

MWRA EMPLOYEES' RETIREMENT BOARD MEETING

AGENDA

Thursday, October 26, 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
 - 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 Minutes – VOTE
- a) September 28, 2023 Minutes
 - b) September 28, 2023 Executive Session Minutes
 - c) October 5, 2023 Minutes
- Item 4 Approval of Warrants – VOTE
- a) Warrant 10-2023
 - b) Warrant 10-2023A – Payroll
- Item 5 Approval of Monthly Transfers 10-2023 – VOTE
- Item 6 Acknowledgement of retirement application under G.L. c 32 §5 – VOTE
- a) Mary Shaw DOR 9/30/2023
 - b) Rose Marie Convery DOR 10/14/2023
- Item 7 Approval of September 2023 Bank Reconciliation – VOTE
- Item 8 Approval of Kristine Dassau's buyback of 1 year and 1 month of MDC employment – VOTE
- Item 9 Consulting Services RFP – VOTE
- Item 10 NEPC
- a) Flash Report as of 9/30/23
 - b) Rebalance Recommendation – VOTE
 - c) Custody Search Review
 - d) Equity Structure Review

FOR YOUR INFORMATION and REVIEW

- Item 99-1 Notice of Option to Invest in the PRIT Private Equity 2024 Vintage Year
- Item 99-2 2024 Meeting Dates
- Item 99-3 2022 PERAC Comparative Analysis September 2023

- Item 99-4 PERAC Memo #20/2023 – Mandatory Retirement Board Member Training – 4th Quarter 2023
- Item 99-5 PERAC Memo #21/2023 – Upcoming Public Hearings on PERAC Regulations
- Item 99-6 PERAC Memo #22/2023 – Appropriation Data Due October 31, 2023
- Item 99-7 TA Realty Core Property Fund Q3 2023 Flash Report

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, November 16, 2023, 10:00 a.m., Chelsea

**MWRA EMPLOYEES' RETIREMENT BOARD MEETING
SEPTEMBER 28, 2023**

A meeting of the MWRA Employees' Retirement Board was conducted in-person on Thursday, September 28, 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 and the MA Secretary of State's website. Participating in the in-person meeting were Board members James Fleming, Matthew Horan, Kevin McKenna, Brian Peña and Frank Zecha, staff members Carolyn Russo, Julie McManus and Danielle DiRuzza, and Sebastian Grzejka representing NEPC. Members of the public including Gar Chung and Kevin Balaod also attended via remote access. Mr. Fleming called the meeting to order at 10:00 a.m.

- 1) Call the meeting to order-roll call of members: Mr. Horan, Mr. McKenna, Mr. Peña, Mr. Zecha, and Mr. Fleming 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 August 31, 2023 Minutes – VOTE

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

VOTED

to approve the Minutes of the August 31, 2023 meeting. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

- 4) Approval of Warrants – VOTE
 - a) Warrant 9-2023 – Accounts Payable
 - b) Warrant 9-2023A – Zero balance to reverse and reissue retiree payments
 - c) Warrant 9-2023B – Retiree Payroll

Mr. Zecha asked to add to the list of warrants 09-2023C to pay for his and Mr. Fleming's registration at the MACRS Fall Conference

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

VOTED

to add to the list of warrants 09-2023C to pay MACRS registration fees. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

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

VOTED

to approve Warrant #9-2023, Warrant #9-2023A, Warrant #09-2023B, and 09-2023C. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

Mr. McKenna asked if Warrant 09-2023A canceled the member's outstanding checks and moved the funds, and the Executive Director responded that all of the member's 18 outstanding checks were canceled and a deposit was wired to the member's account of record.

5) Approval of Monthly Transfers 9-2023 – VOTE

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

VOTED

to approve the monthly transfers for August. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

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

- a) Thomas Wright DOR 8/26/2023
- b) Deborah Ploof DOR 9/6/2023
- c) Edward Brown DOR 9/13/2023
- d) Randy Hattinger DOR 9/14/2023

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

VOTED

to acknowledge the section 5 retirements as listed. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

7) Approval of August 2023 Bank Reconciliation – VOTE

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

VOTED

to approve the Bank of America reconciliation for August 2023. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

Mr. Zecha commended the staff on the timely Bank reconciliations in this environment of persistent cyberattacks.

8) Legal

- a) Anthony Cirelli Section 7 Retirement Review
- b) Robert Hashem 91A Excess Earnings Review
- c) Neal Gouck v. State Board of Retirement

Attorney Thomas Gibson and Attorney Gerald McDonough signed onto the meeting at 10:08 a.m.

Mr. Zecha asked about the RFP vs. RFQ requirements in regard to computer software services, asking whether Boards are required to advertise on PERAC's site. Attorney Gibson cited C. 32, s. 23B as the guidelines for formal RFP's. The section applies to Legal, Investment, Accounting, and Actuarial services. All other services contracted by Retirement Boards are exempt. That said, there is a fiduciary duty for the Boards to conduct an open and competitive process. For instance, in looking for a copier a Board might call three providers to secure pricing for comparable equipment to be sure the Board is getting the best value for the System's members. Mr. Zecha asked how that would be documented, and Attorney Gibson stated the Board should keep notes of whom they spoke to and when, and what was discussed. Mr. Zecha stated his preference is to maintain emails and other documents for the System's protection. Mr. Zecha noted there are several software vendor searches going on right now and it could end up one person's word against another's. Attorney Gibson responded that PERAC had at one time tried to claim s. 23B covers computer services where an accounting module is present, but has since reversed its position.

Given that Mr. Hashem was on the line to address his 91A Earnings report, Mr. Zecha asked that items be taken out of order so Mr. Hashem would not have to sign out for the anticipated Executive Session and re-sign in later.

Mr. Fleming recognized Mr. Hashem and asked Mr. Hashem to address the Board. Mr. Hashem acknowledged that he had over-earned for 2022, and concurred with the amount PERAC reported as \$3,466.88. He expects he will over-earn for 2023 as well, but will take better precautions in the future not to exceed the limits.

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

VOTED

to find that for 2022 Mr. Hashem earned \$3,466.88 in excess of the limitations in C. 32, s. 91A. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

Mr. Hashem asked that he be permitted to repay the amount at \$500 per month adding that otherwise he would just pay the amount in full to put an end to the matter. Attorney Gibson stated that the member's proposal is reasonable.

Mr. McKenna made a motion seconded by Mr. Peña to allow the member to repay the overearnings in \$500 installments. Mr. Zecha requested that the motion be amended to three equal payments, given that the member expressed that he could repay the amount in full without undue hardship, and that the matter would require a receivable at year end if not paid in full by December 31.

On a motion made by Mr. McKenna and seconded by Mr. Peña, as amended by Mr. Zecha:

VOTED:

to allow Mr. Hashem to repay the amount due, \$3,466.88 over three equal payments, to be paid in full by year-end. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

Mr. Hashem stated that his union continues to receive bonus money so he expects to be over again for 2023. Mr. Zecha stated that the member should talk to Board Staff about whether executing a waiver might benefit him. Mr. Fleming asked that Attorney Gibson draft an agreement to be executed by Mr. Hashem so that the Board may begin withholding from the October payment. Mr. Fleming asked Mr. Hashem whether he agrees to sign the document, and he responded affirmatively. Mr. Hashem thanked the Retirement Coordinator for her help, and signed off the call at 10:30 a.m.

Mr. Anthony Cirelli joined the call, accompanied by Attorney Michael Walsh.

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

VOTED

to convene in Executive Session under purposes 1 and 7 to discuss the accidental disability retirement application filed by Mr. Anthony Cirelli. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes. The Board convened in Executive Session at 10:32 a.m. and a breakout room was established.

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

VOTED

to close the Executive Session and return to open session. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes. The Board re-convened in open session at 10:47 a.m.

The Retirement Coordinator asked that the Chair record for the record the vote taken in Executive Session. The Chair reported that by unanimous vote the Board had approved the application for accidental disability retirement under s. 7 filed by Mr. Anthony Cirelli.

Attorney Gibson asked that Attorney McDonough report on *Gouck v. State Board of Retirement*. Attorney McDonough had difficulty with his microphone and was not audible. Attorney Gibson therefore gave the case summary. Essentially the decision invalidated any letters of intent to purchase military service executed by Veterans prior to vesting. Normally Veterans have 180 from receiving notification from the Retirement Board of eligibility for a purchase of military service credit to sign a letter of intent to purchase the service, or they are “out of luck forever.” Previously, Veterans had to be vested and could then purchase military service. The vesting requirement was then appealed and was ultimately reversed. The court in *Gouck* ruled that a notice sent by a retirement board prior to a Veteran’s becoming vested is not valid, and therefore does not trigger the 180 day deadline. It effectively reinstates the vesting requirement for purchase of military service. A legislative correction to resolve this matter is pending. Mr. McKenna asked about what happens if a member doesn’t self-identify as a Veteran upon hiring or enrollment and does not ask staff about a potential purchase. Attorney Gibson stated that the member is required to answer whether he or she is a Veteran on the Enrollment Form. Mr. Zecha stated that he concurs with the Staff’s current policy not to provide written notification to Veterans unless they ask to purchase the time, so the 180-day clock does not begin. Many have young children, are just starting here, and do not have the money for the purchase until later in their careers. They may also work a full 32 years and may not need to buy the service. There is no interest on the military buybacks, so it does not cost the System anything if the member waits to make the purchase – it is simply 10% of their pay when they join a system. Mr. Zecha concluded that Staff does everything they can to help Veterans, and the deadline has not been an issue here. In regard to *Gouck*, Attorney Gibson noted that allowing members to purchase military service at any time helped some members become vested, and therefore become eligible for Ordinary Disability.

The case of *Kidd v. State Retirement Board* decided a matter which the Executive Director first raised as an issue with PERAC in 2019. After a career of being underpaid in comparison to her male colleagues at the RMV, Ms. Kidd was awarded pay increases under the MA Equal Pay Act (MEPA). However, upon retirement, she was penalized by the anti-spiking provision and receives a lesser retirement benefit than her male colleagues would at the same age for equal service. The decision essentially validated the State Retirement Board’s application of the penalty because the anti-spiking statute still does not contain an MEPA exception. Legislative correction is currently before the House Public Service Committee.

Attorney Gibson reported that there was a decision which would allow the use of incident reports rather than actual injury reports to support an accidental disability retirement application. In many instances, in PTSD cases in particular, employees do not file an injury report, and may be allowed to use other forms of incident reports instead.

In *Walsh*, DALA rejected the Reading Retirement Board's arguments, and ruled in favor of the member that her reinstatement began with her date of employment, as argued consistently by the Executive Director. Reading had filed an appeal of DALA's decision, but has since withdrawn, and the decision has become final.

Attorney Gibson reported that at the PERAC forum, Mr. Parsons announced his anticipated March 2024 retirement from PERAC. Mr. Zecha noted that MWRAERB speaks highly of Mr. Parsons, and the Chair concurred. Attorneys Gibson and McDonough signed off the call at 11:01 a.m.

9) Custody Search Presentations

- a) State Street – Kate McCabe, Maria O'Toole, and Kim Moynihan
- b) Wilmington Trust – Jaclyn Callison and Anthony Teberio
- c) Comerica – Heather Leto, Brian Brown, and Felecia Ryan

At 11:03 a.m. the representatives from State Street joined the call to make a presentation as a Custody Search respondent. 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. The Board has the presentations but the participants may choose whether to share their screens. Ms. McCabe stated that she joined State Street as Senior Vice President of Business Development three years ago after 25 years at Bank of New York Mellon. She noted that State Street has provided custody services to the Board in the past, and has changed their approach since then. State Street has extensive involvement in the local community. They are a large financially stable firm, but won't let clients get lost. Mr. Collins introduced himself as the Board's potential Relationship Manager. Ms. O'Toole, Senior Vice President and Head of Client Services would be the Board's Client Service contact. The service team has over 150 years of combined client service management experience. The Board would have access to State Street's "White Paper" research resources. State Street hopes to exceed clients' expectations, using a monthly report card system, surveys, and in-person meetings to build relationships. Ms. O'Toole stated that she has 27 years of experience with day-to-day client service needs. Staff will have data access training, and personalized service. State Street is experienced with PERAC reporting, and has worked with retirement systems' auditors as well. Ms. McCabe stated that in regard to the conversion process, the team will work to ensure that all RFP commitments are delivered. There will be a process where State Street will work to discover and understand MWRAERS' needs, prior to conversion, and parallel run(s) will be done to ensure a seamless transition of assets. Ms. McCabe thanked the Board, and stated that State Street has the right team to succeed, and is priced fairly. Mr. Zecha stated that he has been in the MA public pension business for thirty-eight years and recalled the first custody services were offered by Baybank. He asked if State Street currently has any C. 32 clients, and Ms.

McCabe responded affirmatively. Mr. Zecha noted that when MWRAERS last had State Street as a custodian seven years ago, the fee was \$130,000, and wondered how they could now offer comparable services at \$50,000 for a portfolio that has separate accounts and has grown larger and more complex in the interim. Mr. Collins stated that he will go back to review pricing to ensure it is correct. Mr. Zecha continued that while MWRAERS was a client, State Street closed Boston custody operations and moved everything to St. Louis, severing any personal relationships to local clients. Ms. O'Toole stated that the firm had listened to Boards' comments, and learned from past experience. Mr. Zecha asked how the firm would handle an email request from Staff to transfer \$12m. Mr. Collins responded that they would not. All transfer requests will be entered by Board Staff through State Street's automated system. Mr. Zecha asked what the dual authentication process would be. Mr. Collins responded that State Street can customize an approval process for the client. Mr. Zecha asked if State Street has any MA public fund clients other than MTRS and the City of Boston. Ms. O'Toole responded that they also serve Plymouth County. Mr. Horan expressed some concern about State Street's commitment, because on the Authority's side, State Street had committed to extending their contract with MWRA, then walked away from the relationship. Ms. McCabe stated that State Street is in the process of thoughtfully growing the custody business, is very committed, and is declining at least as many clients as they accept. Mr. Fleming asked if there is any current litigation which would affect custody services, and Ms. McCabe stated that she will follow up with the Board. Mr. Zecha asked if there have been any trading issues over the past 3-5 years. Ms. McCabe stated that she would respond formally. Mr. Grzejka commented that NEPC had provided all respondents with a breakdown of assets and structure, to ensure apples-to-apples pricing. Ms. McCabe reiterated they would go back to verify pricing. State Street signed off at 11:27 a.m.

Mr. Horan commented that the information required for accurate pricing was all in the package. Mr. Zecha concurred, stating State Street obviously underbid this, and underestimated that the Board reviews the materials carefully.

At 11:30 a.m. Wilmington Trust representatives Anthony Teberio and Jaclyn Callison joined the call. Mr. Zecha acknowledged that Gar Chung and Kevin Balaod were in attendance. Mr. Zecha asked if either of the two were recording. Mr. Chung responded that he was not recording. Mr. Zecha asked Mr. Balaod a second time, and he did not respond. Mr. Zecha expressed some concern as to the legal implications if Mr. Balaod had joined the meeting for the purpose of recording it on behalf of With Intelligence, without prior consent. Mr. Chung remarked that PRIM requires written consent for recording.

Mr. Grzejka stated that there are members of the public on the call and cautioned the Wilmington Trust presenters against disclosing any materials which may be considered proprietary. Mr. Teberio thanked Mr. Grzejka and introduced himself as the Board's current relationship manager. Wilmington trust uses Bank of New

York Melon as a sub-custodian, and the relationship is managed from Wilmington Trust's custody office in Andover. Page 12 of the presentation shows MA public fund clients, and includes 34 MA retirement systems. The team has remained the same since the Board signed on in 2016, with Mr. Teberio, Ms. Callison, and Ms. Thibodeau managing the account. The fees have been consistent as well, and Wilmington Trust has agreed to keep them at the current level should the Board choose to remain with them. Malden, Marlborough and Somerville have been brought aboard recently. Marlborough and Somerville had formerly been with Comerica. There have been no accounting or reporting issues with MWRAERS since-inception that could not be resolved with a simple phone call. Having personal relationships makes the job easier on both sides. Mr. McKenna commented that he had recently been in the office and overheard the Executive Director having a conversation with Mr. Teberio about an email request for the System's wire information, and levels of verifying that the request was legitimate, so he has witnessed how important the personal relationship is to day-to-day operations. Mr. Teberio noted that Wilmington Trust has dual signer and dual call-back procedures in place to protect the system. He is in close communication with Staff. The incident referenced by Mr. McKenna required some background work, but ended up that a manager had tried to use an outdated set of wire instructions. Ms. Callison noted that if the request had been regarding an outgoing wire, Wilmington Trust would have required dual authentication measures on both ends. Mr. Horan asked if there are any ratings concerns or downward pressures. Mr. Teberio responded that M&T is well-positioned, and the loan portfolio is very diversified. M&T's stock has taken a hit, but that is more a function of where the market thinks future revenues will be. Mr. Teberio stated he watches it closely because that's where his 401k is. Mr. Zecha asked about a succession plan should Mr. Teberio decide to retire. Mr. Teberio stated that if his staff weren't competent, they wouldn't be his staff. He described himself as particular, and has trained them over a period of many years. His goal is to get his staff to where they could do 100% of his job in his absence, and he estimated they are at about 90% now. Mr. Teberio stated that he hopes their history with this Board will prove the Wilmington Trust team is the right provider for MWRAERS. Mr. Zecha asked what year it was that Baybank began custody services, and Mr. Teberio responded 1985, when Gene Durgin was there, and the legislation was passed to require custodians. Mr. Teberio transitioned from the operational side early in his career to the service side. Mr. McKenna asked how they can hold the fees steady with the number of accounts MWRAERS has. Mr. Teberio noted that the fees when MWRAERS started with People's (M&T) were 39% lower than State Street was charging at the time of conversion. He explained that fees are asset based, so fee increases come when the assets increase. Other providers have raised fees 20% or more. M&T has proved to be both client and employee-oriented, and the fee will be guaranteed for five years. Mr. Fleming asked whether M&T is currently involved in any litigation. Mr. Teberio responded by saying that nearly all large banks are involved in litigation at any given time, but M&T is not currently involved in any

which would affect the Board's custody services. Mr. Teberio and Ms. Callison thanked the Board and signed off the call at 11:53 a.m.

At 11:55 a.m., Heather Leto, Brian Brown and Felicia Ryan signed on the call representing Comerica. Mr. Brown asked how much time they would have, and Mr. Fleming asked that they keep it to 10 or 15 minutes. Mr. Grzejka stated that there are members of the public on the call and cautioned the Comerica presenters against disclosing any materials which may be considered proprietary. Ms. Ryan directed the Board to page 10 of the presentation for information about the client relationship. Ms. Ryan reported that she has over 23 years at Comerica in the municipal group, which consists of industry veterans. The analyst has 35 years of experience. They are a "high touch" team, located in one building with the managers, with regular contact with clients, attorneys, auditors, consultants, etc. Page 11 shows the proposed team, with Ms. Leto as the lead Relationship Manager and Ms. Ryan as the backup. Page 14 shows the array of services offered, including benefit payments, death audits, securities lending and others. Page 16 shows safekeeping processes. Staff will be able to see real-time transactions through the portal. Page 18 shows short-term and sweep services, and page 20 details on-line solutions. Assistance is available on-line 7:30 a.m. – 5:00 p.m., with the relationship team available all hours. Page 21 describes the available benefit payment services. Comerica's commitment to the community is displayed on page 23. Comerica has made \$2bn in community and economic development loans, \$222m of which was in affordable housing lending. Diversity initiatives are shown on page 224. Mr. McKenna asked about the fee structure on page 25, in particular whether the number of accounts is accurate. Mr. Brown stated that the number of accounts will not impact pricing. He said some of his MA clients have Comerica do monthly reporting, some do annual reporting only. Comerica has fewer than ten MA public plans. Mr. Zecha asked if there is currently any litigation which will affect custody services, and Mr. Brown responded in the negative. Mr. Zecha asked if the fee is negotiable, and Mr. Brown said it is open to discussion. He added that if any of Comerica's funds are utilized, Comerica will waive the custody fee for that account, and that the expected fees will be \$48,000. Mr. Grzejka noted that a different number was given in the proposal. Mr. Brown stated that he will get the correct number and report back to the Board. Mr. Fleming thanked Mr. Brown, and the Comerica presenters signed off at 12:14 p.m.

Mr. Zecha stated he has no problem voting today, but the Board may want to wait for the final fee information. Mr. Fleming stated he would table the matter and asked staff to add the Custody Services vote to the agenda for the October 5, 2023 special meeting. Mr. Zecha stated he is comfortable with the current provider, but all three can do the job. State Street wants to get back in the business, but Boston and MTRS are very different systems. We will see what they send back for fees. For what we are currently getting, the level of controls and the systems in place, Wilmington Trust offers value. Mr. McKenna added

that they are holding the pricing at its current level too. Mr. Teberio and Ms. Callison are true professionals. Mr. Horan expressed concern about the way State Street left MWRA after saying they'd extend their agreement, then abruptly decided not to do so.

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

VOTED

to table the matter of Custody Services until the special meeting to be held October 5, 2023. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

10) NEPC

- a) Flash Report as of 8/31/23
- b) Rebalance Recommendation – VOTE
- c) Equity Structure Review
- d) Custody Search Review
- e) Morgan Stanley Prime Property Fund Shareholder Redemption

Mr. Grzejka reported that August and September to date have been volatile. The fund was down 1.8% for the month of August, but is still up 6.3% YTD. Most of the Private Equity and Real Estate funds have not yet reported, but if PRIM PE is any indication, the Board should see a bump in performance. Large Cap performance was negative, and the Board's having taken redemptions from Polen and RhumbLine due to gains helped. Non-US Equity was down 5.9% for the month, and the Emerging Markets portfolio was down 4.8%. Fixed Income was down .5%, and Hedge Funds were slightly positive, at .3%. Mr. McKenna asked about the Morgan Stanley redemption. Mr. Grzejka reported that MWRAERS will be receiving only \$400,000 in September of the \$7m total redemption requested, but that more would likely be coming in the 4th quarter. Mr. Horan mentioned that the Board had discussed being underweight in real estate, and using PRIT RE as a placeholder. Mr. Grzejka responded that if the Board gets the funds from Morgan Stanley in small increments, there won't be a lump sum to invest, so it may need to be discussed as part of an overall rebalance. The Board certainly could do so, and strategically it is an attractive buy-in point for PRIT or another Core Real Estate. Mr. Grzejka stated that he would ask Mr. Daniele from PRIM to update the Board on the RE sleeve at Thursday's special meeting. Mr. Horan asked what the dollar amount is to begin having the conversation, and Mr. Grzejka responded at least \$3m. The roughly \$9.7m Octagon redemption proceeds will take time. We have about \$8m in cash currently. From the \$9.7m, \$3m will be going to Lord Abbett, \$3m will be going to Loomis Sayles Fixed Income, and the remainder will go to cash. Mr. Grzejka asked whether that would provide sufficient cash for the next few months. The Executive Director responded it should be sufficient in the absence of any large calls. Mr. Grzejka continued that we need greater liquidity and quality fixed income, and that credit is creating more attractive opportunities.

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

VOTED

to approve the rebalance recommendation as submitted by NEPC pending the receipt of the proceeds from the Octagon redemption. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

Mr. Zecha asked about the status of the Houston mayoral election and the potential impact of Mr. Garcia's candidacy. Mr. Grzejka stated that the Garcia Hamilton portfolio has steadily moved more in line with the benchmark on duration. In an environment of more potential Fed interest rate hikes, you may want to move to market neutral durations, and Garcia Hamilton got ahead of it. Mr. Zecha asked whether there have been significant outflows from Garcia Hamilton, and what would be expected were he to win. Mr. Grzejka stated that would depend on his succession plan, and that he would follow up with Garcia Hamilton to obtain more information from the firm.

In regard to NEPC's Equity Structure Review, Mr. Grzejka noted that there have been about six RFP's in the past 12-18 months, with the Consulting RFP on the horizon. Next will be the Large Cap search, because both active managers are up against the maximum seven-year contract term. Historically the portfolio's structure has added value, but Large Cap is a highly efficient market, and the Board has active managers in the Small Cap space. The question will be whether to go to 100% index for Large Cap, and/or whether one active manager as a complement to the index would be sufficient. Growth especially has significant overlap with the index. Mr. McKenna asked if we went strictly index would the fees go down. Mr. Grzejka answered that they would, but with only benchmark-like returns. Page 5 shows potential risk profile and returns with just the index, index + Coho, and index + Polen. Mr. Grzejka cautioned that the profiles are "very point-in-time" and reflect current conditions. The Board is getting some added value from the current mix, but it could potentially be enhanced while reducing fees. Mr. Zecha asked what the three and five year returns would have to be to beat the benchmark. Mr. Grzejka stated that would be very difficult to do over the long term, given the efficiencies in the market. Mr. Zecha stated that he looked at the Boston Retirement System's portfolio, also an NEPC client, and they have active managers in the space, so he wants to think about it. Mr. Horan asked what a persistent higher-rate environment would mean, and if it would be similar to that leading up to 1988. Mr. Grzejka stated that this is a different environment and different dynamics. NEPC tends to cap the look-back at 15 years, because of increased "data noise." Mr. Zecha stated it might be beneficial to see 10 year numbers. Mr. McKenna said in a \$160m portfolio, a 70% passive/30% active mix would mean \$48m. He stated Coho and Polen would both require an RFP, but asked whether there is a less concentrated product out there with SMID exposure. Mr. Grzejka stated there is already SMID exposure in Loomis and Mesirow. Mr. Grzejka stated the Board must first decide the structure, whether it will be index or a core manager with a complement, and

then post the RFP accordingly. Mr. Grzejka stated he would lean toward value because there is less overlap. Mr. McKenna asked what it would look like with a 70/30 split with the active portfolio split between the current managers, because both have done well. Mr. Grzejka stated he would re-do the numbers with ten-year numbers for the regular October meeting, noting that it does not seem the Board wants to go strictly passive. Mr. Zecha stated that he appreciates the work Mr. Grzejka does for the Board, but there are two unofficial benchmarks against which performance is being measured. He recognized that the System's cash flows are more tactical, but Mr. Grzejka noted that the System is actually cash flow negative. Mr. Zecha asked the Executive Director how much payroll is now, and the Executive Director responded that the payroll is \$3.3.m per month, plus accounts payable and calls. Mr. Zecha asked what the current M&T rate is, and the Executive Director stated that she and Mr. Horan had looked at it recently and it was competitive at that time.

Mr. Zecha noted the recent PERAC memo in regard to cyber crime and reported that for those who did not know already, the memo followed both Brookline and MWRAERS' having received attempts to divert retirees' benefits, identically formatted via email, which were identified by staff as illicit. PERAC noted one successful attempt at another system, which resulted in a loss of one month of the retiree's benefits. Mr. Zecha thanked the Staff for implementing and adhering to controls to protect the retirees and the system. Both retirees were customers of the same bank. Mr. Zecha stated the Executive Director has a good batting average spotting scams, and complimented the staff on their controls. The Executive Director stated that the "bad actors" made it easy in that they tried to target the former Retirement Director, who would have called and would not have used the wording that was used in the email attempt. Mr. Pena asked whether the attempts are reported. The Executive Director stated that all attempts are reported to MIS, to Security, and to PERAC. Security has a series of federal and state law enforcement contacts and reporting protocols in place, and has been very helpful in training as well as incident follow-up. She noted Retirement Staff are fortunate that MWRA has robust layers of security resources in place that other public entities may not have.

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

VOTED

to adjourn the September 28, 2023 meeting of the MWRA Employees' Retirement Board. 5-0, with Mr. Horan voting yes, Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes. The meeting was adjourned at 01:00 p.m.

The following communications were distributed to the Board for review:

PERAC MEMO # 19/2023 – Tobacco Company List

PERAC Pension News September 2023

Hamilton Lane Announces CEO Succession, Further Leadership Evolution

Morgan Stanley Insight September 2023 “Dispelling the Misconceptions”

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 regular Retirement Board meeting is Thursday, October 26, 2023, 10:00 a.m., Chelsea, MA.

The Board will be holding an extra meeting for the purpose of due diligence presentations on Thursday October 5, 2023. The meeting will be fully remote.

James Fleming, Chair

Matthew Horan, Appointed Member

Kevin McKenna, Elected Member

Brian Peña, Ex Officio Member

Frank Zecha, Fifth Member

**MWRA EMPLOYEES' RETIREMENT BOARD SPECIAL MEETING
OCTOBER 5, 2023**

A special meeting of the MWRA Employees' Retirement Board was conducted remotely on Thursday, October 5, 2023 for the purpose of due diligence presentations and discussion of the Custody RFP. Remote access was provided to the public via Zoom, with call-in information provided on the official Meeting Notice posted to www.mwraretirement.com and the MA Secretary of State's website. Participating in the remote meeting were Board members James Fleming, Matthew Horan, Kevin McKenna, Brian Peña and Frank Zecha, staff members Carolyn Russo, and Julie McManus, and Sebastian Grzejka representing NEPC. Mr. Fleming called the meeting to order at 10:00 a.m.

- 1) Call the meeting to order-roll call of members: Mr. Horan, Mr. McKenna, Mr. Peña, Mr. Zecha and Mr. Fleming present via remote access.

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) Lord Abbett
 - b) SEG Baxter Street
 - c) Corbin
 - d) PRIM
 - e) UBS
 - f) Schrodgers International
 - g) Coho Partners, Ltd.
 - h) ABS
 - i) Park Square Capital
 - j) CarVal Investors
 - k) Cerberus
 - l) Alcentra
 - m) HarbourVest
 - n) Agogem Capital (Private Advisors)
 - o) Hamilton Lane
- 2) At 10:02 a.m. Kewjin Yuoh and Gregory Balewicz joined the meeting representing Lord Abbett. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair

and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Mr. Balewicz stated that he is from MA, and that the Massachusetts business is important to him. He thanked the Board for their support. There have been no significant organizational changes, and no changes to the investment team. The markets have been difficult, but the strategy is still in demand and offers low fees of 27bps all-in. Page 3 shows that the Board invested \$10m in 2019, and the inflows and outflows to/from the account. Mr. Zecha stated he does not see the \$3,000,000 addition the Board approved at the meeting last week. Through the Chair, the Executive Director stated that the allocation is contingent upon the receipt of the funds from the Octagon redemption. Mr. McKenna stated the mortgage sector has been one of the weakest. Mr. Yuoh responded that the sector does present opportunities, but that rates also remain high. Mr. Yuoh does expect to increase the weighting, but it will be in a risk-neutral way because of the spreads within the sector. Mr. Balewicz directed the Board to page 4 which shows that the fund has outperformed the benchmark gross and net of fees. The "batting average" is 72% (i.e., Lord Abbett outperforms its benchmark 72% of the time.) The goal is to deliver consistent excess returns for the investor. Mr. Yuoh stated that of the 70 bps of outperformance, half came from industry and sector selection within the portfolio, and half came from the multisector allocation approach. The presenters thanked the Board and signed off the call at 10:12 a.m.

- 3) At 10:13 a.m. Kerry Dempsey and Matt Pickering joined the meeting representing SEG Baxter Street Fund. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Ms. Dempsey stated that SEG currently has \$37bn AUM, with \$7.1bn in the Baxter Street strategy. There have been no team changes. There was a small disclosure issue on a prior audit, but the matter was resolved and closed. The firm has had \$930m in outflows, mostly moves by clients to de-risk portfolios. The account was initially funded with \$27.5m, with a 5.7% net return since inception. Mr. Pickering explained that the fund has a strategic focus on best ideas outside the US rather than focusing on a particular sector or country. They narrow possible selections to 50 names, and half of the fund is currently invested in the top 15. The goal is to buy into quality names cheaply based on in-house data. The product does not mirror any index. The team is experienced and stable, with no senior-level departures. Performance has been challenging recently. Returns have been hurt by the quality bias, with the markets benefitting from energy and bank returns. 2023 has been flat to date. China and healthcare have presented headwinds, and there have been a few selection mistakes as

well. The fund owns no real estate in China directly, but businesses they do own have exposure. Some selections encountered unanticipated competition. Most of these headwinds are temporary. The portfolio is trading at 19-20x earnings. Profit and revenue growth are predicted for 2024. A recession in Europe, and the regulatory environment in China may pose ongoing pressures, but some of the portfolio business will outperform in a recession. The team recognized that the fund's performance has not met expectations over the last 2½ years, but is expected to outperform in the event of a recession. The team thanked the Board for their continued support and signed off at 10:25 a.m.

- 4) At 10:26 a.m. Carrie Napoletano, Alison Darrar and Craig Bergstrom joined the call representing Corbin. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Ms. Napolitano began with the firm update, stating that there is now \$8.6bn AUM. The team has remained stable. To address whether there is any litigation, Mr. Bergstrom stated that the firm is being sued by a former manager, the amount involved is relatively small, Corbin has a solid case, and the Board's particular fund is not affected. Mr. Bergstrom referred the Board to page 6 for YTD returns. The fund is up roughly 7% for the year. Corbin would like to deliver higher returns with lower volatility, and has historically done so, but performance has been bumpy recently. Returns are expected to fall between those of stocks and bonds. The fund's performance drivers are on page 9. Last year some managers picked stocks poorly on the long side, and it has impacted the three-year numbers, but over the five-plus year term the fund has added value. The strategy has not changed, but a few underlying managers were terminated. Others that have rebounded have been re-underwritten. Year-to-date the fund is up 7%, and returns are positive in September. Mr. Zecha asked about fees. Mr. Bergstrom acknowledged that the fees are high for hedge funds, but he focuses on net returns. Managers that provide excess returns add value. The Corbin team thanked the Board and signed off the call at 10:36 a.m.

- 5) At 10:37 a.m., Mr. Francesco Daniele joined the call representing PRIM. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time. Mr. Grzejka asked that Mr. Daniele touch upon the Real Estate portfolio separately, as the Board may be looking to re-deploy some funds.

Mr. Daniele encouraged the Board to attend the upcoming PRIT Client Conference on October 20th. In regard to personnel changes, Catherine D'Amato, CEO of the Greater Boston Food Bank has been added to the Investment Committee, and PRIM Board members Brousseau and Shanley have been re-elected. PRIM has also added an ESG committee. Page 12 shows awards received by PRIM and members of PRIM staff. Page 20 shows Q3 and Q4 asset allocation changes. With assets under management approaching \$100bn, the Private Equity target will be increased 1% and the Global Equity allocation will be decreased by 1%. Private Equity pacing will remain steady. Page 22 shows target allocations and expected returns, with the ten-year return expectation at 7%. FY23 has been productive in spite of volatile markets. The current value of \$96.6bn has surpassed previous highs, including about \$1bn in anticipated/scheduled outflows. Page 24 shows market values by year. Mr. Daniele directed the Board to page 26 for FY 23 performance for the individual sleeves. PE has had solid returns over the first half of the FY24, although activity remains muted. Liquidity remains a focus for managers. Page 77 shows Hedge Fund returns. In regard to the Real Estate portfolio, Office has not posed an issue, because investment is largely in "non-traditional" assets such as Life Sciences and Medical Office. The portfolio is underweight in retail, and any investments have grocery anchors. The fund also has significant industrial exposure comprised mainly of warehouse (81%). The fundamentals are steady, and PRIM has seen an increase in offers on properties. The since-inception return is 8.53%. Mr. Daniele asked if there were any particular concerns about the Real Estate portfolio, and Mr. Grzejka stated the Board is just looking at options. Mr. Daniele stated he would be happy to arrange a meeting with the Real Estate investment team at the Board's request. Mr. Daniele thanked the Board and signed off the call at 10:52 a.m.

- 6) At 10:52 a.m., Kevin Zychowski and Brandon Melbye joined the call representing UBS. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Mr. Melbye reported that UBS is in the process of fully integrating recently acquired Credit Suisse. CIO Bruce Amlicke has retired and now serves in an advisory capacity. Deputy CIO Edoardo Rulli has taken over as CIO and Head of HFS. AUM in the strategy stands at \$1.8bn. The fund outperformed last year at 6.2% net. The team made strong macro calls last year, and the fund was overweight in managers positioned to take advantage of rate volatility. Citadel has been an outperforming manager. Portfolio performance is shown on page 4. Macro managers are having more difficulty this year, and UBS is making some

adjustments to address that. Looking forward, inflation is expected to come down some, but still remains high overall. There will be a shift toward equity managers with strong fundamentals, and additions to structured credit, agency-backed mortgages, and EM managers to take advantage of changing conditions. Mr. McKenna asked what percentage is mortgage-backed securities. Mr. Zychowski responded that as of July it was 5%, and he expects UBS will be adding exposure. The UBS team thanked the Board and signed off the call at 11:03 a.m.

- 7) At 11:04 a.m., Karim El Nokali and John Gallagher joined the call representing Schroders. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Mr. Gallagher reported that Schroders has had a good year so far, with AUM of \$923bn at the end of July. The Global and International Fund's AUM is \$73bn. There has been no litigation involving the Global and International Fund. MWRAERS has \$28m in the CIT, which holds total assets of \$965m. As shown on page 12, Mr. Nokali reported that the fund has returned 9.9% YTD through August. The fund has a growth tilt, and in an environment of a 400bps spread between growth and value, this contributed to underperformance last year. Performance this year has been driven by strategic stock selection, being underweight in EM, and defensive positioning. Overall, the outlook is positive. The fund is overweight Europe and UK. The team expects corporate governance reforms in Japan, is now at equal weight with the index, and expects to add exposure in the near term. The fund is underweight China due to geopolitical tensions and regulatory environment. In the event of a recession, the fund is defensively positioned through exposure to healthcare, overweighting Industrials and IT, and underweighting financials, materials, and energy. The team expects a "soft landing" with an economic slowdown, lower employment numbers, and inflation moderating but remaining higher than pre-CoVid. There may be a region shift to other opportunities if high rates and inflation in Europe persist. The fund holds 40-60 names that are undervalued relative to their peers and with strong growth prospects. Mr. Zecha commented that Schroders is 54th percentile in peer rankings over the three and five-year periods and asked whether the fund performs better in volatile markets. Mr. Gallagher responded that it is more about the growth vs. value gap. The selection process is very stock-specific and agnostic to growth vs. value, and it impacted performance relative to peers. The team thanked the Board and signed off the call at 11:20 a.m.

- 8) At 11:21, Wayne LeSage joined the call representing Coho Partners, Ltd. Mr. Grzejka stated that there are members of the public and/or media on the call and

cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Mr. LeSage reported that there have been no changes to the firm, other than that they added two research professionals to the staff. The firm is involved in no litigation at the present time. He referred the Board to page 2 of the presentation for Coho's strategy of risk management, downside protection, and responsible participation when markets are moving ahead. This delivers better than market returns over the long term with lower risk. Page 5 shows original investment of \$19.3m, inflows & outflows, and a current market value of \$48.5m. Page 7 shows performance attribution by sector, with 2023 the mirror image of 2022. The market has outperformed in part because the index holds names that wouldn't meet Coho's screen due to risk. In 2022, consumer staples and healthcare were near the top performers, now they're near the bottom. The fund can outperform in market volatility, although there have been a few detractors in the portfolio. Coho still has conviction in the strategy. Page 9 shows the risk/reward profile, with Coho outperforming the Russell 1000 Value over the 5-year period. The firm still hopes to improve upside participation. Page 9 shows that Coho's dividend yield exceeds the S&P's with a lower risk profile by investing in high quality businesses with stable earnings growth, which helps in a high-rate environment. Mr. Zecha asked about peer rankings over the one, three and five-year periods. Mr. LeSage said he would get the numbers to the Board, but expect that the peers would be higher on risk with comparable returns. Mr. McKenna asked what holdings are underperforming. As examples, Mr. LeSage cited CVS and Dollar General, which were among top performers in 2022. For Dollar General, demand outpaced supply chain abilities, leading to empty shelves. The CEO and CFO are working to correct the problem and Coho has been meeting with them on distribution center issues. Coho trimmed the position last year on strength, and are adding on weakness this year. Mr. McKenna stated that he frequents CVS, and that they have the products, but the prices are high. Mr. LeSage said that CVS has been adversely impacted by a reduction in Medicare reimbursement rates, because the company lost a star on Medicare's plan rating system. The rating won't improve until at least 2025. He described the detractors as "clunkers" and said Coho will not be adding to CVS until the star rating improves. He thanked the Board and signed off the call at 11:39 a.m.

- 9) At 11:40 a.m., Mr. Thomas Kelley and Ms. Natascha Williams joined the call representing ABS. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all

attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

In regard to the firm, Mr. Kelley reported that they have added equity partners, and quantitative investment professionals to the team. Page 5 of the presentation shows that there have been positive flows into Emerging Markets, and the strategy is growing steadily. ABS currently has \$6.8bn AUM and \$116m in the EM strategy. Ms. Williams reported that Emerging Markets have been up year to date overall, but China has been another story. The economic rebound China predicted has not yet materialized, and volatility in China is the highest it has been since 2008. If the fund were to invest, it would be big names such as Alibaba or Tencent, which have both been volatile. Lower rates in EM means a faster response to inflation, and that Emerging Markets will be ready to lower rates sooner too, roughly a year before the US. Taiwan, AI and Karma (Energy) have benefitted. Year to date through August the fund is up 8.3%, exceeding the MSCI's return of 4.6% over the same period. ABS takes no country or sector bets, and relies on stock selection to drive returns. The System's current value is \$19.9m, and is down 14.3% since inception. Asia ex-China has been a driver. ABS changed its Europe manager, and added an India manager. Mr. McKenna noted that GDP growth was predicted to be much higher than it is and asked whether reacting to that could result in an uptick in performance. Ms. Williams stated ABS does not make sector or country bets, and does not try to time the markets. Market timing is not a good way to secure alpha and will not result in consistent returns. She cited as an example that even in the current volatile environment, ABS has found "survivors" within the troubled markets in China. ABS keeps their focus on strong stock selection and fundamentals. Mr. McKenna countered that it is "hard to watch" the fund lose money, and that he hopes performance will improve. ABS signed off the call at 11:55 a.m.

- 10) At 11:55 a.m., Park Square Capital presenters Matthias Alt, Tucker Bryan, and Jason Oberg joined the call. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge no one is recording the meeting at the present time.

Mr. Oberg began that Park Square currently has \$14.4bn AUM. Credit Opportunities III is a mature portfolio and is in its wind-down phase. The firm has added employees and is up to 115 people. There has been no noteworthy litigation. Mr. Alt thanked the Board and expressed appreciation for its business. As shown on page 6, the Board initially invested \$3m, \$700k has already been distributed, and the current NAV is \$2.9m. The fund has a net IRR of 8.2% and a 1.34x multiple. When the fund is fully wound-down, Park Square expects a final Net IRR in the vicinity of 8% and a 1.4x multiple. Park Square has been looking

to sell in a choppy market, but the fund is still doing well. Mr. Grzejka asked about the expectations for the timing of the wind-down. Mr. Alt stated that Park Square expects repayments to continue, throughout the process. The fund has a target date of June 2024, but extensions may be required to secure the most value for investors. The Park Square team thanked the Board and signed off the call at 12:02 p.m.

- 11) At 12:03 p.m., Ms. Kerry Fauver joined the call representing CarVal Investors. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Ms. Fauver began that CarVal has a thirty-six-year history investing in opportunistic credit. The firm was sold to AllianceBernstein, but the day-to-day process has not changed, other than CarVal is leveraging AllianceBernstein's resources. AUM stands at \$17bn with 210 employees and 75 investment professionals. The team was reduced in Singapore, but CarVal has added in other areas such as commercial real estate debt, and energy transition businesses. The Board made its initial investment in 2018. The fund is a multi-strategy vehicle and has weathered CoVid well, so the investment period was extended. 2023 began the harvest period. The current IRR is 8%, and CarVal expects the fund to end with an IRR of around 9% and multiple of 1.4x. The portfolio is flexible as to sectors and geography, as shown on page 8 of the presentation. Financial Services, Aviation Leasing, and the Consumer long portfolio have all be drivers. Returns have been positive across geographies and sectors, with the exception of bonds in Chinese property development, which is a small position. CarVal anticipates that distribution notices will be forthcoming, and as of now sees no indication of downside outliers. Ms. Fauver thanked the Board and signed off the call at 12:12 p.m.

- 12) At 12:13 p.m., Cerberus representative Keith Chernoff joined the call. Chris Schiermbock was traveling and unable to attend. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

The firm currently has \$65bn AUM and global offices. There have been new management hires, including a new Deputy Compliance Officer. Fund III, in which the System is invested, is a 2012 vintage, and is now in its late liquidation

stage. It was expected to be fully liquidated by July 2023, but now has a target date of July 2024 for monetization of the remaining assets. Of 67 investments, 47 have been fully realized. The fund has an IRR of 17% and a 1.4x multiple, with \$690m remaining NAV. The top three remaining positions include Albertsons, representing 77% of remaining NAV. The company is awaiting FTC approval of the merger with Kroger, which is expected next year. Project Maple Leaf, a Canadian hotel group, struggled during and after CoVid, but travel is rebounding and Cerberus is working on a favorable exit. They expect to have a buyer in the next twenty-four months. Manhattan Beach Hotel in CA had just renovated and rebranded before CoVid hit, but has rebounded and improved operations. Mr. McKenna asked if the expected wind-down date is July 2024, how is it that the Manhattan Beach property will not be sold for two years. Mr. Chernoff stated Cerberus will likely request another extension. Mr. Grzejka asked for a rundown of the System's Fund III performance. Mr. Chernoff stated that the Board invested \$1.5m, the fund has distributed \$2.6m, and has a remaining NAV of \$480,000. The System's investment has an IRR of 12.1% through the second quarter. Mr. Chernoff thanked the Board and signed off the call at 12:23 p.m.

- 13) At 12:24 p.m., Ms. Nina Moore joined the call representing Alcentra. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Ms. Moore reported the Alcentra investment is in its late stages, and the fund is expected to conclude shortly. Templeton bought Alcentra roughly one year ago, with \$77bn combined AUM. There is no litigation to report. The IRR of the USD portfolio is 7%, which is expected to go up slightly after the remaining three assets are monetized over the next six months. These include Fat Face, Highfield Environmental, and Infopro. A deal for Highfield is expected to close next month, and Infopro is expected to be monetized in Q1 2024. The System made a \$5m investment in 2014. Alcentra called \$4.6m of that, has returned \$4.4m to date, and has a remaining NAV of \$241k, as shown on page 9. Alcentra thanked the Board for its commitment, and Ms. Moore signed off the call at 12:30 p.m.

Mr. Horan reported that he has another commitment, so that he would need to leave the meeting shortly.

- 14) At 12:31 p.m., HarbourVest representatives Maryellen Doyle, David Krauser and Megan Beecher joined the meeting. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against

disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Ms. Doyle reported that there have been no major changes in firm personnel. The firm stands at \$110bn AUM. MWRAERS has been with HarbourVest 3-4 years, much of which has been volatile for investors, but the firm reports steady growth of \$19bn. HarbourVest is a world-wide firm based in Boston, with 1100 employees including 225 investment professionals. Page 7 of the presentation shows the Board's commitment to the Dover Street X and Co-Investment VI funds. Dover Street X is fully committed and has already reports a 37% IRR and a 1.6x multiple, although the IRR is expected to normalize to around 20%. HarbourVest recognizes the liquidity needs of its limited partners. Recently launched funds will take advantage of price dislocation.

Mr. Horan left the meeting at 12:35 p.m.

Mr. Zecha stated that every quarter HarbourVest's reporting is delayed and that the Board has to use September values for the PERAC Annual Statement every year, making HarbourVest an outlier. Mr. Zecha asked why it is that HarbourVest reports two quarters behind, and is showing the Board 3/31 numbers. Ms. Doyle stated that she will send updated numbers to the Board. Ms. Beecher reported that Co-Investment VI has been able to sustain deal flow in volatile markets. The fund has an investment team of 77 professionals throughout the US, Europe and Asia. The Board committed \$8m to the fund in 2022, and the fund is 77% committed, with investments diversified across geography and sector. Co-Investment VI is roughly 60% US, 30% Europe, and 10% Asia/Pacific, and is invested across large and small managers. As of 3/31 the fund was 55% called, and is still in the investment period. Q2 numbers are being finalized. In Q1 early markups indicated a \$100m gain. HarbourVest thanked the Board and signed off the call at 12:43 p.m.

- 15) At 12:44 p.m, Apogem Capital (Private Advisors) representatives Julia Seelye and Bryan Pendleton joined the call. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board's knowledge, no one is recording the meeting at the present time.

Mr. Pendleton introduced himself as the managing Director of the Direct Co-Investment Team. Apogem (formerly PA Capital/Private Advisors) has \$39bn AUM, and 200 employees. The team has remained stable other than to add to

the junior and mid-level teams, and there have been no changes to the strategy. As shown on page 9, the Board initially committed \$4m, \$3.8m has been called, \$3.5m has been distributed, and the remaining NAV is \$4.9m. To date, the fund has a 23% return and a 2.2x multiple. As shown on page 9, the focus is on founder-owned companies valued at less than \$250m. Apogem will facilitate transfer of ownership to professional leadership in order to grow the company, aiming to add job rather than cut them, as often happens at the larger end of the market. Apogem has shown better returns through greater investments in the companies. The fund is diversified by industry, with 30 portfolio companies. Overall fund performance is expected to be 20-24% with a multiple between 2.1 and 2.5x. Apogem does not expect to make any additional calls; gains are expected to cover them. Companies that have already been fully realized have a 3.9x, and Apogem is optimistic about the remaining value to be realized over the next twelve months. Sales proceeds have come in as high as 30% over marked value. Page 13 shows the year-over-year increases in value, and even in 2022 values increased 78%. Apogem had already distributed 92% of called capital, and has sold 3 companies since last year. The Apogem team thanked the Board and signed off the call at 12:56 p.m.

- 16) At 12:57 p.m. Hamilton Lane representatives Tim D’Arcy and Chelsea Larsen joined the call. Mr. Grzejka stated that there are members of the public and/or media on the call and cautioned the presenters against disclosing any materials which may be considered proprietary. Mr. Grzejka continued by stating that Massachusetts is a two-party consent state for the recording of meetings, and that any person recording the meeting must first inform the Chair and all attendees and presenters must be notified. To the Board’s knowledge, no one is recording the meeting at the present time.

Mr. D’Arcy directed the Board to page two of the presentation, which shows that Hamilton Lane has \$818bn AUM, with \$41bn deployed in 2022 alone. Mario Giannini has retired from his CEO role but will remain as the Chairman of the Board. Erik Hirsch and Juan Delgado will be Co-CEO’s. Ms. Larsen directed the Board to page 6 for the Board’s investment to date. The Board committed \$9m to fund V in 2020, of which \$6.2m has been called. The fund made its final investment in Q2 2022. To date the fund has an IRR of 27.2% and a 1.4x multiple. Hamilton Lane expects to call 10% in Q1 of 2024. Page 7 shows returns through 3/31. Project Eagle and WTC Holdings have been drivers, and there is more value to be realized. IRR may end at 53% when the fund is fully realized, because both material upside and growth appreciation are expected. Mr. D’Arcy thanked the Board for their business and signed off the call at 1:05 p.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.

Mr. Fleming stated that in his opinion Coho and ABS should be watched. Mr. McKenna stated that Coho has done exactly what they were hired to do. Mr. Zecha stated that is why he likes to see the peer rankings. Yes markets are bad, but Schroders is 54th percentile? How many other managers beat them? Mr. Grzejka countered that is only one data point. What is driving other managers' outperformance is not held in Coho's portfolio because it would not meet the quality screen.

17) Custody Search Discussion – VOTE

- a) Updated Custody Pricing Worksheet – State Street
- b) Updated Custody Pricing Worksheet – Wilmington Trust
- c) Updated Custody Pricing Worksheet – Comerica

Because Mr. Horan's participation is important to the discussion, the Chair deferred the Custody RFP to the regular October meeting. Mr. Zecha stated he would still like to discuss the correspondence. Mr. Grzejka reported that he had gone back to all three respondents for additional pricing information, and to update numbers to reflect 8/31 asset values. M&T kept their pricing the same. State Street did not seem to understand that there would be cash flow needs, so theirs went from \$50,000 to \$75,000. Comerica just adjusted for market value but will bring it to their internal team for further review. Mr. McKenna asked if it is a negative that State Street did not itemize, but went up 50% with no explanation. Mr. Grzejka postulated that State Street may have written up the proposal with just the minimum fee, without considering separate accounts, etc. All pricing seems to be "in the same ballpark" and are reasonable, so the decision will come down to level of services.

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

VOTED

to table the matter of the Custody RFP to allow the full Board to decide the matter. 4-0 on a roll call with Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes.

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

VOTED

to adjourn the October 5, 2023 special meeting of the MWRA Employees' Retirement Board. 4-0, with Mr. McKenna voting yes, Mr. Peña voting yes, Mr. Zecha voting yes, and Mr. Fleming voting yes. The meeting was adjourned at 1:15 p.m.

The following communications were distributed to the Board for review:

Due diligence materials for Lord Abbett, SEG Baxter Street, Corbin, PRIM, UBS, Schroders, Coho, ABS, CarVal, Park Square, Cerberus, Alcentra, Harbourvest, Apogem (Private Advisors), and Hamilton Lane.
Updated Custody Pricing for State Street Bank, Comerica and M&T Bank

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 regular Retirement Board meeting is Thursday, October 26, 2023, 10:00 a.m., Chelsea, MA.

James Fleming, Chair

Matthew Horan, Appointed Member

Kevin McKenna, Elected Member

Brian Peña, Ex Officio Member

Frank Zecha, Fifth Member

MONTHLY PERFORMANCE REPORT

**MWRA EMPLOYEES' RETIREMENT
SYSTEM**

SEPTEMBER 30, 2023



PROPRIETARY & CONFIDENTIAL

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).

EXECUTIVE SUMMARY

	Market Value (\$)	1 Mo (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Composite	646,703,806	-2.8	-2.7	3.4	7.6	4.0	4.7	5.7
<i>Allocation Index</i>		-2.0	-1.6	4.5	9.0	5.2	5.4	6.3
<i>Policy Index</i>		-2.8	-2.3	4.8	9.5	5.5	5.9	6.5

20 Years As of September 30, 2023

	Return	Standard Deviation	Sharpe Ratio	Sortino Ratio
Composite	7.2	8.4	0.7	1.0
<i>Allocation Index</i>	6.7	7.9	0.7	1.0
<i>Policy Index</i>	7.1	8.5	0.7	1.0

Performance

- The Composite had a preliminary return of -2.8% (net) for the month, underperforming the Allocation Index of -2.0% and in line with the Policy Index of -2.8%.
- In equities, with inflation above target, large fiscal deficits, and cash yielding above 5%, equity valuations are experiencing a repricing. As interest rates rose nearly 50 basis points in September, U.S. equities fell 4.8%, according to the S&P 500 Index. Global equities fared relatively better with the MSCI ACWI down 4.1%; emerging market stocks outperformed with losses of 2.6%. The portfolio's Domestic Equity composite returned -5.2% (net) and the Non-US Equity composite was down -4.9% (net).
- In fixed income, interest rate duration drove returns in fixed income last month as the sell-off in longer-dated Treasuries fueled losses in bonds. Treasury yields rose sharply in September with the 10-year yield rising 48 basis points and the 30-year yield up 50 basis points. During this period, investment-grade credit spreads widened modestly by three basis points, while spreads on high-yield bonds widened 22 basis points; the duration effect drove investment-grade and high-yield debt down 2.7% and 1.2%, respectively. The Fixed Income composite returned -2.1% (net) for the month while the Bloomberg Agg and the Bloomberg US HY returned -2.5% and -1.2%, respectively.
- This brings the total plan return for the trailing one-year period to 7.6% (net), while the Allocation Index and Policy Index both returned 9.0 and 9.5%, respectively.

Returns for 20 years Risk/Return and Statistics Summary are gross of fees.

Since inception return is 8.1% 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 (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
Composite	646,703,806	100.0	100.0	-2.8	-2.7	3.4	7.6	4.0	4.7	5.7	6.6	Jan-86	
Allocation Index				-2.0	-1.6	4.5	9.0	5.2	5.4	6.3			
Policy Index				-2.8	-2.3	4.8	9.5	5.5	5.9	6.5			
Total Balanced	3,613,781	0.6	0.0	-2.6	-1.8	4.6	8.9	6.8	5.7	4.4	4.5	Dec-10	
PRIT Core Fund	3,613,781	0.6	0.0	-2.6	-1.8	4.6	8.9	6.8	6.3	7.3	6.7	Apr-99	
60% S&P 500 / 40% Bloomberg Aggregate				-3.9	-3.2	7.2	13.0	4.0	6.3	7.7	6.0		
Total Domestic Equity	196,502,207	30.4	31.0	-5.2	-4.1	7.4	15.0	6.9	7.4	9.8	7.2	May-99	
Russell 3000 Index				-4.8	-3.3	12.4	20.5	9.4	9.1	11.3	7.1		
Large Cap	151,418,098	23.4	24.0	-5.2	-4.2	8.5	15.6	6.2	8.4	10.7	11.7	Dec-10	
Rhumblin Advisors S&P 500 Index Fund	62,150,620	9.6	10.0	-4.8	-3.3	13.0	21.5	10.1	9.9	11.8	8.8	Apr-97	
S&P 500 Index				-4.8	-3.3	13.1	21.6	10.2	9.9	11.9	8.8		
Coho Relative Value Equity	48,489,282	7.5	7.0	-4.6	-6.1	-6.8	3.5	5.4	5.7		8.5	Mar-16	
Russell 1000 Value Index				-3.9	-3.2	1.8	14.4	11.1	6.2		9.4		
Polen Focused Growth	40,778,196	6.3	7.0	-6.5	-3.4	21.8	21.4	0.9	8.5		12.6	Feb-16	
Russell 1000 Growth Index				-5.4	-3.1	25.0	27.7	8.0	12.4		15.9		
Small Cap	45,084,110	7.0	7.0	-5.1	-3.8	3.6	12.6	9.2	4.6	7.7	10.3	Dec-10	
Loomis Sayles Small Cap Growth	22,175,932	3.4	3.5	-5.4	-5.1	3.9	12.2	3.7	4.4	8.6	6.5	Jan-97	
Russell 2000 Growth Index				-6.6	-7.3	5.2	9.6	1.1	1.6	6.7	6.4		
Mesirow Small Cap Value Equity CIT - Founders Class	22,908,178	3.5	3.5	-4.7	-2.6						-0.5	Apr-23	
Russell 2000 Value Index				-5.2	-3.0						0.1		
Total Non-US Equity	103,961,511	16.1	19.0	-4.9	-7.1	1.6	13.5	-2.8	-0.7	1.5	3.4	Mar-99	
International Equity	67,365,449	10.4	12.0	-5.9	-9.1	1.6	16.5	-1.8	0.6	2.4	2.8	Sep-05	
SEG Baxter Street	27,845,969	4.3	5.0	-6.3	-10.4	-0.9	12.7	-3.4	1.4		4.7	May-16	
MSCI AC World ex USA (Net)				-3.2	-3.8	5.3	20.4	3.7	2.6		4.9		
Schroder International Alpha Trust Class 1	26,810,770	4.1	4.0	-4.5	-7.0	4.4	21.8	3.8	4.8	5.0	5.8	Mar-12	
MSCI AC World ex USA (Net)				-3.2	-3.8	5.3	20.4	3.7	2.6	3.3	4.1		
Baillie Gifford International Growth Fund Class K	12,708,710	2.0	3.0	-7.7	-10.6	1.4	14.6	-10.1			-10.1	Oct-20	
MSCI AC World ex USA (Net)				-3.2	-3.8	5.3	20.4	3.7			3.7		

Since inception return is 8.1% 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 (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
Emerging Markets Equity	36,596,062	5.7	7.0	-3.0	-3.0	1.4	7.9					-13.2	Mar-21
Axiom Emerging Markets Trust Class 2	17,246,003	2.7	7.0	-3.3	-4.4	-2.1	3.6					-16.4	Mar-21
<i>MSCI Emerging Markets (Net)</i>				-2.6	-2.9	1.8	11.7					-9.9	
ABS Emerging Markets MA Fund	19,350,059	3.0		-2.8	-1.8	4.7	11.9					-10.1	Dec-21
<i>MSCI Emerging Markets (Net)</i>				-2.6	-2.9	1.8	11.7					-9.7	
Total Fixed Income	134,813,350	20.8	20.0	-2.1	-2.5	0.1	2.2	-3.1	1.2	2.2	5.4	Mar-99	
Garcia Hamilton Fixed Income Aggregate	30,813,272	4.8	6.0	-3.6	-4.9	-2.8	-1.4	-5.5	-0.4		-0.3	Apr-18	
<i>Blmbg. U.S. Aggregate Index</i>				-2.5	-3.2	-1.2	0.6	-5.2	0.1		0.1		
Lord Abbett Core Fixed Income	36,015,695	5.6	4.0	-2.4	-2.9	-0.7	1.0	-4.7	0.3		0.3	Apr-18	
<i>Blmbg. U.S. Aggregate Index</i>				-2.5	-3.2	-1.2	0.6	-5.2	0.1		0.1		
Loomis Sayles Multisector Full Discretion Trust	46,023,882	7.1	8.0	-2.2	-2.2	0.5	3.1	-2.9	1.6	2.8	6.6	Mar-99	
<i>Blmbg. U.S. Aggregate Index</i>				-2.5	-3.2	-1.2	0.6	-5.2	0.1	1.1	3.7		
<i>Blmbg. U.S. Corp: High Yield Index</i>				-1.2	0.5	5.9	10.3	1.8	3.0	4.2	6.1		
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	9,799,079	1.5	2.0	0.7	2.6	8.1	10.8	4.4			3.7	Aug-19	
<i>Credit Suisse Leveraged Loan</i>				0.9	3.4	9.9	12.5	5.9			4.5		
LMCG Serenitas Credit Gamma Offshore	12,146,036	1.9		1.2							1.2	Sep-23	
<i>HFRI Relative Value (Total) Index</i>				0.2							0.2		
<i>Blmbg. U.S. Aggregate Index</i>				-2.5							-2.5		
Invesco Mortgage Recovery Loans Feeder Fund	15,385	0.0		0.0	0.0	0.4	1.1	-0.1	0.3	5.8	9.4	Apr-10	
<i>Blmbg. U.S. Aggregate Index</i>				-2.5	-3.2	-1.2	0.6	-5.2	0.1	1.1	1.9		
Total Hedge Fund	40,623,149	6.3	6.0	0.3	1.8	4.9	5.0	5.1	4.0	3.3	3.4	Oct-06	
PRIM Portfolio Completion Strategies	12,679,439	2.0		-0.3	1.5	5.0	6.6	6.1	3.5	3.9	3.8	Oct-06	
Corbin Pinehurst Partners	13,513,265	2.1		1.1	2.8	7.3	9.1	4.6			5.1	Nov-18	
<i>HFRI Fund of Funds Composite Index</i>				-0.5	0.5	2.8	4.6	3.8			4.1		
UBS Neutral Alpha Strategies	14,378,429	2.2		0.0	1.0	2.6	4.8	6.5			6.1	Nov-18	
<i>HFRI Fund of Funds Composite Index</i>				-0.5	0.5	2.8	4.6	3.8			4.1		
Entrust Peru Wind Down	52,016	0.0		-0.4	-2.3	-21.4	-92.9	-58.7	-42.6		-38.2	Dec-17	
<i>HFRI Fund of Funds Composite Index</i>				-0.5	0.5	2.8	4.6	3.8	3.4		3.2		
Other	6,296,259	1.0	0.0	0.8	1.3	3.8	4.7	1.7	1.8	1.2	0.9	Dec-10	
Cash Account	6,296,259	1.0		0.8	1.3	3.8	4.7	1.7	1.8	1.2	1.8	Feb-00	
<i>90 Day U.S. Treasury Bill</i>				0.5	1.3	3.6	4.5	1.7	1.7	1.1	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 (%)	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Real Estate	67,325,396	10.4	12.0	0.0	0.0	-2.5	-5.2	10.2	8.0	9.5	8.0	Apr-99
<i>NCREIF Property Index</i>				0.0	0.0	-3.8	-7.1	6.5	5.6	7.5	8.3	
Morgan Stanley Prime Property (\$2.8m commitment in '95)	24,644,518	3.8		0.0	0.0	-3.5	-7.0	8.1	6.4	8.9	8.4	Sep-95
TA Realty Core Property Fund, LP (\$15m commitment in '19)	25,494,984	3.9		0.0	0.0	-1.9	-7.3	12.7			10.2	Jun-19
Invesco Mortgage Recovery II (\$3M commitment in '15)	644,706	0.1		0.0	0.0	-27.6	-40.7	-31.2	-18.4		-8.0	Oct-15
Landmark VI (\$2m commitment in '11)	5,866	0.0		0.0	0.0	-9.3	-9.4	-6.5	-10.4	-2.3	1.3	Jul-11
Landmark VIII (\$4m commitment in '17)	2,087,294	0.3		0.0	0.0	1.3	-1.0	19.4	13.3		16.9	Nov-17
StepStone Real Estate Fund II (\$2m commitment in '11)	361,718	0.1		0.0	0.0	1.4	-1.1	0.0	-2.5	3.5	1.8	May-12
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)	473,317	0.1		0.0	0.0	1.7	19.8	22.7	15.3	13.8	14.2	May-13
TerraCap Partners III, LP (\$2.6m commitment in '15)	1,589,564	0.2		0.0	0.0	-1.3	15.0	8.6	7.7		10.1	Jul-15
TerraCap Partners IV, LP (\$4m commitment in '17)	3,518,882	0.5		0.0	0.0	-4.1	-1.3	7.5	8.0		8.6	Nov-17
TerraCap Partners V, LP (\$8m commitment in '22)	8,504,546	1.3		0.0	0.0	0.0	4.3				7.2	Jun-22
Total Private Equity and Debt	93,568,152	14.5	12.0	-0.1	0.4	5.2	6.2	20.2	13.9	14.7	10.4	Apr-99
<i>CJA US All PE</i>				0.0	0.0	5.5	6.8	17.4	14.5	14.0	13.0	
<i>NASDAQ W/O Income</i>				-5.8	-4.1	26.3	25.0	5.8	10.4	13.4	7.1	
PRIM Vintage Year 2008 (\$3m commitment in '08)	924,691	0.1		0.0	6.4	22.4	21.5	24.6	15.6	18.9	10.8	Jun-08
PRIM Vintage Year 2009 (\$1m commitment in '09)	54,147	0.0		-0.3	4.0	-4.8	-4.3	19.2	24.9	23.7	13.1	Nov-09
PRIM Vintage Year 2010 (\$1m commitment in '10)	384,373	0.1		-0.6	-4.6	-13.0	-19.2	8.2	8.6	15.5	9.1	Jun-10
PRIM Vintage Year 2011 (\$1.5m commitment in '11)	758,219	0.1		-0.2	2.3	3.2	0.1	31.3	21.2	22.3	9.6	May-11
PRIM Vintage Year 2012 (\$1m commitment in '12)	433,616	0.1		-0.8	2.1	4.3	10.4	6.3	11.0	13.1	-8.4	Jun-12
PRIM Vintage Year 2014 (\$2m commitment in '14)	2,087,122	0.3		-0.2	1.2	2.0	-0.3	19.3	19.4		8.0	Jun-14
PRIM Vintage Year 2017 (\$2m commitment in '17)	2,648,705	0.4		-0.1	2.9	7.0	9.4	24.8	18.5		15.4	May-17
PRIM Vintage Year 2020 (\$5m commitment in '20)	4,280,022	0.7		-0.6	2.0	3.1	2.9	16.7			14.0	Mar-20
PRIM Vintage Year 2021 (\$5m commitment in '21)	3,848,158	0.6		-0.2	1.8	5.9	1.5				1.2	Dec-20
PRIM Vintage Year 2022 (\$7.5m commitment in '22)	1,796,672	0.3		-0.8	1.0	4.2	3.6				-1.2	Apr-22
PRIM Vintage Year 2023 (\$10m commitment in '23)	390,006	0.1		-0.6	-0.7						-1.0	May-23
Alcentra European DLF (\$5m commitment in '14)	208,355	0.0		0.0	0.0	4.8	5.6	27.4	13.5		11.6	Jan-15
Ascent Fund IV-B (\$1m commitment in '16)	20,242	0.0		0.0	0.0	-1.4	-49.8	-30.3	-29.8		-21.3	Jul-16
Ascent Fund V (\$2m commitment in '08)	1,274,437	0.2		0.0	0.0	1.0	1.9	2.4	-1.3	1.9	3.8	Oct-08
Ascent VI (\$3m commitment in '15)	3,174,297	0.5		0.0	0.0	-2.6	-10.6	1.4	-1.1		0.7	Dec-15
CVI Credit Value Fund IV A LP (\$6m commitment in '17)	4,527,880	0.7		0.0	0.0	4.0	6.4	10.3	6.4		6.4	Dec-17
Invesco Fund VI (\$5m commitment in '13)	548,079	0.1		0.0	0.0	-28.8	-34.5	0.5	6.3	10.8	10.5	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 (%)	3 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	0.0	-5.1	-2.0	21.3	-17.9		-4.6	Jan-16
Foundry 2007 (\$3m commitment in '07)	205,925	0.0		0.0	0.0	-0.6	-57.5	1.9	-20.0	2.3	12.6	Dec-07
Foundry 2010 (\$3m commitment in '10)	5,901,587	0.9		0.0	0.0	-0.3	-1.2	23.6	18.8	13.1	13.3	Feb-11
Foundry 2010 Annex (\$0.4m commitment in '15)	1,100,130	0.2		0.0	0.0	0.0	-0.5	51.3	54.1		37.4	Sep-15
Pinebridge PEP V (\$6.23m commitment in '07)	393,213	0.1		0.0	0.0	1.1	-1.7	1.3	1.6	6.5	6.7	Dec-10
Pinebridge (AIG) PEP V Asia (\$.55m commitment)	29,864	0.0		0.0	0.0	-5.9	-8.6	-10.7	-13.7		-13.7	Oct-18
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)	88,883	0.0		0.0	0.0	0.1	-1.9	12.8	4.9		4.9	Oct-18
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)	16,685	0.0		0.0	0.0	2.1	3.1	-15.5	97.7		97.7	Oct-18
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)	89,305	0.0		0.0	0.0	16.1	27.3	8.9	10.3		10.3	Oct-18
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)	59,460	0.0		0.0	0.0	-13.1	-21.5	-8.2	-7.9		-7.9	Oct-18
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)	15,403	0.0		0.0	0.0	-8.1	-16.0	-14.4	-15.1		-11.4	Jan-17
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)	52,801	0.0		0.0	0.0	3.4	2.8	6.2	13.9		13.9	Oct-18
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)	40,812	0.0		0.0	0.0	2.3	-13.8	-2.5	-5.2		-5.2	Oct-18
Landmark XV (\$3m commitment in '13)	592,329	0.1		0.0	0.0	-2.1	-3.9	7.0	3.1		9.5	Nov-13
JFL Equity Investors IV, L.P. (\$6m commitment in '16)	2,302,229	0.4		0.0	0.0	27.9	27.9	41.1	40.1		37.5	Jan-17
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)	4,885,206	0.8		0.0	0.0	14.0	15.9	19.2	21.4		19.6	Feb-17
Park Square Credit Opportunities III (\$3m commitment in '17)	2,809,653	0.4		0.0	0.0	5.2	7.7	7.4	8.2		7.1	Feb-18
Ironsides Constitution Opportunities (\$3m commitment in '18)	1,515,127	0.2		0.0	0.0	8.0	11.0	11.3	11.6		11.6	Oct-18
HarbourVest Dover Street X (\$9m commitment in '20)	7,331,986	1.1		0.0	0.0	4.4	7.2	27.6			49.3	Jun-20
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)	7,785,098	1.2		0.0	0.0	3.2	5.1	25.2			27.0	Jul-20
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)	12,688,150	2.0		0.0	0.0	4.2	3.0				3.5	Nov-21
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)	4,594,346	0.7		0.0	0.0	7.4	15.4					Jan-22
JFL Equity Investors V, L.P. (\$9m commitment in '20)	11,417,570	1.8		0.0	0.0	14.6	29.1	13.1			9.7	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.

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PRIT Core Fund	0.49 % of Assets	3,613,781	0.56	17,708	0.49
Rhumblin Advisors S&P 500 Index Fund	0.04 % of Assets	62,150,620	9.61	24,860	0.04
Coho Relative Value Equity	0.50 % of First \$75 M 0.40 % of Next \$75 M 0.35 % Thereafter	48,489,282	7.50	242,446	0.50
Polen Focused Growth	0.65 % of Assets	40,778,196	6.31	265,058	0.65
Loomis Sayles Small Cap Growth	0.45 % of Assets Minimum Fee: \$45,000	22,175,932	3.43	99,792	0.45
SEG Baxter Street	1.00 % of Assets	27,845,969	4.31	278,460	1.00
Schroder International Alpha Trust Class 1	0.55 % of Assets	26,810,770	4.15	147,459	0.55
Baillie Gifford International Growth Fund Class K	0.60 % of Assets	12,708,710	1.97	76,252	0.60
Axiom Emerging Markets Trust Class 2	0.77 % of Assets	17,246,003	2.67	132,794	0.77
ABS Emerging Markets MA Fund	0.75 % of Assets	19,350,059	2.99	145,125	0.75
Garcia Hamilton Fixed Income Aggregate		30,813,272	4.76	38,517	0.13
Lord Abbett Core Fixed Income	0.19 % of Assets	36,015,695	5.57	68,430	0.19
Loomis Sayles Multisector Full Discretion Trust	0.39 % of First \$50 M 0.30 % Thereafter	46,023,882	7.12	179,493	0.39
Mesirow Small Cap Value Equity CIT - Founders Class	0.45 % of Assets	22,908,178	3.54	103,087	0.45
Octagon Senior Secured Credit Cayman Fund Ltd. - Class L Acc, Series 1	0.40 % of Assets	9,799,079	1.52	39,196	0.40
Invesco Mortgage Recovery Loans Feeder Fund		15,385	0.00		
PRIM Portfolio Completion Strategies		12,679,439	1.96		
Corbin Pinehurst Partners	0.85 % of Assets	13,513,265	2.09	114,863	0.85
UBS Neutral Alpha Strategies	0.90 % of Assets	14,378,429	2.22	129,406	0.90
Entrust Peru Wind Down	0.50 % of Assets	52,016	0.01	260	0.50
LMCG Serenitas Credit Gamma Offshore		12,146,036	1.88	182,191	1.50
Cash Account		6,296,259	0.97		
Morgan Stanley Prime Property (\$2.8m commitment in '95)		24,644,518	3.81		
TA Realty Core Property Fund, LP (\$15m commitment in '19)		25,494,984	3.94		
Invesco Mortgage Recovery II (\$3M commitment in '15)		644,706	0.10		
Landmark VI (\$2m commitment in '11)		5,866	0.00		
Landmark VIII (\$4m commitment in '17)		2,087,294	0.32		
StepStone Real Estate Fund II (\$2m commitment in '11)		361,718	0.06		
Cerberus Institutional Real Estate Partners III (\$1.5m commitment in '12)		473,317	0.07		
TA Realty Fund X LP (\$3.5m commitment in '12)		1	0.00		

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
TerraCap Partners III, LP (\$2.6m commitment in '15)		1,589,564	0.25		
TerraCap Partners IV, LP (\$4m commitment in '17)		3,518,882	0.54		
TerraCap Partners V, LP (\$8m commitment in '22)		8,504,546	1.32		
PRIM Vintage Year 2008 (\$3m commitment in '08)		924,691	0.14		
PRIM Vintage Year 2009 (\$1m commitment in '09)		54,147	0.01		
PRIM Vintage Year 2010 (\$1m commitment in '10)		384,373	0.06		
PRIM Vintage Year 2011 (\$1.5m commitment in '11)		758,219	0.12		
PRIM Vintage Year 2012 (\$1m commitment in '12)		433,616	0.07		
PRIM Vintage Year 2014 (\$2m commitment in '14)		2,087,122	0.32		
PRIM Vintage Year 2017 (\$2m commitment in '17)		2,648,705	0.41		
PRIM Vintage Year 2020 (\$5m commitment in '20)		4,280,022	0.66		
PRIM Vintage Year 2021 (\$5m commitment in '21)		3,848,158	0.60		
PRIM Vintage Year 2022 (\$7.5m commitment in '22)		1,796,672	0.28		
PRIM Vintage Year 2023 (\$10m commitment in '23)		390,006	0.06		
Alcentra European DLF (\$5m commitment in '14)		208,355	0.03		
Ascent Fund IV-B (\$1m commitment in '16)		20,242	0.00		
Ascent Fund V (\$2m commitment in '08)		1,274,437	0.20		
Ascent VI (\$3m commitment in '15)		3,174,297	0.49		
CVI Credit Value Fund IV A LP (\$6m commitment in '17)		4,527,880	0.70		
Invesco Fund VI (\$5m commitment in '13)		548,079	0.08		
Kayne Energy Fund VII (\$5m commitment in '15)		2,686,582	0.42		
Foundry 2007 (\$3m commitment in '07)		205,925	0.03		
Foundry 2010 (\$3m commitment in '10)		5,901,587	0.91		
Foundry 2010 Annex (\$0.4m commitment in '15)		1,100,130	0.17		
Pinebridge (AIG) PEP V Asia (\$.55m commitment)		29,864	0.00		
Pinebridge (AIG) PEP V Co-Investment (\$.9m commitment)		88,883	0.01		
Pinebridge (AIG) PEP V Europe (\$1.6m commitment)		16,685	0.00		
Pinebridge (AIG) PEP V Large Market US Buyout (\$.7m commitment)		89,305	0.01		
Pinebridge (AIG) PEP V Preferred Participation Fund (\$.5m commitment)		59,460	0.01		
Pinebridge (AIG) PEP V Secondary (\$.6m commitment)		15,403	0.00		
Pinebridge (AIG) PEP V Small-Mid Market US Buyout (\$.9m commitment)		52,801	0.01		
Pinebridge (AIG) PEP V US Venture (\$.48m commitment)		40,812	0.01		
Landmark XV (\$3m commitment in '13)		592,329	0.09		
JFL Equity Investors IV, L.P. (\$6m commitment in '16)		2,302,229	0.36		

FEE SCHEDULE

Account Name	Fee Schedule	Market Value (\$)	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Private Advisors Small Co. Coinvestment Fund, LP (\$4m commitment in '17)		4,885,206	0.76		
Park Square Credit Opportunities III (\$3m commitment in '17)		2,809,653	0.43		
Ironsides Constitution Opportunities (\$3m commitment in '18)		1,515,127	0.23		
HarbourVest Dover Street X (\$9m commitment in '20)		7,331,986	1.13		
Hamilton Lane Secondary Fund V LP (\$9m commitment in '20)		7,785,098	1.20		
Constitution Ironsides Co-Investment Fund VI (\$12m commitment in '21)		12,688,150	1.96		
JFL Equity Investors V, L.P. (\$9m commitment in '20)		11,417,570	1.77		
HarbourVest Co-Investment Fund VI (\$8m commitment in '21)		4,594,346	0.71		
Investment Management Fee		646,703,806	100.00	2,285,397	0.35

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 6.6% for the current month.
- 4 - Preliminary Total Composite gross of fee since inception return is 8.1% 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 6/30/23 and cash adjusted through 9/30/2023.
- 10 - UBS Neutral Alpha Strategies is preliminary as of 9/30/2023

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

October 20, 2023

	Market Value	Weight in Fund	Target Weight	Recommendation	New Market Value	New Weight
Composite	\$644,346,214	100.0%	100.0%	\$0	\$644,346,214	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	\$195,633,653	30.4%	31.0%	-\$3,000,000	\$192,633,653	29.9%
Rhumblin Advisors S&P 500 Index Fund	\$61,280,511	9.5%	10.0%	-\$3,000,000	\$58,280,511	9.0%
Coho Relative Value	\$48,489,282	7.5%	7.0%	\$0	\$48,489,282	7.5%
Polen Focused Growth	\$40,778,196	6.3%	7.0%	\$0	\$40,778,196	6.3%
Mesirow Smcall Cap Value	\$22,908,178	3.6%	3.5%	\$0	\$22,908,178	3.6%
Loomis Sayles Small Cap Growth	\$22,177,486	3.4%	3.5%	\$0	\$22,177,486	3.4%
Total International Equity	\$102,757,308	15.9%	19.0%	\$0	\$102,757,308	15.9%
SEG - Baxter Street Fund	\$27,845,696	4.3%	5.0%	\$0	\$27,845,696	4.3%
Schroders International Alpha	\$26,191,441	4.1%	4.0%	\$0	\$26,191,441	4.1%
Baillie Gifford	\$12,124,109	1.9%	3.0%	\$0	\$12,124,109	1.9%
Axiom Emerging Markets	\$17,246,003	2.7%	3.5%	\$0	\$17,246,003	2.7%
ABS Emerging Markets Strategic Portfolio	\$19,350,059	3.0%	3.5%	\$0	\$19,350,059	3.0%
Total Equity	\$298,390,961	46.3%	50.0%	-\$3,000,000	\$295,390,961	45.8%
Total Fixed Income	\$132,917,071	20.6%	20.0%	-\$3,799,079	\$129,117,992	20.0%
Garcia Hamilton	\$30,813,272	4.8%	6.0%	\$0	\$30,813,272	4.8%
Lord Abbett	\$35,208,943	5.5%	6.0%	\$3,000,000	\$38,208,943	5.9%
Loomis Sayles Multi Sector Bonds	\$45,080,392	7.0%	7.0%	\$3,000,000	\$48,080,392	7.5%
LMCG Serenitas	\$12,000,000	1.9%	0.0%	\$0	\$12,000,000	1.9%
Octagon Senior Secured Loans	\$9,799,079	1.5%	1.0%	-\$9,799,079	\$0	0.0%
Invesco Mortgage Recovery	\$15,385	0.0%	0.0%	\$0	\$15,385	0.0%
Total Hedge Fund	\$40,623,149	6.3%	6.0%	-\$3,000,000	\$37,623,149	5.8%
PRIM Absolute Return Fund	\$12,679,439	2.0%		-\$1,000,000	\$11,679,439	1.8%
Corbin Pinehurst Partners	\$13,513,265	2.1%		-\$1,000,000	\$12,513,265	1.9%
UBS Neutral Alpha Strategies	\$14,378,429	2.2%		-\$1,000,000	\$13,378,429	2.1%
Entrust Peru Winddown	\$52,016	0.0%		\$0	\$52,016	0.0%
Total Real Estate	\$67,325,396	10.4%	12.0%	\$0	\$67,325,396	10.4%
TA Realty Core	\$25,494,984	4.0%		\$0	\$25,494,984	4.0%
Morgan Stanley PPF	\$24,644,518	3.8%		\$0	\$24,644,518	3.8%
Total Private Equity	\$93,568,152	14.5%	12.0%	\$0	\$93,568,152	14.5%
Cash	\$7,341,380	1.1%	0.0%	\$9,799,079	\$17,140,459	2.7%
M&T Cash	\$7,341,380	1.1%	0.0%	\$9,799,079	\$17,140,459	2.7%





CUSTODY SEARCH - REVISED PRICING ANALYSIS

MWRA RETIREMENT SYSTEM

OCTOBER 26, 2023

Sebastian Grzejka, CAIA, Partner

Francesca LoVerde, Consulting Analyst



PRICING ANALYSIS

SUMMARY (REVISED)

	State Street	Comerica Bank	Wilmington Trust / M&T Bank
Core Custody Services¹			
Account Based Fees	Included in Annual Minimum	\$ -	\$6,250
Asset Based Fees	Included in Annual Minimum	\$39,732	\$66,219
Holdings Based Fees	Included in Annual Minimum	\$ -	\$ -
Transaction Based Fees	Included in Annual Minimum	\$663	\$600
Annual Minimum Fees	\$50,000	\$ -	\$ -
Alternative Asset Services²			
Alternative Asset Support Fees	\$25,000	Standard Services Included	Standard Services Included
Total Estimated Fees³	\$75,000	\$40,395	\$75,569

¹ Custody fee structure varies by custodian. Please refer to detailed fee proposals for additional details. State Street minimum fee of \$50,000 per year applies for custody services.

² State Street fee of \$25,000 per year for alternative support includes monthly processing of general partner statements to provide cash adjusted market values, cash flows and distribution processing, document management. Standard alternative services are included in custody fees for Comerica Bank and Wilmington Trust/M&T Bank.

³ Comerica Bank fees estimated assuming pricing presented to board on September 28, 2023. Wilmington Trust/M&T Bank transaction fee estimate includes miscellaneous pass-through fees.



Fee quotes are based on MWRA ERS custody account structure as of 5/31/2023. Pricing terms are based on "all-in" fee schedules, where one custodian is selected for all services in scope of this search. Cash management fees netted against income earned and not billed directly to the plan (management fees vary by product). Broker commissions are not a part of custodian transaction fees and would be additional cost based on actual trading activity. Detailed pricing estimates available upon request.

PRICING ANALYSIS

DETAILED SUMMARY (REVISED)

		State Street		Comerica Bank		Wilmington Trust / M&T Bank	
Core Custody Services		Itemized Fees	Annual Fees	Itemized Fees	Annual Fees	Itemized Fees	Annual Fees
Account(s)	Volume (#)						
US Separate Managed Accounts	4	\$ -	\$ -	\$ -	\$ -	\$ 1,250	\$ 5,000
Line Item Accounts (PE, RE, Natural Resources)	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Cash Accounts	1	\$ -	\$ -	\$ -	\$ -	\$ 1,250	\$ 1,250
Subtotal	6						\$ 6,250
Safekeeping (\$)	Market Value (\$)	Itemized	Annual	Itemized	Annual	Itemized	Annual
US Separately Managed Assets - Equity	\$ 113,760,823	-	\$ -	0.60	\$ 6,826	0.00010	\$ 11,376
US Separately Managed Assets - Fixed Income	\$ 31,766,148	-	\$ -	0.60	\$ 1,906	0.00010	\$ 3,177
Line-Item Assets - Mutual Funds	\$ 13,775,416	-	\$ -	0.60	\$ 827	0.00010	\$ 1,378
Line-Item Assets - Commingled/Hedge Funds	\$ 323,821,547	-	\$ -	0.60	\$ 19,429	0.00010	\$ 32,382
Line-Item Assets - Private Equity	\$ 89,688,627	-	\$ -	0.60	\$ 5,381	0.00010	\$ 8,969
Line Item Assets - Real Estate	\$ 67,851,274	-	\$ -	0.60	\$ 4,071	0.00010	\$ 6,785
Line Item Assets - Natural Resources	\$ 2,686,582	-	\$ -	0.60	\$ 161	0.00010	\$ 269
Cash	\$ 18,841,981	-	\$ -	0.60	\$ 1,131	0.00010	\$ 1,884
Subtotal	\$ 640,663,835				\$ 39,732	1.00	\$ 66,219
Holding(s)	#	Itemized	Annual	Itemized	Annual	Itemized	Annual
US Separately Mgd Assets - Equity Holdings	144	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
US Separately Mgd - Fixed Income Holdings	31	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Line-Item Assets - Mutual Funds	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Line-Item Assets - Commingled/Hedge Funds	15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Line-Item Assets - Private Equity	33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Line Item Assets - Real Estate	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Line Item Assets - Natural Resources	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal							
Transaction(s)	#	Itemized	Annual	Itemized	Annual	Itemized	Annual
US Separate Managed Transactions	85	\$ -	\$ -	\$ -	\$ -	\$ 6	\$ 510
Line Item Transactions (PE, Real Est & Ntrl Rsrc)	15	\$ -	\$ -	\$ -	\$ -	\$ 6	\$ 90
Wires/Transfers (ACH and Checks)	20	\$ -	\$ -	\$ 17	\$ 340	\$ 6	\$ -
Paydowns	16	\$ -	\$ -	\$ 17	\$ 272	\$ -	\$ -
Corporate Actions/Class Actions	3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Investment Manager/Custodian Fees	3	\$ -	\$ -	\$ 17	\$ 51	\$ -	\$ -
Manual Transactions	2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal	142				\$ 663		\$ 600
Annual/Regulatory Reporting	1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subtotal			\$ 25,000		\$ -		\$ 2,500
Total			\$ 75,000		\$ 40,395		\$ 75,569

¹ Custody fee structure varies by custodian. Please refer to detailed fee proposals for additional details. State Street minimum fee of \$50,000 per year applies for custody services.

² State Street fee of \$25,000 per year for alternative support includes monthly processing of general partner statements to provide cash adjusted market values, cash flows and distribution processing, document management. Standard alternative services are included in custody fees for Comerica Bank and Wilmington Trust/M&T Bank.

³ Comerica Bank fees estimated assuming pricing presented to board on September 28, 2023. Wilmington Trust/M&T Bank transaction fee estimate includes miscellaneous pass-through fees.

Fee quotes are based on MWRA ERS custody account structure as of 5/31/2023. Pricing terms are based on "all-in" fee schedules, where one custodian is selected for all services in scope of this search. Cash management fees netted against income earned and not billed directly to the plan (management fees vary by product). Broker commissions are not a part of custodian transaction fees and would be additional cost based on actual trading activity. Detailed pricing estimates available upon request.



INFORMATION DISCLOSURE

These materials contain summary information regarding the custodian banks described herein and are not a complete description of the products, services, and/or legal agreements for each provider. This analysis does not constitute a formal recommendation, approval or affirmation by NEPC. This report is for informational purposes and should be used as legal and/or tax advise. This report was prepared by NEPC for use by an individual client and should not be used by anyone other than the intended recipient. This report may consist of statements of opinion which are as of the date published and specific to the individual client review.

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EQUITY STRUCTURE REVIEW

MWRA RETIREMENT SYSTEM

OCTOBER 26, 2023

Sebastian Grzejka, CAIA, Partner
Francesca LoVerde, Consulting Analyst



EXECUTIVE SUMMARY

- **The purpose of today's presentation is to review the current structure and implementation of the US equity allocation**
 - The goal is to reaffirm the structure and consider next steps in the implementation of the exposure
- **Today, we want to focus on the following areas**
 - ***US Equity Implementation:***
 - We have provided a detailed quantitative analysis of the current allocation
 - The goal is to reaffirm the existing approach, or consider adjustments to implementation that best meets the Systems goals
 - We have provided two options for consideration to enhance the exposure
 - ***Small Cap and Index exposure already completed:***
 - Three RFP's have been issued over the last twelve months focused on small cap growth, value and the S&P 500 Index exposure
 - Loomis Small Cap Growth was retained for the small growth allocation
 - Mesirov Small Cap Value replaced Boston Partners in small value
 - Rhumblin was retained to manage the S&P 500 Index exposure
- **Based on today's review, we recommend issuing an RFP for an active large cap manager**

ACTIVE V. PASSIVE REVIEW



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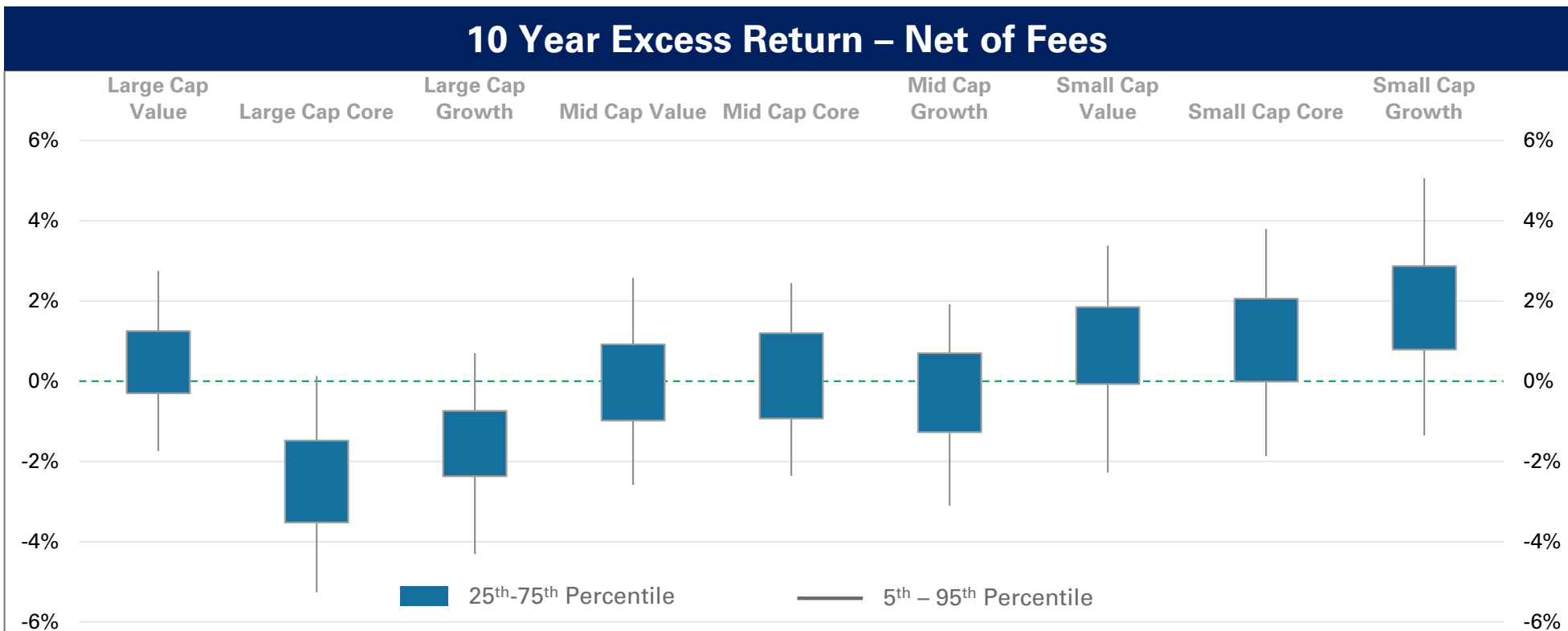
NEPC ACTIVE VS. PASSIVE RESEARCH STUDY

- **NEPC conducts an annual study of the performance of active vs. passive investment strategies in public markets**
- **We evaluate the decision for active management across two tests:**
 - **Test 1** considers whether there is wide dispersion between manager returns across the trailing 10-year period
 - **Test 2** considers whether the median manager outperforms the benchmark, net of fees, on a rolling 3-year basis
- **While this study is meant to be based on our quantitative tests, there are several things that clients should consider as they review the study**
 - The active vs. passive decision should also incorporate the individual goals of clients and the allocation specifically
 - Passive implementation in some asset classes may be costly or may not fully replicate its index

US EQUITIES

ACTIVE VS. PASSIVE VIEWS

	Large Value	Large Core	Large Growth	Mid Value	Mid Core	Mid Growth	Small Value	Small Core	Small Growth
Test 1 (Dispersion)	Fail	Pass	Fail	Pass	Pass	Pass	Pass	Pass	Pass
Test 2 (Rolling Outperformance)	Pass	Fail	Fail	Fail	Fail	Fail	Pass	Pass	Pass
Efficient Passive Option	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



Source: eVestment. Data as of 12/31/2022

*Benchmarks used in the above analysis are detailed within appendix



US LARGE CAP VALUE

NEPC Active Management Views

Asset Class	Median Fee	Test 1 Dispersion	Test 2 Median Outperf	Efficient Passive Option
US Large Cap Value	0.54%	Fail	Pass	Yes

Rolling 3 Year Excess Returns



Data is Net-of-Fees. US Large Cap Value Universe vs. Russell 1000 Value Index.
 Source: eVestment. Data as of 12/31/2022

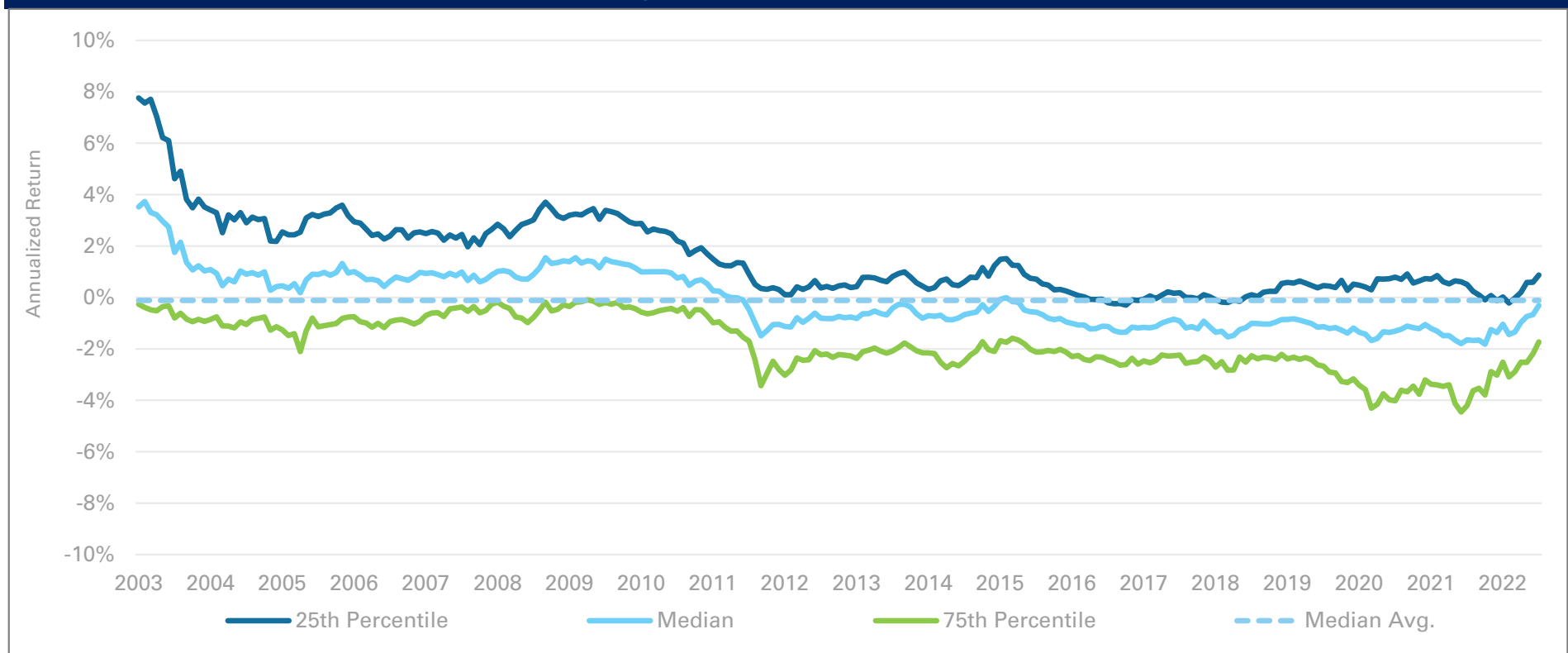


US LARGE CAP CORE

NEPC Active Management Views

Asset Class	Median Fee	Test 1 Dispersion	Test 2 Median Outperf	Efficient Passive Option
US Large Cap Core	0.45%	Pass	Fail	Yes

Rolling 3 Year Excess Returns



Data is Net-of-Fees. US Large Cap Core Universe vs. S&P 500 Index.
Source: eVestment. Data as of 12/31/2022

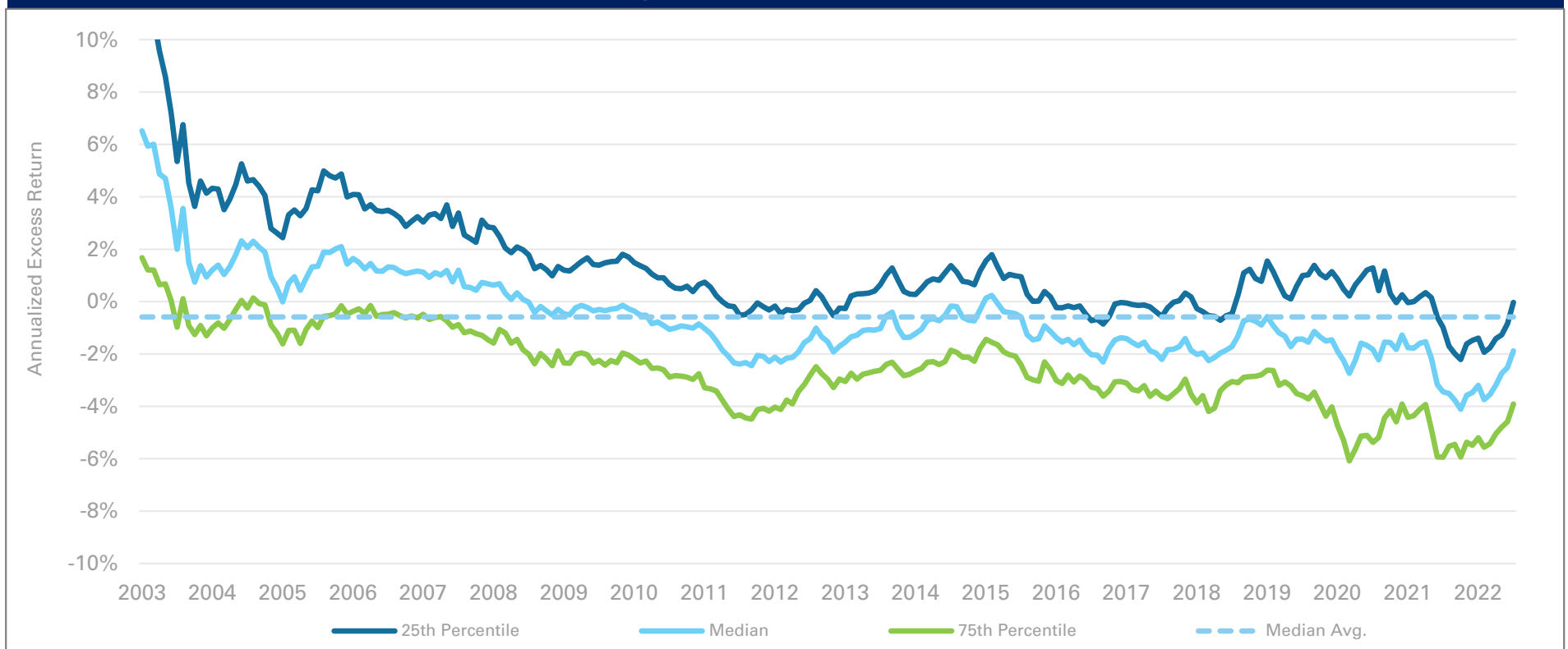


US LARGE CAP GROWTH

NEPC Active Management Views

Asset Class	Median Fee	Test 1 Dispersion	Test 2 Median Outperf	Efficient Passive Option
US Large Cap Growth	0.53%	Fail	Fail	Yes

Rolling 3 Year Excess Returns



Data is Net-of-Fees. US Large Cap Growth Universe vs. Russell 1000 Growth Index.

Source: eVestment. Data as of 12/31/2022



US EQUITY STRUCTURE REVIEW



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PORTFOLIO CONSTRUCTION SUMMARY

Fund	Domestic Equity Incumbent	Mix 1 (70% Passive/30% Active)	Mix 2 (50% Passive/50% Active)	Mix 3 (Coho Option)	Mix 4 (Polen Option)	Benchmark	Analysis Start Date	Analysis End Date
Rhumbline S&P 500 Index	32%	54%	39%	54%	54%	S&P 500	10/31/2013	9/30/2023
Coho Relative Value Equity	23%	12%	19%	23%	---	Russell 1000 Value	10/31/2013	9/30/2023
Polen Focus Growth	23%	12%	19%	---	23%	Russell 1000 Growth	10/31/2013	9/30/2023
Mesirow Financial Small Cap Value Equity	11%	11%	11%	11%	11%	Russell 2000 Value	10/31/2013	9/30/2023
Loomis Sayles Small Cap Growth	11%	11%	11%	11%	11%	Russell 2000 Growth	10/31/2013	9/30/2023
Total	100%	100%	100%	100%	100%			

	Domestic Equity Incumbent	Mix 1 (70% Passive/30% Active)	Mix 2 (50% Passive/50% Active)	Mix 3 (Coho Option)	Mix 4 (Polen Option)
Active Risk and Return					
Realized Alpha	0.7%	0.5%	0.6%	0.7%	0.4%
Beta	0.95	0.97	0.95	0.96	0.98
Tracking Error	1.8%	1.2%	1.6%	1.5%	1.4%
Diversification Ratio	1.71	1.69	1.72	1.43	1.47
Information Ratio	0.37	0.44	0.39	0.50	0.26
Style and Size Regression					
Style	Core	Core	Core	Core	Growth
Size	Large-Cap	Large-Cap	Large-Cap	Large-Cap	Large-Cap
Return Decomposition					
Upside Market Capture	95.6%	96.9%	95.6%	96.5%	97.3%
Downside Market Capture	94.9%	96.2%	94.9%	95.4%	97.1%
Upside Alpha	0.4%	0.2%	0.3%	0.4%	0.0%
Downside Alpha	0.9%	0.9%	0.9%	0.9%	0.9%

The current equity allocation was designed to provide balanced exposure and downside protection, which has been achieved.

Mixes one and two look to increase the passive exposure to 70% and 50% of the large cap allocation, respectively. Overall, these mixes maintain similar characteristics to the current allocation.

In a "core"- "satellite" approach, we adjusted the weight of any active strategy to 30% of large cap exposure. Mix three represents the most efficient option of all profiled.

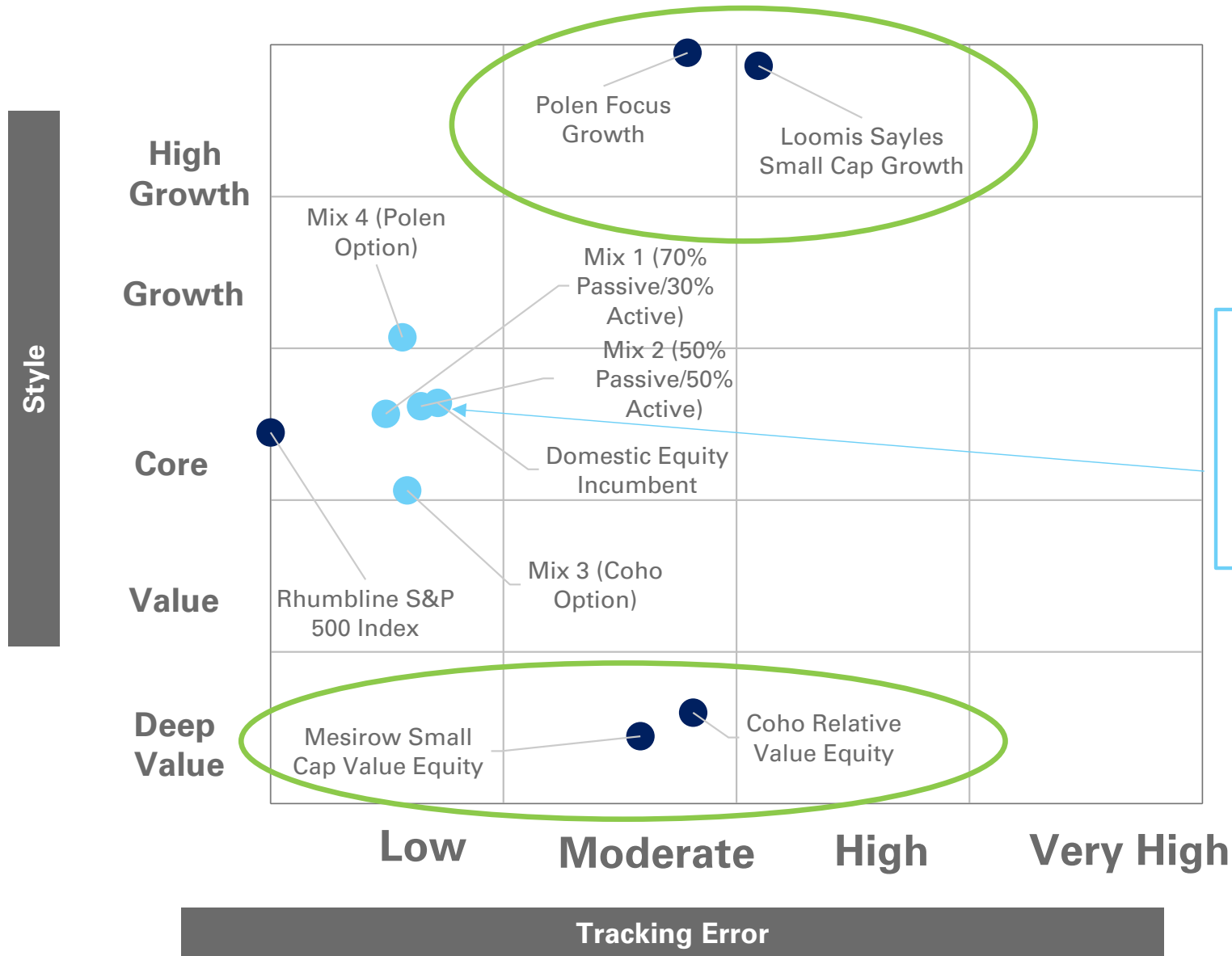
All Risk/Return statistics calculated through 09/30/23. Portfolio metrics calculated by combining fund statistics at specified weights.

Diversification Ratio defined as: $\sum(\text{Fund Active Risk} * \text{Fund Weight}) / (\text{Total Portfolio Active Risk})$. Higher numbers represent greater diversification.

Information Ratio defined as: $\text{Realized Alpha} / \text{Tracking Error}$



STYLE/TRACKING ERROR MATRIX

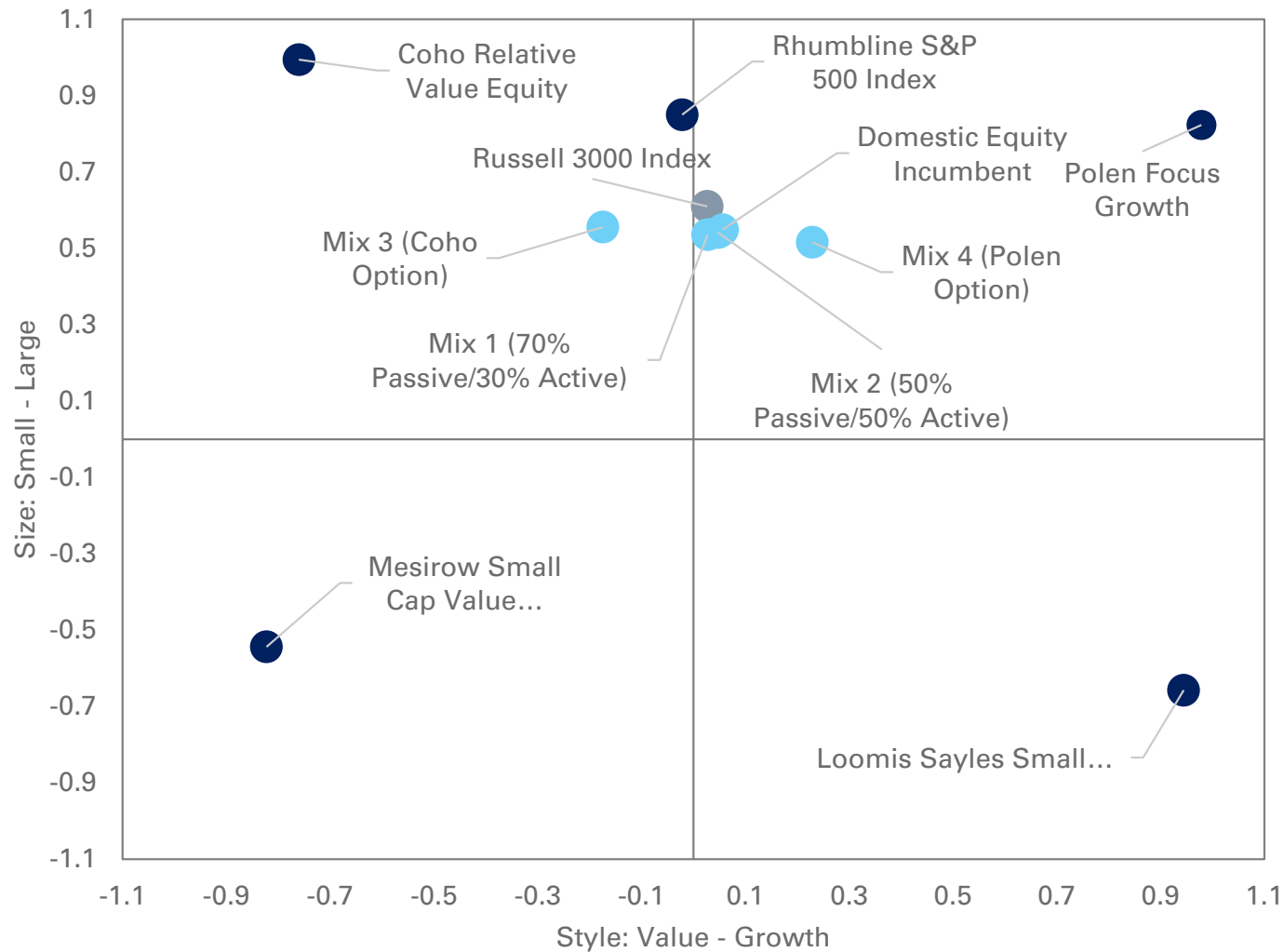


The structure was designed to balance both size and style. Overall, managers provide balance through style and size exposure.



STYLE EXPOSURES

STYLE & SIZE



Dark Blue:
Manager

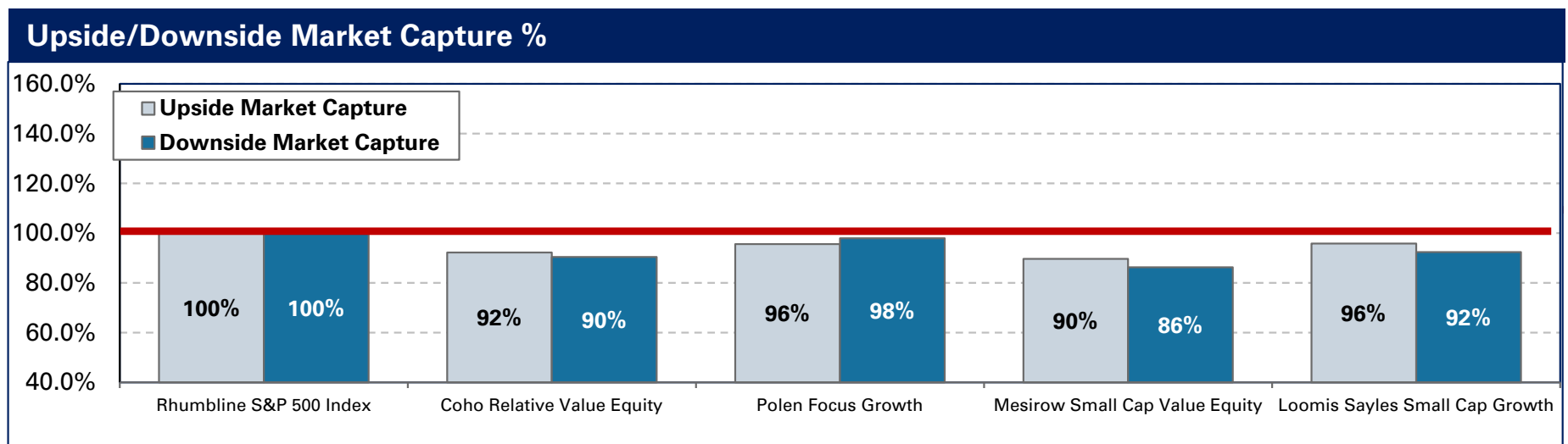
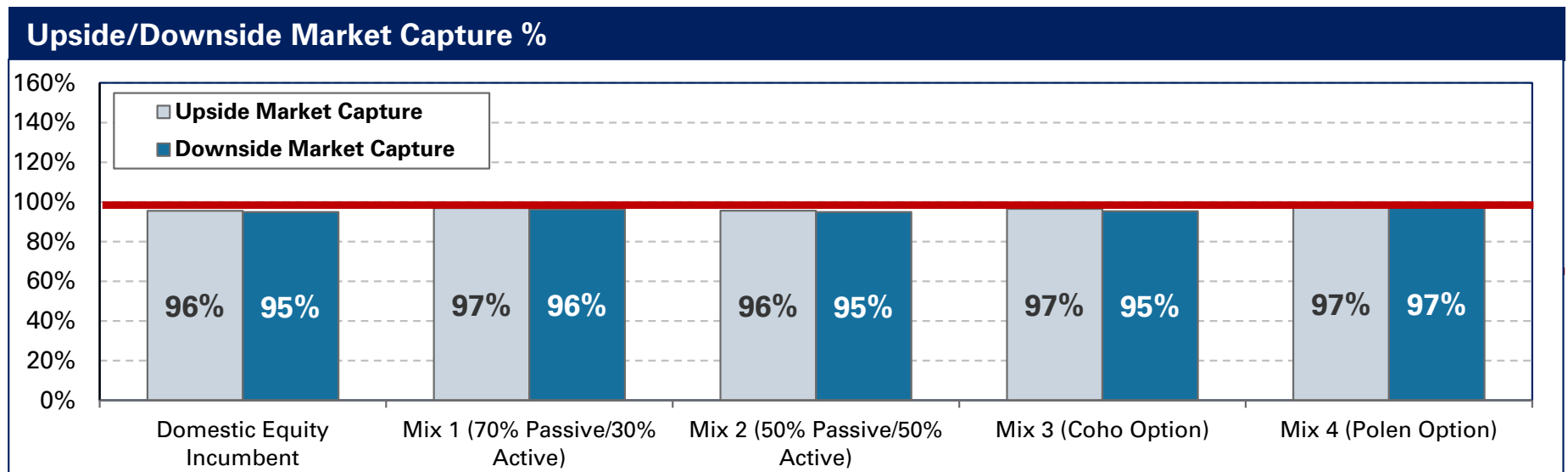
Light Blue:
Portfolio

Grey:
Benchmark



RETURN DECOMPOSITION

UPSIDE/DOWNSIDE CAPTURE

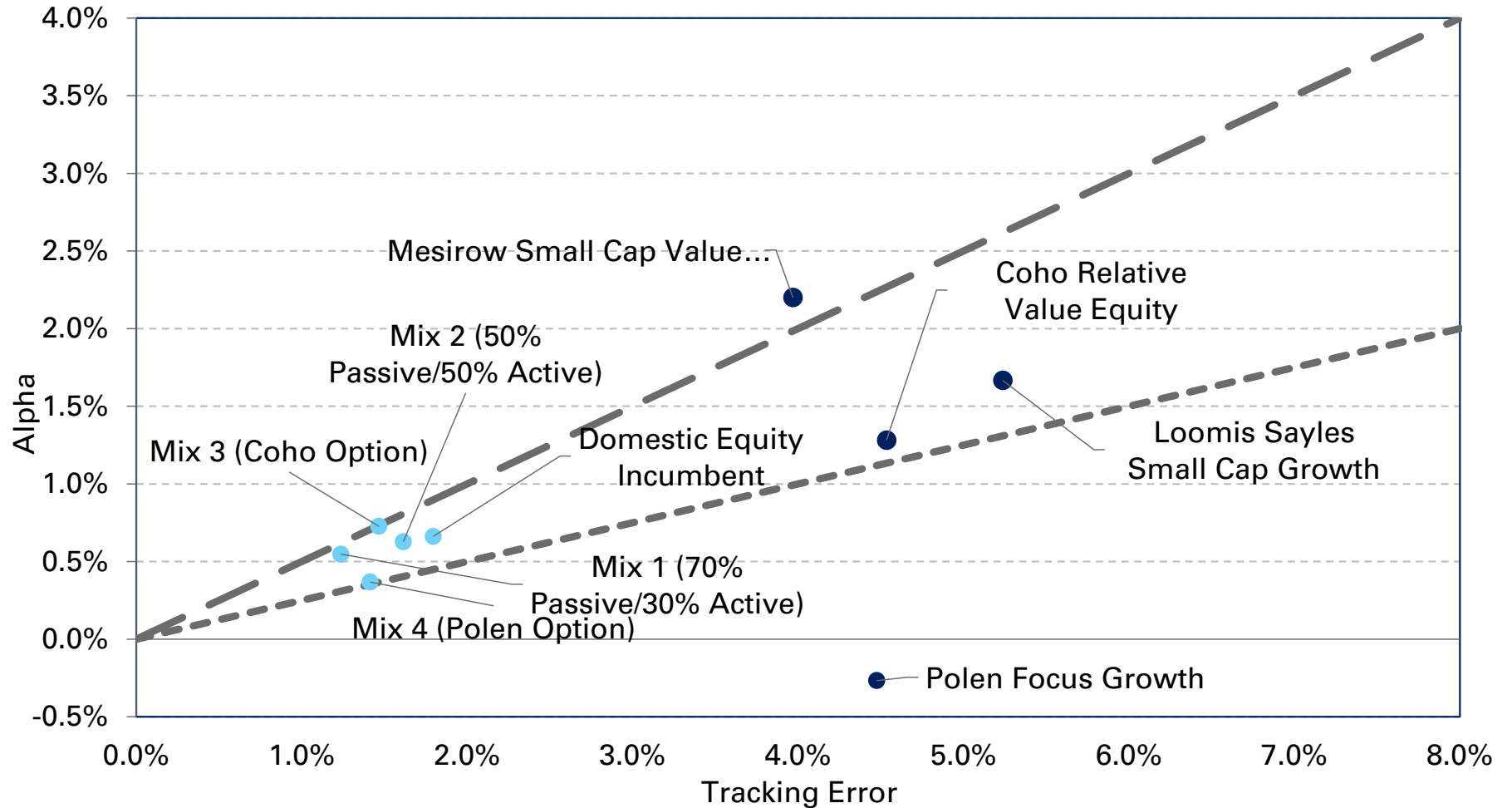


All Risk/Return statistics calculated through 09/30/23.
 Benchmarks shown on page 2 (Portfolio construction summary)



ACTIVE RISK/RETURN

ALPHA, TRACKING ERROR, & INFORMATION RATIO



All Risk/Return statistics calculated from 10/31/13 through 09/30/23.

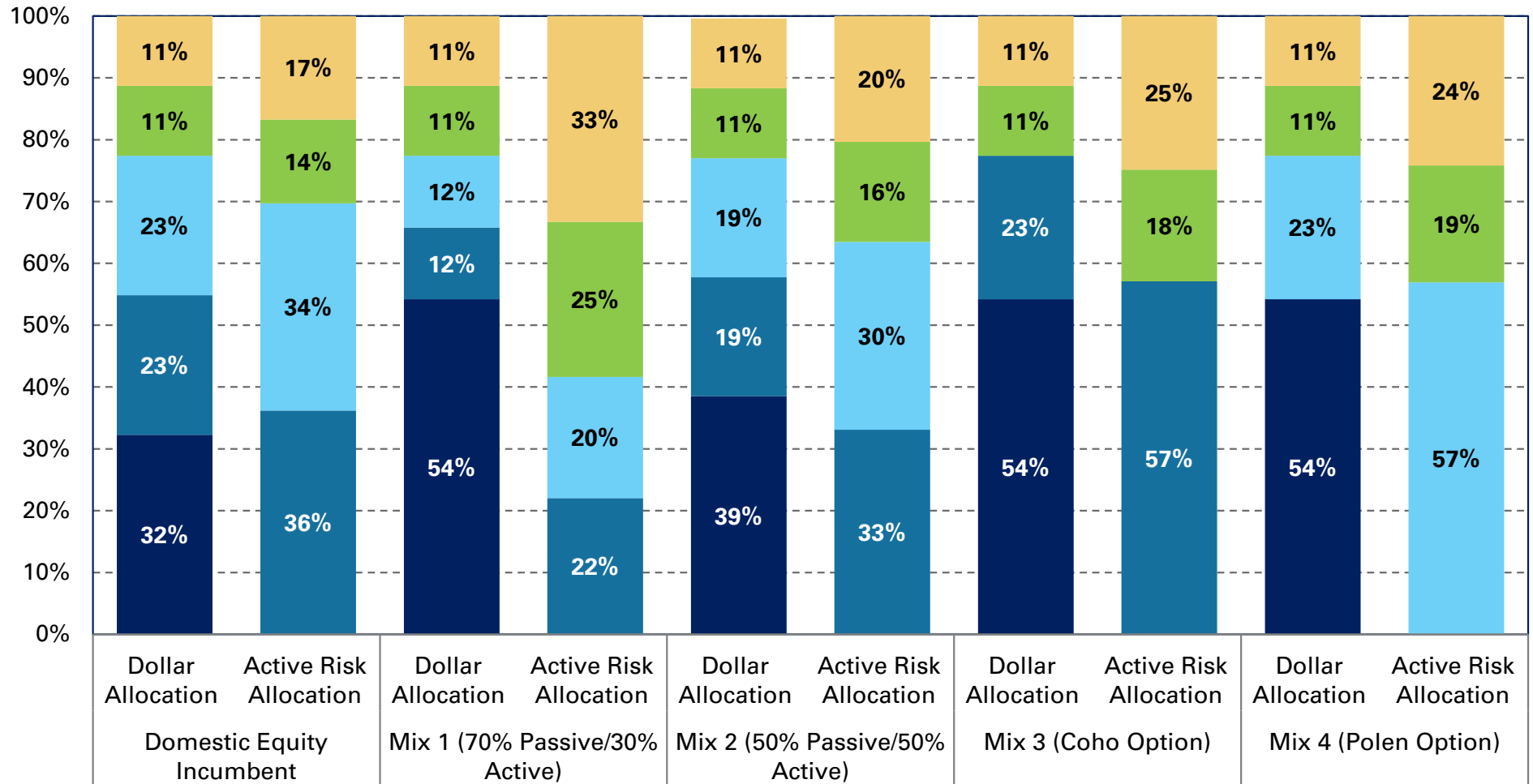
Benchmarks shown on page 2 (Portfolio construction summary)

Information Ratio defined as: Realized Alpha/Tracking Error



ACTIVE RISK/RETURN

ACTIVE RISK BUDGET



■ Rhumblin S&P 500 Index ■ Coho Relative Value Equity ■ Polen Focus Growth ■ Mesirow Small Cap Value Equity ■ Loomis Sayles Small Cap Growth



All Risk/Return statistics calculated through 09/30/23.
 Benchmarks shown on page 2 (Portfolio construction summary)

CONCLUSION AND NEXT STEPS

- **The current equity allocation has been designed to provide a balanced and diversified approach, while also providing downside protection**
 - While this has been achieved over time, there have been periods where the performance of certain strategies has been outside of expectations
 - As a result, the Board has expressed a desire to review the existing allocation, and consider other potential implementation options for the allocation

- **Given these discussions, NEPC recommends one of two options for the allocation:**
 - **Option One:** Consider moving the large cap allocation fully passive
 - Given the efficiency of the large cap space, active management can be difficult
 - Moving to a fully passive approach reduces fees and reduces tracking error
 - Can balance current exposure through the addition of a style based index fund
 - This option allows the System to fine tune the risk profile using active small cap managers

 - **Option Two:** Move to a “Core”-“Satellite” approach
 - The “core” passive exposure would represent a larger share of the allocation
 - This would be complemented by one high conviction active “satellite” manager in large cap
 - The structure of this exposure could be ~ 70% passive and ~30% active
 - As in the first option, we would fine tune the risk profile of the active small cap managers

- **While both options result in a change to the current equity allocation, they maintain a balanced approach for the allocation**
 - In each, the Plan would see reduced fees and administration given the consolidation
 - As part of the restructure, NEPC will issue RFPs to help with the efficient implementation of the approved changes



APPENDIX



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PORTFOLIO CONSTRUCTION DATA DISCLOSURES

ANALYSIS PERIOD AND SUMMARY STATISTICS

Displayed is a summary of the data we modeled.

	Rhumblin S&P 500 Index	Coho Relative Value Equity	Polen Focus Growth	Mesirow Small Cap Value Equity	Loomis Sayles Small Cap Growth	Russell 3000 Index
Total Risk and Return						
Annualized Return (10 Year)	11.9%	8.8%	13.7%	8.1%	8.2%	11.3%
Annualized Standard Deviation	14.9%	13.5%	16.9%	18.2%	18.9%	15.3%
Active Risk and Return						
Realized Alpha	0.0%	1.3%	-0.3%	2.2%	1.7%	0.0%
Beta	1.00	0.90	0.97	0.92	0.94	1.00
Tracking Error	0.0%	4.5%	4.5%	4.0%	5.2%	0.0%
Information Ratio	---	0.28	-0.06	0.55	0.32	---
Style and Size Regression						
Style	Core	Deep Value	High Growth	Deep Value	High Growth	Core
Size	Large-Cap	Large-Cap	Large-Cap	Small-Cap	Small-Cap	Large-Cap
Return Decomposition						
Upside Market Capture	100.0%	92.2%	95.5%	89.6%	95.8%	100.0%
Downside Market Capture	100.0%	90.4%	97.9%	86.2%	92.3%	100.0%

All Risk/Return statistics calculated through 09/30/23.

Benchmarks shown on page 2 (Portfolio construction summary)

Information Ratio defined as: Realized Alpha/Tracking Error



PORTFOLIO CONSTRUCTION DATA DISCLOSURES

INVESTMENT MANAGER TRAILING RETURNS

Displayed is a summary of the data we modeled.

Fund	Analysis Start Date	Analysis End Date	Last 3 Months	YTD	1 Year	3 Years	5 Years	7 Years	10 Years	Since Inception (Analysis Start Date)
Rhumblin S&P 500 Index	10/31/2013	9/30/2023	-3.3%	13.1%	21.6%	10.1%	9.9%	12.2%	11.9%	11.9%
S&P 500			-3.3%	13.1%	21.6%	10.2%	9.9%	12.2%	11.9%	11.9%
<i>Excess Return</i>			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Coho Relative Value Equity	10/31/2013	9/30/2023	-5.9%	-6.5%	4.4%	6.5%	5.9%	8.1%	8.8%	8.8%
Russell 1000 Value			-3.2%	1.8%	14.4%	11.1%	6.2%	7.9%	8.4%	8.4%
<i>Excess Return</i>			-2.7%	-8.3%	-10.1%	-4.6%	-0.3%	0.2%	0.3%	0.3%
Polen Focus Growth	10/31/2013	9/30/2023	-3.5%	21.5%	21.2%	0.9%	8.6%	13.1%	13.7%	13.7%
Russell 1000 Growth			-3.1%	25.0%	27.7%	8.0%	12.4%	15.6%	14.5%	14.5%
<i>Excess Return</i>			-0.3%	-3.5%	-6.5%	-7.1%	-3.8%	-2.5%	-0.7%	-0.7%
Mesirow Financial Small Cap Value Equity	10/31/2013	9/30/2023	-2.0%	3.8%	14.0%	18.9%	6.9%	9.1%	8.1%	8.1%
Russell 2000 Value			-3.0%	-0.5%	7.8%	13.3%	2.6%	5.9%	6.2%	6.2%
<i>Excess Return</i>			0.9%	4.3%	6.2%	5.6%	4.3%	3.2%	1.9%	1.9%
Loomis Sayles Small Cap Growth	10/31/2013	9/30/2023	-5.2%	3.4%	11.6%	3.2%	3.9%	10.1%	8.2%	8.2%
Russell 2000 Growth			-7.3%	5.2%	9.6%	1.1%	1.6%	6.8%	6.7%	6.7%
<i>Excess Return</i>			2.1%	-1.9%	2.0%	2.2%	2.4%	3.3%	1.4%	1.4%
Russell 3000 Index	10/31/2013	9/30/2023	-3.3%	12.4%	20.4%	9.4%	9.1%	11.6%	11.3%	11.3%
Russell 3000			-3.3%	12.4%	20.5%	9.4%	9.1%	11.6%	11.3%	11.3%
<i>Excess Return</i>			0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



All return statistics calculated net of fee through 06/30/23

EXCESS RETURNS

ALPHA CORRELATIONS

Alpha Correlations	Rhumblin S&P 500 Index	Coho Relative Value Equity	Polen Focus Growth	Mesirow Small Cap Value Equity	Loomis Sayles Small Cap Growth
Rhumblin S&P 500 Index	1.00				
Coho Relative Value Equity	0.00	1.00			
Polen Focus Growth	0.00	0.00	1.00		
Mesirow Small Cap Value Equity	0.00	0.13	0.11	1.00	
Loomis Sayles Small Cap Growth	0.00	0.09	0.01	0.47	1.00

Positive (>0.25)
Relatively Uncorrelated (-0.25 – 0.25)
Negative (<-0.25)

All Risk/Return statistics calculated through 06/30/23.
 Benchmarks shown on page 2 (Portfolio construction summary)



CURRENT MARKET OUTLOOK



The "higher-for-longer" interest rate environment will test the economy's ability to avoid a recession in 2024



The outlook for U.S. TIPS is favorable with higher real interest rates and attractive breakeven inflation rates



We are concerned about U.S. mega-caps and suggest reducing exposure, while maintaining U.S. large-cap value exposure



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



We recommend a duration-neutral posture relative to policy targets and remain comfortable with elevated levels of cash

NEPC PUBLIC MARKET EQUITY OUTLOOK

We recommend **reducing S&P 500 and U.S. mega-cap equity exposure**, while maintaining U.S. large-cap value positions

Implementation Outlook: Target strategies with high alpha potential, such as global equity, to capture regional and industry shifts within the developed world

SUB-ASSET CLASS	DYNAMIC TILT	COMMENTS
U.S. Large-Cap	<i>Reduce</i>	<p>We recommend reducing S&P 500 and U.S. mega-cap exposure in favor of high yield credit, while maintaining U.S. value positions.</p> <p>We suggest tilting equity exposure to global equity strategies and encourage greater usage of active equity approaches.</p>
U.S. Small-Cap	<i>Neutral</i>	
EAFE Large-Cap	<i>Neutral</i>	
EAFE Small-Cap	<i>Unfavorable</i>	
EM Large-Cap	<i>Neutral</i>	
EM Small-Cap	<i>Unfavorable</i>	
DM Currency Hedge	<i>Neutral</i>	

REDUCE

UNFAVORABLE

NEUTRAL

FAVORABLE

ADD

Shaded diagonal ratings reflect the asset class ratings for the previous month.



CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	09/30/23 10-Year Return	09/30/22 10-Year Return	Delta
	Cash	4.4%	3.9%	+0.5%
	U.S. Inflation	2.8%	2.7%	+0.1%
Equity	U.S. Large-Cap Equity	4.8%	6.1%	-1.3%
	Non-U.S. Developed Equity	5.1%	6.6%	-1.5%
	Emerging Market Equity	9.1%	10.3%	-1.2%
	Global Equity*	5.9%	7.1%	-1.2%
	Private Equity*	9.3%	9.9%	-0.6%
Fixed Income	U.S. Treasury Bond	4.8%	4.2%	+0.6%
	U.S. Municipal Bond	4.6%	4.8%	-0.2%
	U.S. Aggregate Bond*	5.3%	4.9%	+0.4%
	U.S. TIPS	5.2%	4.4%	+0.8%
	U.S. High Yield Corporate Bond	7.2%	7.5%	-0.3%
	Private Debt*	8.8%	8.8%	-
Real Assets	Commodity Futures	4.7%	4.1%	+0.6%
	REIT	6.8%	7.0%	-0.2%
	Gold	5.6%	5.2%	+0.4%
	Real Estate - Core	5.0%	4.5%	+0.5%
	Private Real Assets - Infrastructure	6.7%	7.2%	-0.5%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	5.3%	5.9%	-0.6%
	60% MSCI ACWI & 40% U.S. Agg.	6.0%	6.5%	-0.5%
	Hedge Fund*	6.7%	6.7%	-

*Calculated as a blend of other asset classes



BENCHMARK DISCLOSURE

EQUITY

Asset Class	Index	eVestment Universe
Large Cap Value	Russell 1000 Value	US Large Cap Value Equity
Large Cap Core	S&P 500	US Large Cap Core Equity
Large Cap Growth	Russell 1000 Growth	US Large Cap Growth Equity
Mid Cap Value	Russell Mid Cap Value	US Mid Cap Value Equity
Mid Cap Core	Russell Mid Cap	US Mid Cap Core Equity
Mid Cap Growth	Russell Mid Cap Growth	US Mid Cap Growth Equity
Small Cap Value	Russell 2000 Value	US Small Cap Value Equity
Small Cap Core	Russell 2000	US Small Cap Core Equity
Small Cap Growth	Russell 2000 Growth	US Small Cap Growth Equity
Global Equity	MSCI ACWI	All Global Equity
ACWI-ex US	MSCI ACWI ex US	All ACWI ex US
EAFE Large Cap	MSCI EAFE Large Cap	EAFE Large Cap Equity
EAFE Small Cap	MSCI EAFE Small Cap	EAFE Small Cap Equity
EM Large Cap	MSCI Emerging Mkt. Equity	Global Emerging Mkt. Large Cap Equity
EM Small Cap	MSCI Emerging Mkt. Equity Small Cap	Global Emerging Mkts. Small Cap Equity
China A Shares	MSCI China A	Onshore China A Shares Equity

DATA DISCLOSURES

Universe performance data is shown on a net-of-fee basis

The universe data shown includes only actively managed portfolios

Rolling 3-year annualized excess returns and benchmark rankings have a one month rollback

The median fee shown for each asset class is for a commingled fund at an assumed \$50 million mandate size

To account for survivorship bias, eVestment includes inactive accounts in any historical universe calculations. eVestment does not allow for products/vehicles to be deleted from its database.

eVestment classifies universes using a tiered approach so that products can be found in data screens of differing levels of granularity. eVestment offers universe tiers at three levels: Primary, Secondary/Specialty, and Roll-Up.

Primary Universes are typically the most granular and are commonly used as the default comparison peer group in eVestment's analytics modules. A product can only be classified into one Primary Universe. Example: US Large Cap Core Equity, US High Yield, and US REIT.

NEPC DISCLOSURES

Past performance is no guarantee of future results.

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

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The opinions presented herein represent the good faith views of NEPC as of the publication date and are subject to change at any time.

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