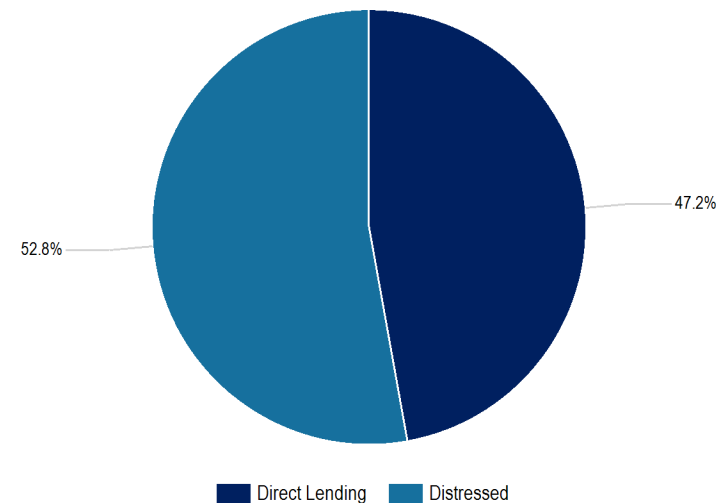
BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

MWRA Employees' Retirement System ANALYSIS BY STRATEGY

Private Markets Valuation by Strategy



Private Markets Fund Exposure by Strategy

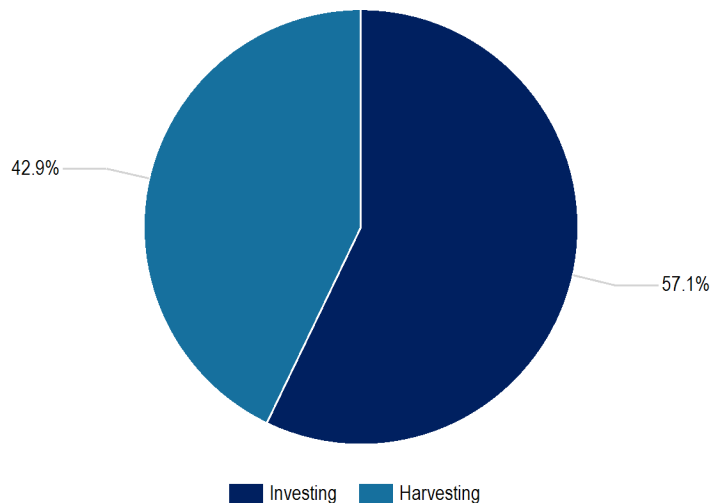


Investments	Commitments			Contributions & Distributions			Valuations				Performance		
	Investment Strategy	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Fund Exposure	DPI	TVPI
Total Direct Lending	\$8,000,000	\$5,260,707	0.34	\$2,739,293	\$26,581	\$1,830,779	\$3,079,496	\$4,910,276	\$2,144,402	\$8,340,204	0.66	1.78	7.66%
Total Distressed	\$13,000,000	\$2,102,136	0.84	\$10,897,864	\$14,569	\$8,004,554	\$7,239,231	\$15,243,785	\$4,331,352	\$9,341,367	0.73	1.40	11.12%
Total	\$21,000,000	\$7,362,843	0.65	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	\$17,681,570	0.72	1.47	9.66%

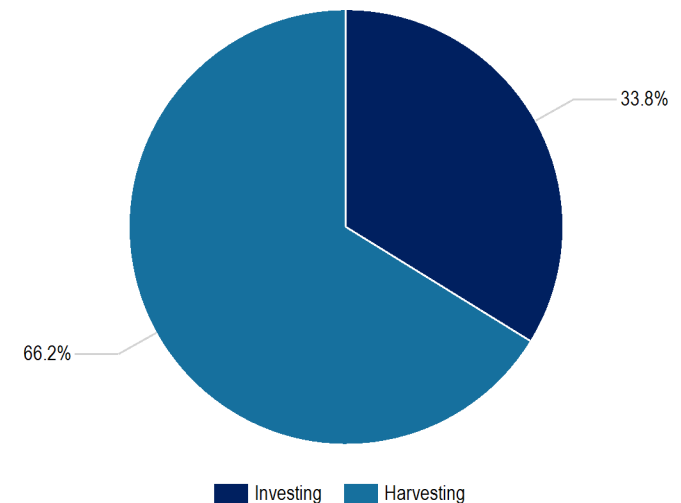


MWRA Employees' Retirement System ANALYSIS BY LIFECYCLE

Commitment by Lifecycle



Unfunded Commitment by Lifecycle



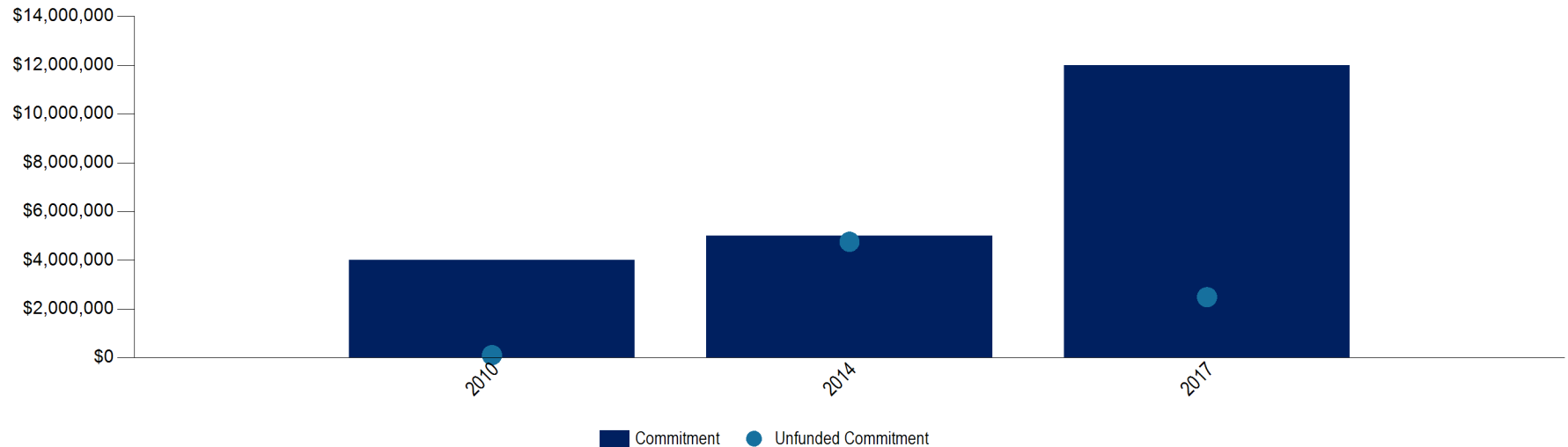
Investments	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total Investing	\$12,000,000	\$2,488,662	0.79	\$9,511,338	\$10,063	\$3,190,388	\$10,094,732	\$13,285,120	\$3,763,720	0.34	1.40	9.13%
Total Harvesting	\$9,000,000	\$4,874,180	0.46	\$4,125,820	\$31,087	\$6,644,946	\$223,995	\$6,868,941	\$2,712,034	1.60	1.65	10.16%
Total	\$21,000,000	\$7,362,843	0.65	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	0.72	1.47	9.66%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Commitments By Vintage Year



Vintage Year	Commitments			Contributions & Distributions			Valuations			Performance		
	Commitment	Unfunded Commitment	Call Ratio	Cumulative Contributions	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Total 2010	\$4,000,000	\$114,794	0.97	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
Total 2014	\$5,000,000	\$4,759,386	0.05	\$240,614	\$26,581	\$1,404,489	\$208,684	\$1,613,173	\$1,345,978	5.26	6.04	7.50%
Total 2017	\$12,000,000	\$2,488,662	0.79	\$9,511,338	\$10,063	\$3,190,388	\$10,094,732	\$13,285,120	\$3,763,720	0.34	1.40	9.13%
Total	\$21,000,000	\$7,362,843	0.65	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	0.72	1.47	9.66%



APPENDIX

MWRA Employees' Retirement System

March 31, 2023



MWRA Employees' Retirement System

RETURN SUMMARY

Investments			Trailing Period Returns (IRR) %							Public Market Equivalent (PME)		
Investment Name	Vintage Year	Commitment	(Qtr)	(YTD)	(1 Yr)	(3 Yrs)	(5 Yrs)	(10 Yrs)	SI IRR	IRR PME	KS PME	Benchmark
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	4.93%	4.93%	10.51%	13.14%	3.06%		7.50%	2.94%	1.18	Bloomberg US Aggregate TR
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	1.94%	1.94%	8.01%	14.89%	7.89%		7.84%	-0.09%	1.28	Bloomberg US Aggregate TR
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	-0.06%	-0.06%	-0.10%	-0.73%	5.45%	15.26%	13.33%	8.38%	1.16	Bloomberg US Aggregate TR
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	4.40%	4.40%	12.10%	16.25%			13.95%	0.36%	1.32	Bloomberg US Aggregate TR
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	2.46%	2.46%	7.31%	7.73%	8.36%		8.02%	-0.18%	1.31	Bloomberg US Aggregate TR
Total		\$21,000,000	2.60%	2.60%	8.64%	13.20%	8.38%	9.25%	9.66%	1.44%	1.24	



MWRA Employees' Retirement System

ANALYSIS BY FUND

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$4,759,386	\$240,614	\$26,581	\$1,404,489	\$208,684	\$1,613,173	\$1,345,978	5.26	6.04	7.50%
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$1,757,833	\$5,433,301	\$7,191,134	\$1,792,363	0.33	1.33	7.84%
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,387,342	\$1,612,658	\$11,292	\$1,006,264	\$1,790,619	\$2,796,883	\$1,172,933	0.62	1.72	13.95%
Park Square Capital Credit Opportunities III (USD), L.P.	2017	\$3,000,000	\$501,321	\$2,498,679	\$0	\$426,291	\$2,870,812	\$3,297,103	\$798,424	0.17	1.32	8.02%
Total		\$21,000,000	\$7,362,843	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	0.72	1.47	9.66%



MWRA Employees' Retirement System

ANALYSIS BY LIFECYCLE

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Investing												
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$1,757,833	\$5,433,301	\$7,191,134	\$1,792,363	0.33	1.33	7.84%
Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,387,342	\$1,612,658	\$11,292	\$1,006,264	\$1,790,619	\$2,796,883	\$1,172,933	0.62	1.72	13.95%
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Total Investing		\$12,000,000	\$2,488,662	\$9,511,338	\$10,063	\$3,190,388	\$10,094,732	\$13,285,120	\$3,763,720	0.34	1.40	9.13%
Harvesting												
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$4,759,386	\$240,614	\$26,581	\$1,404,489	\$208,684	\$1,613,173	\$1,345,978	5.26	6.04	7.50%
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
Total Harvesting		\$9,000,000	\$4,874,180	\$4,125,820	\$31,087	\$6,644,946	\$223,995	\$6,868,941	\$2,712,034	1.60	1.65	10.16%
Total		\$21,000,000	\$7,362,843	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	0.72	1.47	9.66%



MWRA Employees' Retirement System

ANALYSIS BY VINTAGE YEAR

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
2010												
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
Total 2010		\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
2014												
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$4,759,386	\$240,614	\$26,581	\$1,404,489	\$208,684	\$1,613,173	\$1,345,978	5.26	6.04	7.50%
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2017												
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Ironsides Opportunities Fund, L.P.	2017	\$3,000,000	\$1,387,342	\$1,612,658	\$11,292	\$1,006,264	\$1,790,619	\$2,796,883	\$1,172,933	0.62	1.72	13.95%
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Total		\$21,000,000	\$7,362,843	\$13,637,157	\$41,150	\$9,835,334	\$10,318,728	\$20,154,061	\$6,475,754	0.72	1.47	9.66%



MWRA Employees' Retirement System

ANALYSIS BY INVESTMENT STRATEGY

Investments		Commitments		Contributions & Distributions			Valuations			Performance		
Investment Name	Vintage Year	Commitment	Unfunded Commitment	Paid In Capital	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	DPI	TVPI	IRR
Direct Lending												
Alcentra European Direct Lending Fund I, L.P.	2014	\$5,000,000	\$4,759,386	\$240,614	\$26,581	\$1,404,489	\$208,684	\$1,613,173	\$1,345,978	5.26	6.04	7.50%
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Total Direct Lending		\$8,000,000	\$5,260,707	\$2,739,293	\$26,581	\$1,830,779	\$3,079,496	\$4,910,276	\$2,144,402	0.66	1.78	7.66%
Distressed												
CVI Credit Value Fund A IV, L.P.	2017	\$6,000,000	\$600,000	\$5,400,000	-\$1,229	\$1,757,833	\$5,433,301	\$7,191,134	\$1,792,363	0.33	1.33	7.84%
Invesco Mortgage Recovery Fund, L.P.	2010	\$4,000,000	\$114,794	\$3,885,206	\$4,506	\$5,240,457	\$15,311	\$5,255,768	\$1,366,056	1.35	1.35	13.33%
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MWRA Employees' Retirement System

QUARTERLY TRANSACTION SUMMARY

Fund Name	Month Ended	Capital Call	Additional Fee	Temp Return of Capital	Distribution	Net Cash Flow
CVI Credit Value Fund A IV, L.P.	3/31/2023				-201,071	-201,071
Total: CVI Credit Value Fund A IV, L.P.					-201,071	-201,071
Ironsides Opportunities Fund, L.P.	1/31/2023	8,099			-38,374	-30,275
	2/28/2023	57,487			-650,524	-593,037
Total: Ironsides Opportunities Fund, L.P.		65,586			-688,898	-623,312
Park Square Capital Credit Opportunities III (USD), L.P.	2/28/2023				-40,149	-40,149
Total: Park Square Capital Credit Opportunities III (USD), L.P.					-40,149	-40,149
Grand Total		65,586			-930,118	-864,532



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- **IRR ICM** – The IRR equivalent that ICM calculates for the public market is called IRR ICM

