EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Cindy Charan, Director of Human Resources

FROM: Lisa Sorani, Manager of Employee Services

SUBJECT: Retirement Board Regular Meeting – 1/18/2024

A regular meeting of the Retirement Board will convene at 8:30 a.m. on Thursday, January 18, 2024. This meeting will be conducted in person with all Retirement Board members physically present in the Administration Training Resource Center, 375 Eleventh Street, Oakland, California, which shall serve as the physical location for members of the public who wish to attend the meeting in person. Please note, however, that members of the public will also be provided the opportunity to participate via video and teleconference. Public participation will also be available by live audio stream at https://www.ebmud.com/about-us/board-directors/board-meetings/retirement-board-meetings/; however, listeners will not be able to provide public comment via live audio stream. To participate in the meeting or provide public comment, please see the Appendix of the Agenda for instructions on joining the Zoom meeting online or by phone.

Some Staff and Presenters will be attending via Zoom which will be broadcast at the meeting.

Enclosed are the agenda items for the January 18, 2024 meeting and the minutes for the November 9, 2023 regular meeting and the December 12, 2023 special meeting. The package also includes the following: **(1) CONSENT items**: Approval of Minutes of the Retirement Board – Regular Meeting of November 9, 2023, Approval of Minutes of the Retirement Board – special meeting of December 12, 2023, Ratifying and Approving Investment Transactions by Retirement Fund Managers for October 2023 and November 2023, Ratifying and Approving the corrected Short-Term Investment Transactions for October 2023 and November 2023, Approving Treasurer's Statement of Receipts and Disbursements for October 2023 and November 2023; (2) **ACTION items**: Approve Resolution honoring the 10+ years of service provided by Eric White of Meketa to the Retirement Board, Adopt the Actuarial Valuations of the Retirement System as of June 30, 2022, and Recommend the Fiscal Year 2025 Employer Contribution Rates for the Pension and the Health Insurance Benefit Plans, Approve Resolution Amending Retirement Board Meeting Schedule, Confirm Retirement Board Meeting Date for May 2024, Approve Additional Asset Allocation Training; **(3) INFORMATION items:** Performance Report and Economic Review (Meketa Investment Group), Training: Introduction to Capital Market Assumptions (training), HIB Study: Retiree Demographics and HIB Utilization, Announce Timelines for Employee and Retiree Retirement Board Seat Elections, Update on the Pension Gold (LRS) Implementation Project; **(4) REPORTS FROM THE RETIREMENT BOARD:** none.

CC:ls

Enclosure

AGENDA

EBMUD EMPLOYEES' RETIREMENT SYSTEM
January 18, 2024

A regular meeting of the Retirement Board will convene at 8:30 a.m. on Thursday, January 18, 2024. This meeting will be conducted with Retirement Board Members physically present in the Administration **Training Resource Center**, 375 Eleventh Street, Oakland, California. This location shall serve as the physical location for members of the public who wish to attend the meeting in person. Please note, however, that members of the public will also be provided the opportunity to participate via video and teleconference. Public participation will also be available by live audio stream https://www.ebmud.com/about-us/board-directors/board-meetings/retirement-board-meetings/; however, listeners will not be able to provide public comment via live audio stream. To participate in the meeting or provide public comment, please see the Appendix of the Agenda for instructions on joining the Zoom meeting online or by phone. Some Presenters may be attending via Zoom.

Retirement Board Members: Clifford Chan, Marguerite Young, April Chan, Tim McGowan, Jae Park and Elizabeth Grassetti

Staff to the Retirement Board: Sophia Skoda, Lourdes Matthew, Cindy Charan, Robert Hannay, Lisa Sorani, Steven Goodman-Leibof, Valerie Weekly and Mae Shepherd

Consultants & Presenters: Meketa - Colin Bebee, Sarah Bernstein, Eric Larsen, and John Camp; Segal – Andy Yeung and Dirk Adamsen; Alliant – Billie Brown and Tom Sher

****Public Participation****
Please see Appendix at end of Agenda for Public Participation Details

ROLL CALL:

PUBLIC COMMENT: The Retirement Board is limited by State Law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.

REGULAR BUSINESS MEETING

CONSENT CALENDAR:

1. Approval of Minutes of the Retirement Board – Regular Meeting of November 9, 2023

2. Approval of the Minutes of the Special Retirement Board Meeting of December 12, 2023

3. Ratifying and Approving Investment Transactions by Retirement Fund Managers for October 2023 and November 2023

4. Ratifying and Approving Short-Term Investment Transactions for October 2023 and November 2023

5. Approving Treasurer's Statement of Receipts and Disbursements for October 2023 and November 2023

ACTION:

6. Approve Resolution honoring the 10+ years of service provided by Eric White of Meketa to the Retirement Board – S. Skoda

7. Adopt the Actuarial Valuations of the Retirement System as of June 30, 2022, and Recommend the Fiscal Year 2025 Employer Contribution Rates for the Pension and the Health Insurance Benefit Plans – S. Skoda

8. Approve Resolution Amending Retirement Board Meeting Schedule – C. Charan

9. Confirm Retirement Board Meeting Date for May 2024 – C. Charan

10. Approve Additional Asset Allocation Training – S. Skoda

INFORMATION:

11. Performance Report and Economic Review (Meketa Investment Group) – S. Skoda

12. Introduction to Capital Market Assumptions (training) – S. Skoda

13. HIB Study: Retiree Demographics and HIB Utilization – C. Charan

14. Announce Timelines for Employee and Retiree Retirement Board Seat Elections – C. Charan

15. Update on the Pension Gold (LRS) Implementation Project – C. Charan

REPORTS FROM THE RETIREMENT BOARD:

ITEMS TO BE CALENDARED:

MEETING ADJOURNMENT:

The next meeting of the Retirement Board is a Special Meeting that will be held at 9:00 a.m. Tuesday, February 6, 2024. The next regular meeting of the Retirement Board will be held on Thursday, March 21, 2024.

Retirement Board Meetings

- February 6, 2024 (Special)
- March 21, 2024
- April 16, 2024 (Special)
- May 9, 2024
- June 4, 2024 (Special)
- July 18, 2024
- September 19, 2024
- November 21, 2024

APPENDIX

Retirement Board Meeting
Thursday, January 18, 2024
8:30 a.m.

This meeting will be conducted with Retirement Board Members physically present in the Administration Training Resource Center, 375 Eleventh Street, Oakland, California. Members of the public are welcome to attend in person or virtually as described below.
Please note that Retirement Board meetings are recorded and live-streamed.

To **view the livestream of the** Retirement Board Meeting, without making public comment, please visit: https://www.ebmud.com/about-us/board-directors/board-meetings/retirement-board-meetings/

If you wish to join the meeting, or to make public comment, please visit this page beforehand to familiarize yourself with Zoom. http://support.zoom/us/hc/en-us/articles/201362193-Joining-a-Meeting

Zoom Webinar

When: Jan 18, 2024 08:30 AM Pacific Time (US and Canada)
Topic: January 18, 2024 EBMUD Retirement Board Meeting

Please click the link below to join the webinar:
https://ebmud.zoom.us/j/83057548782
Or One tap mobile :
+16694449171,,83057548782# US
+16699006833,,83057548782# US (San Jose)
Or Telephone:
Dial(for higher quality, dial a number based on your current location):
+1 669 444 9171 US
+1 669 900 6833 US (San Jose)
Webinar ID: 830 5754 8782
International numbers available: https://ebmud.zoom.us/u/kV8ZTfHsS

Providing Public Comment

The EBMUD Retirement Board is limited by State Law to providing a brief response, asking questions for clarification, or referring a matter to staff when responding to items that are not listed on the agenda.
If you wish to provide public comment, please:

- Use the raise hand feature in Zoom to indicate you wish to make a public comment https://support.zoom/us/hc/en-us/articles/20055661-Raising-your-hand-in-a-webinar
    - If you participate by phone, press *9 to raise your hand
- When prompted by the Asst. Secretary, please state your name, affiliation if applicable, and topic
- The Assistant Secretary will call each speaker in the order received
- Comments on non-agenda items will be heard at the beginning of the meeting
- Comments on agenda items will be heard when the item is up for consideration
- Each Speaker is allotted 3 minutes to speak; The Retirement Board President has the discretion to amend this time based on the number of speakers
- The Assistant Secretary will keep track of time and inform each speaker when time is up

MINUTES OF THE RETIREMENT BOARD
November 9, 2023

A regular meeting of the Retirement Board convened on Thursday, November 9, 2023 at 8:33 a.m.

The meeting was called to order by Retirement Board President Tim McGowan. This meeting was conducted with Retirement Board Members physically present in the Administration Building **Training Resource Center**, 375 Eleventh Street, Oakland, California. This location served as the physical location for members of the public who wish to attend the meeting in person. Please note, however, that members of the public were also provided the opportunity to participate via video and teleconference.

Roll Call – The following Retirement Board Members were present: Clifford Chan, Tim McGowan, Jae Park, Elizabeth Grassetti. April Chan was absent. Marguerite Young was absent at roll call and arrived at 8:37 am.

The following staff members were present: Cindy Charan, Sophia Skoda, Lisa Sorani, Lourdes Matthew, Robert Hannay, Steven Goodman-Leibof, and Valerie Weekly.

The following consultants were present: Colin Bebee, Jonathan Camp, Eric Larsen and Sarah Berstein, from Meketa Investment Group. Catherine Moyer and John Wieck form Northern Trust. Billy Brown and Tom Sher from Alliant Employee Benefits.

PUBLIC COMMENT

There was no public comment in the room or online.

CONSENT CALENDAR

1-6. **Consent Calendar - A motion was made to approve items 1-6** of the consent calendar by Clifford Chan and seconded by Jae Park. The motion carried (3-0) by the following vote: AYES (McGowan, C. Chan, Park), NOES (none), ABSTAIN (none), ABSENT (A. Chan, Young).

ACTION

Marguerite Young joined the meeting at 8:37 a.m.

7. **Declare the Interest Rate Credited to Members** – Cindy Charan introduced the item and explained that interest is declared twice annually. Valerie Weekly explained the rules and documents used in determining the interest rate and requested the Board to approve the Resolution to declare the rate credited to member accounts effective December 31, 2023 to be three and two-tenth percent (3.2%) for the balance of employee contributions and interest as June 30, 2023. A motion was made to approve the Resolution by Jae Park and seconded by Clifford Chan. The motion carried (4-0-0-1) by the following vote: AYES (McGowan, C. Chan, Park, Young), NOES (none), ABSTAIN (none), ABSENT (A. Chan).

8. **Adopt Updated 2024 Retirement Board Meeting Calendar including Additional Sessions for HIB Study** – Cindy Charan introduced this item and Lisa Sorani reviewed the calendar for the HIB Study and presented the request for the Retirement Board to authorize hiring Alliant Insurance Services Inc. as consultants to project manage the HIB Study. A motion was made by Marguerite Young to confirm the study as outlined including the dates and topics and cost of the consultants. The motion was seconded by Jae Park. The motion carried (4-0-0-1) by the following vote: AYES (McGowan, C. Chan, Park, Young), NOES (none), ABSTAIN (none), ABSENT (A. Chan).

9. **Authorize Contract with Flexible Benefit Administrators, Inc. for HIB Administration** – Cindy Charan introduced this item. Lisa Sorani reminded the Retirement Board of the terms of the agreement. Marguerite Young asked about the ability to cancel the agreement if we moved in a different direction with the HIB Benefit that did not require their services, Lourdes Matthew confirmed that the contract can be cancelled with 90 days of notice and payment for services through the date of termination. A motion to authorize the contract was made by Clifford Chan and seconded by Jae Park. The motion carried (4-0-0-1) by the following vote: AYES (McGowan, C. Chan, Park, Young), NOES (none), ABSTAIN (none), ABSENT (A. Chan).

INFORMATION

10. **Update on the PensionGold (LRS) Implementation Project** – Cindy Charan introduced this item and Valerie Weekly presented. Valerie Weekly first responded to a public comment at the September meeting related to staff's ability to use another employer's compensation when running an estimate, confirming that while the system would allow this, staff is directed not to do this, as reciprocity is not finally confirmed until the time that a member retires from all agencies and therefore running an estimate with that income is a risk. Several retirement board members discussed the need for members to model this information on their own. Others were concerned about possible risk and agreed with the need to include disclaimers on the estimate. There was discussion about the timeline. It was agreed that Adam Froio, EBMUD Project Manager, will attend the January meeting to address some of these questions and discuss the critical path.

11. **Present Audited Financial Statements** – Sophia Skoda introduced this item, noting that Robert Hannay, who is working out of class as the Controller will be presenting. Sophia Skoda noted that there is now a candidate for the Controller position and she anticipates taking the Controller candidate to the Board of Directors in November. Robert Hannay reviewed the information noting that membership numbers in the report which represents both active employees and retirees has grown over the last 10 years. Employee and Employer contributions represent the major sources of financial resources.

12. **Performance Report and Economic Review (Meketa Investment Group)** – Sophia Skoda introduced this item. There was a memo to the Retirement Board announcing the departure of Eric White. There was discussion of a memo or resolution recognizing his 10+ years of support to the Board. Colin Bebee will replace Eric White. Eric Larson will continue to support the Board. Colin continued on to present the performance report. The fed rate increases have yet to derail economic growth. Inflation remains high and there remain some pressures. There are three important variables economic growth, interest rates and inflation. These three variables drive performance. Q3 was a

challenging period, but it has overall been a good year driven by big companies. The ability of individuals and companies to service future debt will be a large driver of future returns. 2023 has been a strong year for equities, not so much for fixed income. Eric Larsen will discuss the EBMUDERS portfolio. Ended third quarter just under $2.2 billion. Strong historical performance against the benchmark. Both US and international equities are tracking benchmarks, covered calls providing strong performance outperforming their benchmarks, real estate has underperformed benchmarks due, fixed income is slightly underperforming the benchmark. The full Q3 report will be covered in the next meeting.

Retirement Board took a break 10:15 – 10:40am. Called back to order.

13. **Asset-Liability Training: Asset – Liability Concepts and Process** – Sophia Skoda introduced this item. Colin Bebee and Jonathan Camp from Meketa presented this item. The overall goal of an asset-liability study is to select a new-long term asset allocation or strategic allocation based on the System's risk tolerance and liability structure. Asset allocation is one of the most important decisions a Board makes. There are six main risks: investment, inflation, liquidity, workforce, cash inflow and longevity. Each risk was explained. There was a discussion of workforce risk. Marguerite Young and Clifford Chan discussed that we have a 20+ year infrastructure plan and will be able to accurately project workforce. Tim McGowan agreed and said that workforce risk should probably be de-emphasized. In terms of the statistics, we will focus on funded status, which is assets divided by liability. The modeling will show the impact on funded status based on different scenarios. Contributions will also be a big topic. Two strategies were introduced. Clifford Chan asked if there are only two predominant strategies. There are other strategies, but only a few will be discussed in the modeling. Marguerite Young discussed the fact that San Francisco has risky assets despite its 100% funded status. San Francisco doesn't have to change its asset allocation as they are still assuming a 7% target. Jae Park mentioned that there are some odd objectives in the current policy, and he was wondering if we were following some of them. This would be the time to review the entire document to make sure it is rational. Next, there is a need to wait on the capital market assumptions that will be done by the end of January. Clifford Chan asked if the consultants could describe potential scenarios as storylines to make it more understandable to the layperson.

14. **Proxy Voting Annual Update** – Sophia Skoda introduced this item, which was presented by Colin Bebee from Meketa, John Wieck from Glass Lewis and Catherine Moyer from Northern Trust. Staff is planning to sign the final year of our Glass Lewis voting contract under our current service agreement, and that will ensure that we have proxy voting for the portions of the portfolio voted on by Glass Lewis through the end of 2024. The majority of the portfolio is passive, so Northern Trust will be voting the majority of our proxy. Tim McGowan asked if dollarwise Northern Trust has a much bigger influence than Glass Lewis. John Wieck mentioned that there were a lot of instances where Glass Lewis and Northern Trust voted the same. ESG is still a big topic, most companies are embracing ESG policies. There are some companies and systems that engage in anti-ESG policies. There is a large increase in the number of shareholder proposals that tend to lean towards ESG. There has been a rise in anti-ESG proposals. CEO has gone down driven by market returns. Support of management proposals went down due to strengthening of diversity and oversight requirements in the voting policy. Support of shareholder proposals was down too because the SEC is not blocking immaterial proposals and rise of anti-ESG proposals. There was a good level of overlap with voting

with Northern Trust, 94% overlap with the gap being largest in management proposals mainly due to auditor tenure issues. Glass Lewis believes that the System is best served by the Public Pension Policy. Sandy Signor of Northern Trust discussed that the account will be transferred to Charmaine Fulnick. Catherine Moyer took over to present. No major changes of proxy voting policy. More votes against management proposals due to stricter diversity requirements. Higher support of social proposals than environmental due to the environmental being too prescriptive. Northern Trust is working on pass-through voting for pooled funds to better align votes across managers. Tim McGowan asked what the plan is for proxy voting once Glass Lewis' contract is up. Sophia said we will wait until after the asset study. Tim McGowan asked when proxy voting season is. Proxy voting season is typically the second quarter. It starts to ramp up the beginning of March, and then it really is in full force through mid-April into the first second week of June. The Retirement Board will decide on Glass Lewis contract by late 2024.

15. **Training: Engagement Opportunities** – Sophia Skoda introduced this item. Colin Bebee presented. If the Retirement Board wants to expand capital stewardship outside of proxy voting, engagement is one of those next steps. Engagement opportunities are a large area of growth. This is a high-level introduction of what to do with engagement. Managers can engage through the mandate itself, or as a standalone service and more and more are offering engagement addition. Consultants, whether that is Segal or others, who also proxy vote or offer engagement. It is really that spectrum of simple reporting to actual verbal and written dialogue with the company, and how customized that last piece may be.

REPORTS FROM THE RETIREMENT BOARD:

Brief report on any course, workshop, or conference attended since the last Retirement Board meeting

No trainings or reports were provided from the Retirement Board members.

ITEMS TO BE CALENDERED:

- HIB Study Schedule
- Pension Gold Implementation Update - Bring back Retirement Project Manager to discuss Critical Path of the Implementation.
- Action item to discuss if date change is needed for the May Retirement Board meeting.
- Consider a change of start time from 8:30 a.m. to 9 a.m. for future Retirement Board meetings.
- Review updated Draft Changes to Retirement Ordinance
- 12. RE-OPENED Performance Report and Economic Review (Meketa Investment Group) – Retirement Board President Tim McGowan re-opened item 12 to allow Retirement Board members to engage with Eric White who joined the meeting live. Board members wished to thank Eric White for his years of service to the Retirement System.

MEETING ADJOURNMENT – Clifford Chan moved to adjourn the meeting at 12:25 p.m. and Marguerite Young seconded the motion; the motion carried (4-0) by the following voice vote: AYES (McGowan, Young, C. Chan, Park), NOES (none), ABSTAIN (none), ABSENT (A. Chan).

Minutes
Retirement Board Meeting
November 9, 2023

Timothy McGowan

President

ATTEST:

Secretary

1/18/2024

MINUTES OF THE RETIREMENT BOARD
December 12, 2023

A special joint closed session meeting of the Retirement Board and Board of Directors convened on Tuesday, December 12, 2023 at 11:00 a.m.

The meeting was called to order by Retirement Board President Tim McGowan. This meeting was conducted with Retirement Board Members physically present in the Board Room, 375 Eleventh Street, Oakland, California. This location served as the physical location for members of the public who wish to attend the meeting in person. Please note, however, that members of the public were also provided the opportunity to participate via video and teleconference.

Roll Call – The following Retirement Board Members were present: Clifford Chan, Tim McGowan, Jae Park, Marguerite Young, April Chan.

Elizabeth Grassetti was recused from the meeting so was absent at roll call.

The following staff members were present: Cindy Charan, Sophia Skoda, Lisa Sorani, Lourdes Matthew, Robert Hannay, Steven Goodman-Leibof, and Valerie Weekly.

PUBLIC COMMENT

There was no public comment in the room or online.

The Retirement Board members moved to Closed Session with the Board of Directors at the 8th floor conference room. The following staff members were present in closed session: Cindy Charan and Lourdes Matthew. There was no report out following Closed Session.

CONSENT CALENDAR

No other items were agendized for this Special Retirement Board meeting.

Timothy McGowan

President

ATTEST:

Secretary

1/18/2024

{00088446;1}

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Investment Transactions by Retirement Fund Managers for October 2023 and November 2023

The attached Investment Transactions by Retirement Fund Managers report for the months of October 2023 and November 2023 is hereby submitted for Retirement Board approval.

SDS:RLH:SGL

Attachment: Investment Transactions by Retirement Fund Managers

R.B. RESOLUTION NO. 6998

RATIFYING AND APPROVING INVESTMENT TRANSACTIONS BY FUND MANAGERS FOR OCTOBER 2023 AND NOVEMBER 2023

Introduced by: Clifford Chan ; Seconded by: Marguerite Young

WHEREAS, Retirement Board Rule No. B-5 provides for investment transactions without prior specific approval by the Retirement Board; and

WHEREAS, investment transactions have been consummated during October 2023 and November 2023, in accordance with the provisions of said rule and in securities designated as acceptable by Retirement Board Resolution No. 4975, as amended;

NOW, THEREFORE, BE IT RESOLVED that the investment transactions appearing on the following Exhibit A are hereby ratified and approved.

President

ATTEST:

Secretary

1/18/2024

INVESTMENT TRANSACTIONS BY RETIREMENT FUND MANAGERS

October 2023

	PURCHASES	SALES	PORTFOLIO VALUE
FIXED INCOME			
C.S. McKee	$20,278,991	$21,178,693	$198,343,132
Federated Bank Loans	$293,286	$0	$54,681,883
Garcia Hamilton Associates	$1,150,238	$0	$192,569,653
Mackay Shields - HY	$1,811,655	$1,382,024	$56,929,548
TOTAL	**$23,534,169**	**$22,560,717**	**$502,524,216**
DOMESTIC EQUITY			
Russell 3000 Index Fund	$0	$0	$552,682,474
Total Domestic Equity	**$0**	**$0**	**$552,682,474**
COVERED CALLS			
Parametric (BXM)	$3,556,661	$6,258,424	$152,606,231
Parametric (Delta-Shift)	$971,811	$3,640,279	$150,498,583
Van Hulzen	$3,564,118	$7,544,567	$146,057,294
Total Covered Calls	**$8,092,590**	**$17,443,269**	**$449,162,107**
INTERNATIONAL EQUITY			
ACWI Index fund	$0	$0	$503,453,119
Global Transition	$0	$0	$895,475
Total International Equity	**$0**	**$0**	**$504,348,594**
REAL ESTATE EQUITY			
RREEF America II	$0	$0	$59,399,667
CenterSquare	$2,217,982	$1,960,129	$52,531,583
Total Real Estate	**$2,217,982**	**$1,960,129**	**$111,931,250**
TOTAL ALL FUND MANAGERS	**$33,844,740**	**$41,964,116**	**$2,120,648,641**

November 2023

	PURCHASES	SALES	PORTFOLIO VALUE
FIXED INCOME			
C.S. McKee	$19,525,202	$18,015,992	$208,368,189
Federated Bank Loans	$4,090,278	$273,821	$55,145,221
Garcia Hamilton Associates	$1,597,578	$0	$203,881,743
Mackay Shields - HY	$2,052,339	$225,478	$58,220,907
TOTAL	**$27,265,397**	**$18,515,290**	**$525,616,059**
DOMESTIC EQUITY			
Russell 3000 Index Fund	$0	$0	$604,319,104
Total Domestic Equity	**$0**	**$0**	**$604,319,104**
COVERED CALLS			
Parametric (BXM)	$7,294,216	$7,232,504	$154,711,397
Parametric (Delta-Shift)	$2,067,283	$1,917,297	$158,872,936
Van Hulzen	$10,836,235	$5,863,091	$152,508,697
Total Covered Calls	**$20,197,733**	**$15,012,892**	**$466,093,030**
INTERNATIONAL EQUITY			
ACWI Index fund	$0	$0	$548,635,432
Global Transition	$0	$0	$875,629
Total International Equity	**$0**	**$0**	**$549,511,061**
REAL ESTATE EQUITY			
RREEF America II	$0	$0	$58,937,300
CenterSquare	$3,032,999	$2,950,329	$58,312,368
Total Real Estate	**$3,032,999**	**$2,950,329**	**$117,249,668**
TOTAL ALL FUND MANAGERS	**$50,496,130**	**$36,478,511**	**$2,262,788,922**

Prepared By: Matt Houck Date: 12-21-2023

Matt Houck, Accountant III

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Short Term Investment Transactions for October 2023 and November 2023

The attached Short Term Investment Transactions reports for the months of October 2023 and November 2023 are hereby submitted for Retirement Board approval.

SDS:RLH:SGL

Attachments: Short Term Investment Transactions October 2023
Short Term Investment Transactions November 2023

R.B. RESOLUTION NO. 6999

RATIFYING AND APPROVING SHORT TERM INVESTMENT TRANSACTIONS BY THE TREASURER FOR OCTOBER 2023 AND NOVEMBER 2023

Introduced by: Clifford Chan ; Seconded by: Marguerite Young

WHEREAS, Retirement Board Rule No. B-7 provides for the temporary investment of retirement system funds by the Treasurer or Assistant Treasurer in securities authorized by Sections 1350 through 1366 of the Financial Code or holding funds in inactive time deposits in accordance with Section 12364 of the Municipal Utility District Act; and

WHEREAS, investment transactions during October 2023 and November 2023, have been made in accordance with the provisions of the said rule;

NOW, THEREFORE, BE IT RESOLVED that the investment transactions consummated by the Treasurer and included on the attached reports for October 2023 and November 2023 are hereby ratified and approved.

President

ATTEST:

Secretary

1/18/2024

EBMUD EMPLOYEES' RETIREMENT SYSTEM
SHORT TERM INVESTMENT TRANSACTIONS
CONSUMMATED BY THE TREASURER
MONTH OF OCTOBER 2023

	COST/ FACE VALUE	DESCRIPTION	DATE OF PURCHASE	DATE OF SALE/MATURITY	YIELD (%)
$	92,171.18	Local Agency Investment Fund	13-Oct-23		3.670
$	5,310,000.00	Local Agency Investment Fund	13-Oct-23		3.670
$	5,279,000.00	Local Agency Investment Fund	27-Oct-23		3.670
$	**10,681,171.18**	Net Activity for Month			

$	4,728,426.70	Beginning Balance
	10,681,171.18	Net Activity for Month
$	**15,409,597.88**	Ending Balance

SUBMITTED BY David Glasser DATE 12/22/23

David Glasser
Controller

Robert L. Hannay
Treasury Mgr.

Kevin Ma
Acctg. Systems Supvr.

prepared by Acinco

EBMUD EMPLOYEES' RETIREMENT SYSTEM
SHORT TERM INVESTMENT TRANSACTIONS
CONSUMMATED BY THE TREASURER
MONTH OF NOVEMBER 2023

	COST/ FACE VALUE	DESCRIPTION	DATE OF PURCHASE	DATE OF SALE/MATURITY	YIELD (%)
$	(13,549,000.00)	Local Agency Investment Fund		1-Nov-23	3.843
$	6,360,000.00	Local Agency Investment Fund	2-Nov-23		3.843
$	5,268,000.00	Local Agency Investment Fund	9-Nov-23		3.843
$	5,257,000.00	Local Agency Investment Fund	22-Nov-23		3.843
$	(13,534,000.00)	Local Agency Investment Fund		30-Nov-23	3.843
$	**(10,198,000.00)**	Net Activity for Month			

$	15,409,597.88	Beginning Balance
	(10,198,000.00)	Net Activity for Month
$	**5,211,597.88**	Ending Balance

SUBMITTED BY David Glasser DATE 12/22/23

David Glasser
Controller

Robert L. Hannay
Treasury Mgr.

Kevin Ma
Acctg. Systems Supvr.

prepared by Acinco

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Sophia D. Skoda, Director of Finance SDS

FROM: David Glasser, Controller DG

SUBJECT: Statement of Receipts and Disbursements for October 2023

The attached Statement of Receipts and Disbursements report for the month of October 2023 is hereby submitted for Retirement Board approval.

Attachment

SDS:DG:AC

STATEMENT OF RECEIPTS AND DISBURSEMENTS
EMPLOYEES' RETIREMENT FUND
MONTH OF OCTOBER 2023

CASH BALANCE at September 30, 2023			$ 3,304,612.98
Receipts			
Employees' Contributions	$	1,791,719.41	
District Contributions		8,884,747.21	
LAIF Redemptions		0.00	
Refunds and Commission Recapture		21,110.33	
TOTAL Receipts			10,697,576.95
Disbursements			
Checks/Wires Issued:			
Service Retirement Allowances	$	12,058,536.23	
Disability Retirement Allowances		161,749.00	
Health Insurance Benefit		883,351.19	
Payments to Retiree's Resigned/Deceased		471,793.68	
LAIF Deposits		10,589,000.00	
Administrative Cost		721,363.41	
TOTAL Disbursements			(24,885,793.51)
CASH BALANCE at October 31, 2023			$ (10,883,603.58)
LAIF			15,409,597.88
LAIF and CASH BALANCE at October 31, 2023			$ 4,525,994.30
Domestic Equity			
Barrow Hanley			
Russell 3000 Index Fund	$	552,682,474.13	
Subtotal Domestic Equity		552,682,474.13	
Covered Calls			
Parametric (BXM)	$	152,606,230.91	
Parametric (Delta-Shift)		150,498,582.58	
Van Hulzen		146,057,293.81	
Subtotal Covered Calls		449,162,107.30	
International Equity			
ACWI Index fund	$	503,453,118.98	
Global Transition		895,474.52	
Subtotal International Equity		504,348,593.50	
Real Estate			
RREEF America REIT II	$	59,399,666.78	
Center Square		52,531,582.79	
Subtotal Real Estate		111,931,249.57	
Fixed Income			
CS Mckee	$	198,343,131.58	
Federated Bank Loans		54,681,883.20	
Garcia Hamilton Associates		192,569,653.36	
Mackay Shields-High Yield		56,929,547.88	
Subtotal Fixed Income		502,524,216.02	
Total for Domestic and International Equities			2,120,648,640.52
MARKET VALUE of ASSETS at October 31, 2023			$ 2,125,174,634.82

Respectfully submitted,

David Glasser

David Glasser
Controller

Robert L. Hannay
Treasury Mgr.

Kevin Ma

Kevin Ma
Acctg Sys Supvr.

prepared by Acinco

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Sophia D. Skoda, Director of Finance SDS

FROM: David Glasser, Controller DG

SUBJECT: Statement of Receipts and Disbursements for November 2023

The attached Statement of Receipts and Disbursements report for the month of November 2023 is hereby submitted for Retirement Board approval.

Attachment

SDS:DG:AC

STATEMENT OF RECEIPTS AND DISBURSEMENTS
EMPLOYEES' RETIREMENT FUND
MONTH OF NOVEMBER 2023

CASH BALANCE at October 31, 2023			**$ (10,883,603.58)**
Receipts			
Employees' Contributions	$	1,707,677.67	
District Contributions		8,915,810.54	
LAIF Redemptions		27,083,000.00	
Northern Trust Redemptions		6,360,000.00	
Refunds and Commission Recapture		28,575.47	
TOTAL Receipts			44,095,063.68
Disbursements			
Checks/Wires Issued:			
Service Retirement Allowances	$	12,047,176.90	
Disability Retirement Allowances		161,749.00	
Health Insurance Benefit		555,090.90	
Payments to Retiree's Resigned/Deceased		6,789.55	
LAIF Deposits		16,885,000.00	
Administrative Cost		224,859.77	
TOTAL Disbursements			(29,880,666.12)
CASH BALANCE at November 30, 2023			**$ 3,330,793.98**
LAIF			**5,211,597.88**
LAIF and CASH BALANCE at November 30, 2023			**$ 8,542,391.86**
Domestic Equity			
Russell 3000 Index Fund	$	604,319,103.94	
Subtotal Domestic Equity		604,319,103.94	
Covered Calls			
Parametric (BXM)	$	154,711,396.82	
Parametric (Delta-Shift)		158,872,936.14	
Van Hulzen		152,508,697.28	
Subtotal Covered Calls		466,093,030.24	
International Equity			
ACWI Index fund	$	548,635,432.35	
Global Transition		875,628.51	
Subtotal International Equity		549,511,060.86	
Real Estate			
RREEF America REIT II	$	58,937,299.97	
Center Square		58,312,367.85	
Subtotal Real Estate		117,249,667.82	
Fixed Income			
CS Mckee	$	208,368,188.57	
Federated Bank Loans		55,145,221.05	
Garcia Hamilton Associates		203,881,742.58	
Mackay Shields-High Yield		58,220,907.16	
Subtotal Fixed Income		525,616,059.36	
Total for Domestic and International Equities			**2,262,788,922.22**
MARKET VALUE of ASSETS at November 30, 2023			**$ 2,271,331,314.08**

Respectfully submitted,

David Glasser
David Glasser
Controller

Robert L. Hannay
Treasury Mgr.

Kevin Ma
Kevin Ma
Acctg Sys Supvr.

prepared by Acinco

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Commending Eric White's Service to the Retirement System

RECOMMENDATION

Approve a resolution commending the service of Eric White, formerly of Meketa Investments LLC.

BACKGROUND

In September of 2023, the Retirement System learned that Eric White had resigned from his position at Meketa Investments LLC. Mr. White had worked closely with the Retirement System as its investment advisor for over 13 years. In 2009, Mr. White began providing client service to the Retirement System as an analyst at Meketa's predecessor firm, PCA, and in 2011 he took over as the lead consultant for the relationship. During this time, Mr. White helped guide the Retirement System's growing investment portfolio through a range of market environments and worked with the Retirement Board to direct the portfolio's asset allocation decisions toward a diversified mix with low management fees. During Eric's tenure the Retirement System's value grew from 910.4 million at the start of 2011 to 2.27 billion as of November 2023.

Mr. White has been a trusted source of advice for the Retirement Board as it fulfills its duties to the District's employees, retirees, and rate payers. For all his dedicated service and his contribution to the East Bay Municipal Utility District Employees' Retirement System, the Retirement Board would like to recognize Mr. White and extend him this resolution of appreciation and thanks.

SDS:RLH

R.B. RESOLUTION NO. 7000

EXPRESSING APPRECIATION TO ERIC WHITE FOR HIS SERVICE TO THE EAST BAY MUNICIPAL UTILITY DISTRICT RETIREMENT BOARD

Introduced by: Marguerite Young ; Seconded by: Jae Park

WHEREAS, Eric White was a consultant at the investment advisory firm Meketa Investments LLC (Meketa) until September 2023; and

WHEREAS, Eric White was previously a consultant at Meketa's predecessor firm, PCA, prior to its merger with Meketa in 2019; and

WHEREAS, Eric White began his client work for the East Bay Municipal Utility District Employees' Retirement System (the Retirement System) as an analyst at PCA in 2009; and

WHEREAS, Eric White took over as the lead consultant at PCA for the Retirement System in 2011; and

WHEREAS, Eric White provided regular, ongoing advice to the Retirement System's Retirement Board in his capacity as the lead investment advisor for the Retirement System; and

WHEREAS, Eric White advised the Retirement Board during turbulent financial markets and during a period of growth in the size of the Retirement System's investment portfolio; and

NOW, THEREFORE, BE IT RESOLVED that on behalf of the East Bay Municipal Utility District Retirement Board, we hereby commend Eric White and express our gratitude for his years of service to the Employees' Retirement System.

Timothy McGowan
President

ATTEST:

Secretary

1/18/2024

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Adopt the Actuarial Valuations of the Retirement System as of June 30, 2023, and Adopt the Fiscal Year 2025 Employer Contribution Rates for the Pension and the Health Insurance Benefit Plans

RECOMMENDATION

Adopt the Actuarial Valuations of the Retirement System as of June 30, 2023 prepared by the Retirement System's actuary. In addition, recommend to the District Board to set Retirement System Contribution Rates for Fiscal Year 2025 (FY 2025) equal to the actuarially determined rates presented in the Actuarial Valuations.

DISCUSSION

Each year the Retirement System's actuary, Segal, prepares Actuarial Valuations for the pension and Health Insurance Benefit (HIB) plans and presents them to the Retirement Board. The Retirement System relies upon these reports to set the contribution rates for the following fiscal year. The Pension Valuation, HIB Valuation, supplemental exhibits, and two related accounting reports are attached to this memo.

Changes from the Previous Year

The valuation value of the combined pension and HIB assets increased from $2.2 billion on June 30, 2022 to $2.3 billion on June 30, 2023, representing growth of 4.4%. While the Plan's market value rose 9.5%, the smoothing of investment returns (above or below those expected) over a five year period caused the valuation value of assets (VVA) to increase to a lesser degree than the market value. The combined pension and HIB Unfunded Actuarial Accrued Liability (UAAL) increased from $751 million in the June 30, 2022 to $812 million as of June 30, 2023. The largest factors in the growth in the unfunded liability are lower than expected investment earnings after smoothing, active employees salary increases that were higher than the actuarial assumption, and retiree cost of living allowances (COLA) that were higher than the assumption. Between June 30, 2022 and June 30, 2023, the pension funded ratio on a VVA basis fell from 76.1% to 75.2% while the HIB funded ratio increased from 44.0% to 47.7%. The combined pension and HIB funded ratio decreased from 74.7% to 74.0% over this time period.

Contribution Rates
The Actuarial Valuations provide the actuarially determined employer contribution rates for both the 1955/1980 and 2013 pension plans and the HIB plan for FY 2025. These rates are presented below along with the rates adopted by the Retirement Board for FY 2024.

Actuarially Determined Contribution Rates				
	FY 2025 (Recommended)		FY 2024 (Adopted)	
Employer	**1955/1980 Plan**	**2013 Plan**	**1955/1980 Plan**	**2013 Plan**
Pension	44.59%	35.80%	43.73%	34.69%
HIB	4.43%	4.27%	4.75%	4.52%
Total	**49.02%**	**40.07%**	**48.48%**	**39.21%**
Member				
Pension	8.66%	9.41%	8.66%	9.41%
HIB	0.09%	0.09%	0.09%	0.09%
Total	**8.75%**	**9.50%**	**8.75%**	**9.50%**

Recommended Employee Contribution Rates
The employee contribution rates are set based on a different methodology for the 1955/1980 Plan and the 2013 Plan. For members of the 1955/1980 Plan, the employee contribution rate is set in the Memoranda of Understanding (MOUs) between the District and its employee unions. For members of the 2013 Plan, the employee rate is calculated based on requirements in the California Public Employees' Pension Reform Act (PEPRA).

Under the MOUs, the 1955/1980 Plan employee contribution rate is currently set at 8.75% of payroll. Included in this contribution rate is a 0.09% contribution to the HIB plan. The employee contribution rates for the 1955/1980 Plan remains unchanged for FY 2025.

PEPRA requires employees hired on or after January 1, 2013 to contribute 50% of the Normal Cost to their pension plan. Once the employee contribution rate is set, it is not adjusted until the total Normal Cost rate deviates more than 1% (of payroll) from the last established rate. In FY 2022, the employee contribution rate for the pension plan was increased from 8.75% to 9.41% because the total Normal Cost rate in the FY 2020 Valuation deviated by more than 1% from the rate in the original PEPRA Valuation. In the FY 2023 Valuation presented here, the Normal Cost rate deviates by less than 1% from the rate in the FY 2021 Valuation. Therefore, there is no change to the PEPRA employee contribution rate for FY 2025. 2013 Plan members also contribute 0.09% to the HIB plan.

Recommended Employer Contribution Rates
The FY 2025 actuarially determined employer contribution rates for the pension and HIB plans in the FY 2023 valuations represent an increase in the rate from those adopted in FY 2024.

The table below provides: 1) the currently adopted FY 2024 rates, 2) the FY 2025 actuarially determined rates, which are the same as 3) the FY 2025 recommended District contribution rates. The increase in the actuarially determined contribution rates are due to larger than expected

salary increases for active employees, cost of living adjustments for retirees/beneficiaries that were higher than assumed, and lower than expected return on the smoothed value of assets.

	Recommended Rates (Same as Actuarially Determined Rates)		**Adopted Rates**	
	FY 2025		**FY 2024**	
Employer	**1955/1980 Plan**	**2013 Plan**	**1955/1980 Plan**	**2013 Plan**
Pension	44.59%	35.80%	43.73%	34.69%
HIB	4.43%	4.27%	4.75%	4.52%
Total	**49.02%**	**40.07%**	**48.48%**	**39.21%**

Representatives from Segal will attend the meeting to review the attached reports and answer any questions.

SDS:RLH:SGL

Attachments: Supplemental Exhibits
Actuarial Valuation and Review of Pension Plan
HIB Review of Contribution Rates and Funding Status
GASB 67 Actuarial Valuation for the Pension Plan
GASB 74 Actuarial Valuation for the HIB Plan

R. B. RESOLUTION NO. _____

ACCEPTING RETIREMENT SYSTEM ACTUARIAL VALUATIONS AND RECOMMENDING THE ADOPTION OF BY THE BOARD OF DIRECTORS PENSION AND HEALTH INSURANCE BENEFIT EMPLOYER CONTRIBUTION RATES FOR FISCAL YEAR 2025

Introduced by: ; Seconded by:

WHEREAS, pursuant to Section 22 of the Ordinance No. 40, as amended, the Board of Directors shall cause to be made an actuarial valuation of the assets and liabilities of the pension and Health Insurance Benefit (HIB) funds and on the basis of such investigation and valuation shall make revisions to the contribution rates to the Retirement System at least once in each two-year period; and

WHEREAS, the Retirement System's actuary, Segal, has prepared actuarial valuations for the pension plan and the HIB plan and has additionally prepared supplementary documentation based on measurement data through June 30, 2023; and

WHEREAS, Segal has determined in the actuarial valuations that the funded ratios of the pension plan and HIB plan are below one-hundred percent as of June 30, 2023, leading to unfunded liabilities in each plan; and

WHEREAS, the actuarial valuations have set forth recommended employer contribution rates for the coming fiscal year beginning July 1, 2024; and

WHEREAS, the recommended employer contribution rates in the valuations represent increases in the contribution rates compared with the employer contribution rates currently in effect for Fiscal Year 2024; and

WHEREAS, a portion of the actuarially recommended employer contribution rates is intended to pay down the unfunded liabilities of each plan over time; and

WHEREAS, the Retirement Board recommends that the Board of Directors adopt the employer contribution rates for Fiscal Year 2025 that, on a total percent of payroll basis, are greater than the employer contribution rates currently in effect for Fiscal Year 2024 in order to provide annual funding for the employer normal cost and unfunded liabilities as recommended in the actuarial valuations referenced in this resolution;

NOW, THEREFORE, BE IT RESOLVED that the Retirement Board accepts the actuarial valuations as of June 30, 2023 for the pension plan and HIB plan prepared by the Retirement System's actuary, Segal; and

BE IT FURTHER RESOLVED that the Retirement Board hereby recommends that the Board of Directors adopt the following Employer Contribution Rates for the Fiscal Year beginning July 1, 2024 and ending June 30, 2025 (Fiscal Year 2025):

Employer Contribution Rates for Fiscal Year 2025		
	1955/1980 Plan	**2013 Plan**
Pension	44.59%	35.80%
HIB	4.43%	4.27%
Total	**49.02%**	**40.07%**

_____

President

ATTEST:

_____

Secretary

1/18/2024

East Bay Municipal Utility District Employees' Retirement System

Actuarial Valuation and Review of Pension Plan and Health Insurance Benefit Plan as of June 30, 2023

Supplemental Exhibits

Segal

Segal

180 Howard Street, Suite 1100
San Francisco, CA 94105-6147
T 415.263.8200
segalco.com

January 5, 2024

Ms. Sophia Skoda
Director of Finance
East Bay Municipal Utility District
375 Eleventh Street
Oakland, CA 94607-4240

Re: June 30, 2023 Actuarial Valuations – Supplemental Exhibits

Dear Sophia:

Enclosed please find two exhibits that provide supplemental information to the June 30, 2023 actuarial valuations for the pension and health insurance benefit (HIB) plans.

Exhibit A provides a summary of the funding valuation results for both the pension and HIB plans. In particular, for the HIB plan, this information is based on our HIB funding valuation report dated January 5, 2024 that includes a maximum monthly benefit of $450 ($550 benefit for a retiree with a spouse or EBMUD domestic partner). It does not include the accounting liability for the "implicit subsidy" associated with the pooling of the health care premium rate for actives and retirees under age 65.

In Exhibit B, we have included a comparison of the historical Projected Benefit Obligations with the market value of assets for both plans.

We look forward to discussing this information with you and the Board.

Sincerely,

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

Mehdi Riazi, FSA, MAAA, FCA, EA
Vice President and Actuary

DNA/jl
Enclosures

Exhibit A

East Bay Municipal Utility District Employees' Retirement System
Summary of Significant Valuation Results for the Funding Valuations

		June 30, 2023	June 30, 2022	Change From Prior Year
I.	**Total Membership**			
	A. Active Members	1,955	1,895	3.2%
	B. Pensioners and Beneficiaries	2,117	2,048	3.4%
II.	**Valuation Salary[1]**			
	A. Total Projected Compensation	$262,272,600	$241,537,720	8.6%
	B. Average Projected Compensation	134,155	127,461	5.3%
III.	**Total System Assets**			
	A. Valuation Value of Pension Plan Assets	$2,251,690,803	$2,158,462,528	4.3%
	B. Valuation Value of HIB Plan Assets	62,769,259	57,661,197	8.9%
	C. Total Valuation Value (Actuarial Value)	$2,314,460,062	$2,216,123,725	4.4%
	D. Market Value of Pension Plan Assets	$2,194,142,000	$2,005,352,000	9.4%
	E. Market Value of HIB Plan Assets	61,165,000	53,571,000	14.2%
	F. Total Market Value	$2,255,307,000	$2,058,923,000	9.5%
IV.	**Unfunded Actuarial Accrued Liability (UAAL) and Funded Ratio[2]**			
	A. Pension Plan	$742,738,347	$677,308,564	9.7%
	B. Funded Ratio	75.2%	76.1%	-0.9%
	C. HIB Plan	$68,858,196	$73,290,113	-6.0%
	D. Funded Ratio	47.7%	44.0%	3.7%
	E. Pension Plan and HIB Plan	$811,596,543	$750,598,677	8.1%
	F. Funded Ratio	74.0%	74.7%	-0.7%

(1) Projected payroll.

(2) Based on valuation value of assets.

Note: The HIB information is based on our HIB funding valuation report that includes a maximum monthly benefit of $450 ($550 for a retiree with a spouse or EBMUD domestic partner). It does not include the accounting liability for the "implicit subsidy" associated with the pooling of the health care premium rate for actives and retirees under age 65.

Exhibit A (continued)

East Bay Municipal Utility District Employees' Retirement System
Summary of Significant Valuation Results for the Funding Valuations

		June 30, 2023	June 30, 2022	Change From Prior Year
V.	**Projected Benefit Obligation and Funded Ratio[3]**			
	A. Pension Plan	$2,926,665,000	$2,771,238,000	5.6%
	B. Funded Ratio	75.0%	72.4%	2.6%
	C. HIB Plan	$138,464,000	$137,670,000	0.6%
	D. Funded Ratio	44.2%	38.9%	5.3%
	E. Pension Plan and HIB Plan	$3,065,129,000	$2,908,908,000	5.4%
	F. Funded Ratio	73.6%	70.8%	2.8%

		FY 2024-2025			FY 2023-2024			Difference		
		1955/1980 Plan	2013 Tier	Combined[5]	1955/1980 Plan	2013 Tier	Combined[5]	1955/1980 Plan	2013 Tier	Combined[5]
VI.	**Budget Items[4]**									
	A. Pension Plan									
	1. Total Normal Cost	27.83%	19.79%	23.76%	27.90%	19.61%	23.70%	-0.07%	0.18%	0.06%
	2. Employee Contributions	-8.66%[6]	-9.41%	-9.04%	-8.66%[6]	-9.41%	-9.04%	0.00%	0.00%	0.00%
	3. Employer Normal Cost	19.17%	10.38%	14.72%	19.24%	10.20%	14.66%	-0.07%	0.18%	0.06%
	4. UAAL (paid by Employer)	25.42%	25.42%	25.42%	24.49%	24.49%	24.49%	0.93%	0.93%	0.93%
	5. Total Employer Contribution	44.59%	35.80%	40.14%	43.73%	34.69%	39.15%	0.86%	1.11%	0.99%
	B. HIB Plan									
	1. Total Normal Cost	0.95%	0.79%	0.87%	1.08%	0.85%	0.96%	-0.13%	-0.06%	-0.09%
	2. Employee Contributions	-0.09%	-0.09%	-0.09%	-0.09%	-0.09%	-0.09%	0.00%	0.00%	0.00%
	3. Employer Normal Cost	0.86%	0.70%	0.78%	0.99%	0.76%	0.87%	-0.13%	-0.06%	-0.09%
	4. UAAL (paid by Employer)	3.57%	3.57%	3.57%	3.76%	3.76%	3.76%	-0.19%	-0.19%	-0.19%
	5. Total Employer Contribution	4.43%	4.27%	4.35%	4.75%	4.52%	4.63%	-0.32%	-0.25%	-0.28%
	C. Total Contribution									
	1. Employee Contribution (A2 + B2)	8.75%	9.50%	9.13%	8.75%	9.50%	9.13%	0.00%	0.00%	0.00%
	2. Employer Contribution (A5 + B5)	49.02%	40.07%	44.49%	48.48%	39.21%	43.78%	0.54%	0.86%	0.71%

[3] Based on market value of assets.

[4] Contribution rates, payable at the end of each pay period, are expressed as a percentage of projected payroll.

[5] Aggregated based on June 30, 2023 projected annual payroll.

[6] The rate of 8.66% payable during fiscal years 2023/2024 and 2024/2025 is calculated by taking the total employee rate payable beginning April 18, 2016 (i.e., 8.75%), less the HIB employee contribution rate of 0.09%.

Exhibit B

East Bay Municipal Utility District Employees' Retirement System
Comparison of Projected Benefit Obligation with the Market Value of Assets
(Dollar Amounts in Thousands)

Actuarial Valuation Date	Projected Benefit Obligation	Market Value of Assets	Funded Ratio
06/30/2002	$749,113	$536,449	71.6%
06/30/2003	880,054	545,527	62.0%
06/30/2004	928,434	640,641	69.0%
06/30/2005	999,231	694,590	69.5%
06/30/2006	1,068,966	763,455	71.4%
06/30/2007	1,160,325	911,104	78.5%
06/30/2008	1,289,236	838,614	65.0%
06/30/2009	1,366,207	668,750	48.9%
06/30/2010	1,444,258	769,052	53.2%
06/30/2011	1,498,879	968,239	64.6%
06/30/2012	1,606,973	986,972	61.4%
06/30/2013	1,699,340	1,124,328	66.2%
06/30/2014	1,815,349	1,346,888	74.2%
06/30/2015	1,907,462	1,407,209	73.8%
06/30/2016	2,061,202	1,418,129	68.8%
06/30/2017	2,137,483	1,612,644	75.4%
06/30/2018	2,292,859	1,753,240	76.5%
06/30/2019	2,413,489	1,832,965	75.9%
06/30/2020	2,607,362	1,857,609	71.2%
06/30/2021	2,675,737	2,328,722	87.0%
06/30/2022	2,908,908	2,058,923	70.8%
06/30/2023	3,065,129	2,255,307	73.6%

East Bay Municipal Utility District Employees' Retirement System

Actuarial Valuation and Review of Pension Plan Benefits

As of June 30, 2023

Segal

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San Francisco, CA 94105-6147
T 415.263.8200
segalco.com

January 5, 2024

Ms. Sophia Skoda
Director of Finance
East Bay Municipal Utility District
375 Eleventh Street
Oakland, CA 94607-4240

Dear Sophia:

We are pleased to submit this Actuarial Valuation and Review as of June 30, 2023 for only the pension plan. The Review of Contribution Rates and Funding Status for the health insurance benefit (HIB) plan is provided in a separate report. This report summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2024/2025.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Retirement Board to assist in administering the Plan. The census information and financial information on which our calculations were based was prepared by the East Bay Municipal Utility District Employees' Retirement System (EBMUDERS). That assistance is gratefully acknowledged.

Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

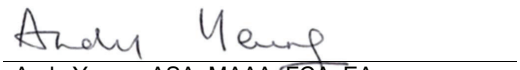
The actuarial calculations were directed under my supervision. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. The assumptions used in this actuarial valuation were selected by the Board based upon our analysis and recommendations. In our opinion, the assumptions are reasonable and take into account the

experience of the Plan and reasonable expectations. In addition, in our opinion, the combined effect of these assumptions is expected to have no significant bias.

We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

Segal



Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

DNA/jl

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the East Bay Municipal Utility District Employees' Retirement System ("the System") as of June 30, 2023. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Plan, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of June 30, 2023, provided by EBMUDERS;
- The assets of the Plan as of June 30, 2023, provided by EBMUDERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the June 30, 2023 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the June 30, 2023 valuation; and
- The funding policy adopted by the Board.

One of the general goals of an actuarial valuation is to establish contributions which fully fund the System's liabilities, and which, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

Section 1: Actuarial Valuation Summary

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the System's liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the System's staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year's information.

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the revised funding policy adopted by the Board on September 22, 2022. In particular, any changes in the Unfunded Actuarial Accrued Liability (UAAL) as a result of assumption or method changes on or after July 1, 2021 are amortized over 20 years (instead of 25 years). Details of the funding policy are provided in *Section 4, Exhibit 1* starting on page 66.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit G* starting on page 53. A graphical projection of the UAAL amortization balances and payments has been included in *Section 3, Exhibit H* starting on page 55. In the aggregate, the total payment from all the UAAL layers was the same as amortizing the entire UAAL over a period of about 14 years.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2024 through June 30, 2025.

Section 1: Actuarial Valuation Summary

Valuation Highlights

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1. The funded ratio (the ratio of the valuation value of assets to actuarial accrued liability) is 75.2%, compared to the prior year funded ratio of 76.1%. This ratio is one measure of funding status, and its history is a measure of funding progress. The funded ratio measured on a market value basis is 73.3%, compared to 70.7% as of the prior valuation date. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for, or the amount of, future contributions.

   In addition to the type of funded ratios noted above, Section 33 of the Employees' Retirement System Ordinance ("Ordinance") references a funded ratio based on the ratio of the market value of assets to the projected benefit obligation (PBO) for purposes of determining post-retirement cost of living adjustments (COLA). As noted in the plan provisions section of this report (*Section 4, Exhibit 2*), the basic minimum COLA benefit is the lesser of 3% and the actual change in the cost of living index. Any excess of the actual change in the cost of living index over 3% is accumulated in individual retiree COLA banks, and withdrawals from the bank are made in years when the index increases less than 3%. However, increases of up to 5% are granted in years when the Retirement Board determines that the System is more than 85% funded on a PBO basis. In those years when the System is more than 85% funded and the cost of living index exceeds 5%, any excess cost of living over 5% is accumulated in the COLA bank. Furthermore, effective October 1, 2000, in those years when the system is more than 85% funded on a PBO basis and the cost of living is less than 4%, withdrawals from the bank are made to allow cost of living increases up to 4%.

   For the June 30, 2023 Retirement Plan and HIB Plan valuations, we note that the funded ratio on the PBO (and market value) basis is 73.6% for both plans combined, as shown in the Supplemental Exhibits report dated January 5, 2024.

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2. The UAAL as of June 30, 2022 was $677.3 million. In this year's valuation, the UAAL has increased to $742.7 million mainly due to unfavorable investment experience (after asset smoothing), higher than expected salary increases for continuing actives, higher than expected cost-of-living adjustment (COLA) and a contribution loss due to actual contributions lower than expected from the anticipated one-year delay in implementing the higher contribution rates calculated in the last valuation, offset somewhat by miscellaneous actuarial gains.

   A reconciliation of the System's UAAL is provided in *Section 2, Subsection E*. A schedule of the current UAAL amortization amounts is provided in *Section 3, Exhibit G*. Note that a graphical projection of the UAAL amortization bases and payments has been provided in *Section 3, Exhibit H*.

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3. An actuarial loss of $80.8 million, or 2.70% of the Actuarial Accrued Liability, is due to an investment loss of $28.6 million, a contribution experience loss of $0.4 million, and a net experience loss from sources other than investments and contributions of $51.8 million. This loss from sources other than investment and contribution experience was primarily due to higher than expected salary increases for continuing actives and higher than expected cost-of-living adjustment (COLA) increases for payees, offset somewhat by miscellaneous actuarial gains.

4. This valuation reflects one minor actuarial methodology refinement of applying beginning of year timing of decrements for exiting from active membership status in calculating the normal cost rate. The refinement resulted in a 0.11% of payroll net decrease in the total normal cost rate.

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5. The aggregate employer rate (if paid at the end of each pay period) calculated in this valuation has increased from 39.15% of payroll to 40.14% of payroll. The increase in the employer rate was primarily due to (a) the change in member demographics, (b) the lower than expected return on the valuation value of assets (after smoothing), (c) higher than expected salary increases for continuing actives, (d) higher than expected COLA increases for current retirees and beneficiaries, and(e) the contribution loss due to actual contributions lower than expected from the anticipated one-year delay in implementing the higher contributions rates calculated in the prior valuation, offset somewhat by (f) amortizing the prior year's UAAL over a larger than expected projected total payroll and (g) miscellaneous actuarial gains.

6. The total normal cost rates for both the 1955/1980 Plan and the 2013 Tier have been developed assuming the normal cost dollar contribution amounts would increase at the rate of the total salary increase assumption. The dollar contribution amounts are then converted to a percent of payroll normal cost rate by dividing the dollar contribution amounts by the payroll after limiting each individual employee's payroll by the appropriate compensation limit. There was an increase in the total normal cost rate for the 2013 Tier due to the changes in member demographics during 2022/2023 as the average salary for continuing active 2013 Tier members increased by more than the increase in the CalPEPRA limit between the June 30, 2022 and 2023 valuations. We will continue to monitor this relationship in future valuations and are available to discuss with the Retirement System other alternatives that could be used in the total normal cost calculation in order to mitigate future rate increases that could result from such event.

   Although there was an increase in the total normal cost rate for the 2013 Tier, from 19.61% of payroll in the June 30, 2022 valuation to 19.79% of payroll in the June 30, 2023 valuation, the total normal cost rate for the 2013 Tier remained within 1% of the 18.81% of payroll threshold that was newly established in the June 30, 2020 valuation for determining whether a change in the member rate for that tier would be warranted. Consequently, the member rate for the 2013 Tier has remained unchanged at 9.41% of payroll in this valuation. With that said, it is very likely that the total normal cost rate for the 2013 Tier will increase and will exceed the 1% of the 18.81% threshold in the next valuation as of June 30, 2024.

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7. The aggregate member rate calculated in this valuation has remained unchanged at 9.04% of payroll. A reconciliation of the aggregate member rate is provided in *Section 2, Subsection F*.

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8. The rate of return on the Market Value of Assets was 10.62% for the July 1, 2022 to June 30, 2023 plan year. The return on the Valuation Value of Assets (pension plan only) was 5.42% for the same period after considering the recognition of current and prior years' investment gains and losses. This resulted in an actuarial loss when measured against the previous valuation's assumed rate of return of 6.75%. This actuarial investment loss increased the average employer contribution rate by 0.77% of pay.

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9. As indicated in *Section 2, Subsection B* of this report, the total net unrecognized investment loss as of June 30, 2023 is $59.2 million for the assets for the pension and HIB plans (note that in the previous valuation, this amount was a net deferred loss of $157.2

million). This net investment loss will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years. This implies that earning the assumed rate of investment return of 6.75% per year (net of expenses) on a market value basis will produce investment losses on the actuarial value of assets after June 30, 2023.

The net deferred loss of $59.2 million represents 2.6% of the market value of assets as of June 30, 2023. Unless offset by future investment gains or other favorable experience, the recognition of the net $59.2 million market loss is expected to have an impact on the System's future funded percentage and contribution rate requirements. This potential impact may be illustrated as follows:

- If the pension plan portion of the net deferred loss were recognized immediately and entirely in the valuation value of assets, the funded percentage would decrease from 75.2% to 73.3%.

  For comparison purposes, if the pension plan portion of the net deferred loss were recognized immediately and entirely in the valuation value of assets in the June 30, 2022 valuation, the funded percentage would have decreased from 76.1% to 70.7%.

- If the pension plan portion of the net deferred loss were recognized immediately and entirely in the valuation value of assets, the aggregate employer rate (payable at the end of each pay period) would increase from 40.14% to about 41.7% of payroll.

  For comparison purposes, if the pension plan portion of the net deferred loss were recognized immediately and entirely in the valuation value of assets in the June 30, 2022 valuation, the aggregate employer rate (payable at the end of each pay period) would have increased from 39.60% of payroll to about 44.1% of payroll.

10. The actuarial valuation report as of June 30, 2023 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.

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11. Actuarial Standard of Practice No. 51 (ASOP 51) requires actuaries to identify and assess risks that "may reasonably be anticipated to significantly affect the plan's future financial condition." Examples of key risks listed that are particularly relevant to EBMUDERS are asset/liability mismatch risk, investment risk, and longevity risk. The standard also requires an actuary to consider if there is any ongoing contribution risk to the plan, however it does not require the actuary to evaluate the particular ability or willingness of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

    The actuary's initial assessment can be strictly a qualitative discussion about potential adverse experience and the possible effect on future results, but it may also include quantitative numerical demonstrations where informative. The actuary is also encouraged to consider a recommendation as to whether a more detailed assessment or risk report would be significantly beneficial for the intended user in order to examine particular financial risks. When making that recommendation, the actuary will take into account such factors as the plan's design, risk profile, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

Since the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan. In 2021 we prepared a standalone Risk Assessment report for the Pension Plan dated April 29, 2021 by using membership and financial information as provided in the actuarial valuation as of June 30, 2020. That report includes various deterministic projections of future results under different investment return scenarios based on the assumptions adopted in the quadrennial experience study for the June 30, 2020 valuation.

We understand that the next stand-alone risk assessment report is not scheduled to be performed until after the next full experience study is conducted, which is scheduled prior to the June 30, 2024 actuarial valuation, unless EBMUDERS decides to have Segal develop a risk assessment report before then. In the meantime, we have included a brief discussion of key risks that may affect the System in Section 2, Subsection J.

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Note that this year the risk assessment section includes the disclosure of a "Low-Default-Risk Obligation Measure" (LDROM). This disclosure, along with commentary on the significance of the LDROM, is a new requirement under Actuarial Standard of Practice No. 4 (ASOP 4) for all pension funding actuarial valuation reports.

12. It is important to note that this actuarial valuation is based on plan assets as of June 30, 2023. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after June 30, 2023 due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.
13. Segal strongly recommends an actuarial funding policy that targets 100% funding of the Actuarial Accrued Liability. Generally, this implies payments that are ultimately at least enough to cover Normal Cost, interest on the UAAL and the principal balance. The funding policy adopted by the Board as described in Section 4, Exhibit 1 meets this standard.
14. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution (ADC) under the System's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of June 30, 2023, will be provided separately. The accounting disclosures will utilize different methodologies from those employed in the funding valuation, as required by GASB. However, the ADC in this valuation is expected to be used as the ADC for GASB financial reporting.

Summary of Key Valuation Results

		June 30, 2023		June 30, 2022	
		Total Rate	Estimated Annual Dollar Amount[1]	Total Rate	Estimated Annual Dollar Amount[1]
Employer Contribution Rates: ***(payable at the end of each pay period)***	• 1955/1980 Plan	44.59%	$57,738,772	43.73%	$56,625,174
	• 2013 Tier	35.80%	47,536,829	34.69%	46,062,921
	• Combined	40.14%	$105,275,601	39.15%	$102,688,095
Average Member Contribution Rates: ***(payable at the end of each pay period)***	• 1955/1980 Plan	8.66%[2]	$11,213,675	8.66%[2]	$11,213,675
	• 2013 Tier	9.41%	12,495,015	9.41%	12,495,015
	• Combined	9.04%	$23,708,690	9.04%	$23,708,690

[1] Estimated based on June 30, 2023 projected annual compensation of $262,272,600 (that is, $129,488,164 for the 1955/1980 Plan and $132,784,436 for the 2013 Tier).

[2] The rate of 8.66% payable during the fiscal years 2023/2024 and 2024/2025 is calculated by taking the total employee rate payable beginning April 18, 2016 (i.e., 8.75%), less the HIB employee contribution rate of 0.09%.

Summary of Key Valuation Results (continued)

		June 30, 2023	June 30, 2022
Actuarial Accrued Liability:	• Retired members and beneficiaries	$1,959,982,363	$1,834,781,122
	• Inactive vested members	59,125,354	55,173,918
	• Active members	975,321,433	945,816,052
	• Total Actuarial Accrued Liability (AAL)	$2,994,429,150	$2,835,771,092
	• Normal Cost for plan year beginning June 30[1]	62,314,596	58,245,086
Assets:	• Valuation value of pension plan assets (VVA)[2]	$2,251,690,803	$2,158,462,528
	• Market value of pension plan assets (MVA)[2]	2,194,142,000	2,005,352,000
	• Actuarial value of pension plan and HIB plan assets	2,314,460,062	2,216,123,725
	• Market value of pension plan and HIB plan assets	2,255,307,000	2,058,923,000
	• Actuarial value of total plan assets as a percentage of market value of total plan assets	102.6%	107.6%
Funded status:	• Unfunded Actuarial Accrued Liability (UAAL) on VVA basis	$742,738,347	$677,308,564
	• Funded ratio on VVA basis	75.2%	76.1%
	• UAAL on MVA basis	$800,287,150	$830,419,092
	• Funded ratio on MVA basis	73.3%	70.7%
Key assumptions:	• Net investment return	6.75%	6.75%
	• Price Inflation	2.50%	2.50%
	• Real across-the-board increase	0.50%	0.50%
	• Payroll growth increase	3.00%	3.00%
	• Cost of Living Adjustment (COLA)	2.75%	2.75%
	• Amortization period on VVA basis[3]	20 years	20 years

[1] Adjusted with interest to middle of the year assuming contributions would be paid at the end of each pay period.
[2] Net of HIB plan assets.
[3] Changes in UAAL as a result of gains or losses for each valuation are amortized over separate 20-year periods. Details on the funding policy are provided in *Section 4, Exhibit 1*.

Summary of Key Valuation Results (continued)

		June 30, 2023	June 30, 2022	Change From Prior Year
Demographic data:	**Active Members:**			
	• Number of members	1,955	1,895	3.2%
	• Average age	47.1	47.2	-0.1
	• Average service	11.0	11.4	-0.4
	• Total projected compensation	$262,272,600	$241,537,720	8.6%
	• Average projected compensation	$134,155	$127,461	5.3%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	1,704	1,656	2.9%
	– Disability retired	51	53	-3.8%
	– Beneficiaries	362	339	6.8%
	– Total	2,117	2,048	3.4%
	• Average age	71.4	71.0	0.4
	• Average monthly benefit	$5,752	$5,592	2.9%
	Inactive Vested Members:			
	• Number of members[1]	381	360	5.8%
	• Average Age	48.4	48.3	0.1
	Total Members:	4,453	4,303	3.5%

[1] Includes inactive members due a refund of member contributions.

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan provisions	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant information	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Financial information	Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the System. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there is a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

Section 1: Actuarial Valuation Summary

Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the System. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.
If EBMUDERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The System should look to their other advisors for expertise in these areas.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
Segal's report shall be deemed to be final and accepted by the System upon delivery and review. The System should notify Segal immediately of any questions or concerns about the final content.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Member Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive vested members, retired members and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3, Exhibits A, B,* and *C*.

Member Population: 2014 – 2023

Year Ended June 30	Active Members	Inactive Vested Members[1]	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2014	1,715	237	1,497	1,734	1.01	0.87
2015	1,762	239	1,563	1,802	1.02	0.89
2016	1,789	248	1,630	1,878	1.05	0.91
2017	1,802	267	1,713	1,980	1.10	0.95
2018	1,828	284	1,779	2,063	1.13	0.97
2019	1,847	303	1,844	2,147	1.16	1.00
2020	1,903	312	1,905	2,217	1.17	1.00
2021	1,896	327	1,977	2,304	1.22	1.04
2022	1,895	360	2,048	2,408	1.27	1.08
2023	1,955	381	2,117	2,498	1.28	1.08

[1] Includes inactive members due a refund of member contributions.

Section 2: Actuarial Valuation Results

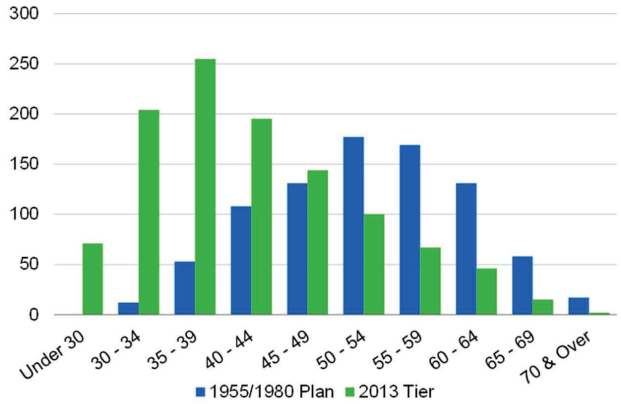
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 1,955 active members with an average age of 47.1, average years of service of 11.0 years and average compensation of $134,155. The 1,895 active members in the prior valuation had an average age of 47.2, average service of 11.4 years and average compensation of $127,461.

Among the active members, there were none with unknown age information.

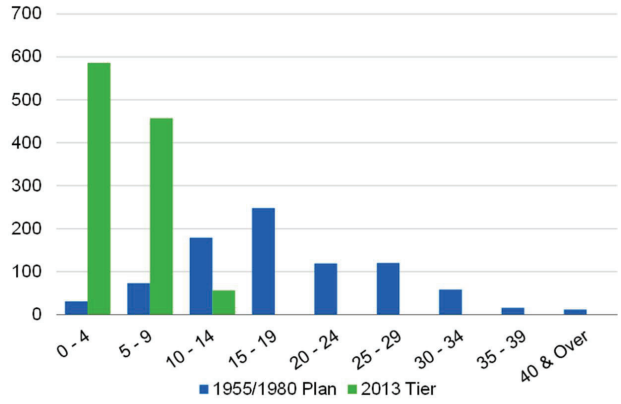
Distribution of Active Members as of June 30, 2023

Actives by Age



Average age	47.1
Prior year average age	47.2
Difference	-0.1

Actives by Years of Service



Average years of service	11.0
Prior year average years of service	11.4
Difference	-0.4

Inactive Members

In this year's valuation, there were 381 members with a vested right to a deferred or immediate vested benefit or a refund of contributions, versus 360 in the prior valuation.

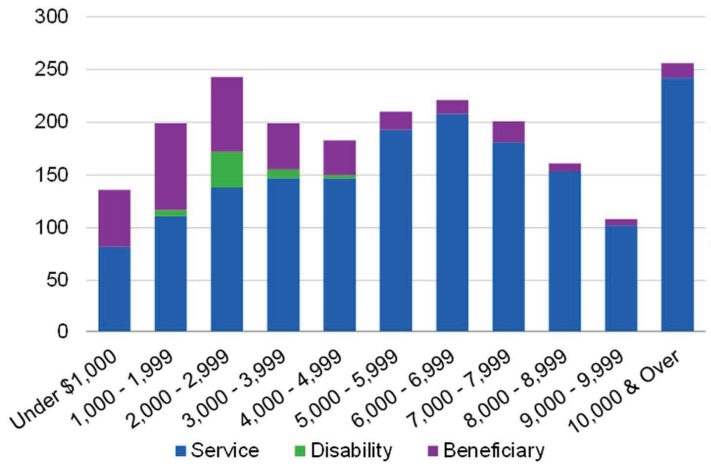
Retired Members and Beneficiaries

As of June 30, 2023, 1,755 retired members and 362 beneficiaries were receiving total monthly benefits of $12,176,254. For comparison, in the previous valuation, there were 1,709 retired members and 339 beneficiaries receiving monthly benefits of $11,452,514.

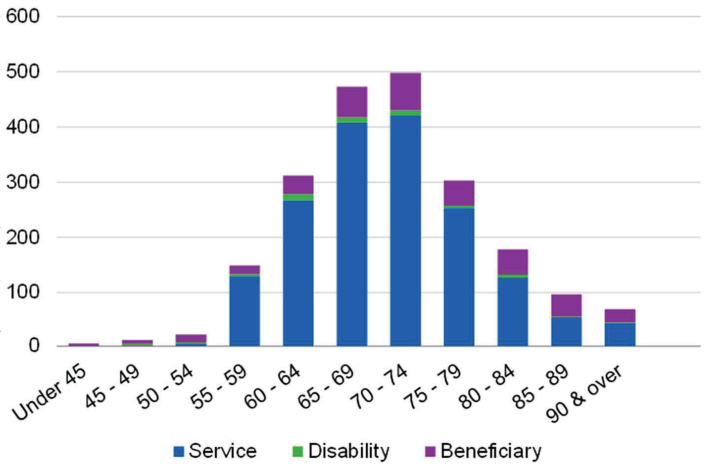
As of June 30, 2023, the average monthly benefit for retired members and beneficiaries is $5,752, compared to $5,592 in the previous valuation. The average age for retired members and beneficiaries is 71.4 in the current valuation, compared with 71.0 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of June 30, 2023

Retired Members and Beneficiaries by Type and Monthly Amount



Retired Members and Beneficiaries by Type and Age



Section 2: Actuarial Valuation Results

Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2014 – 2023

	Active Members			Retired Members and Beneficiaries		
Year Ended June 30	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2014	1,715	49.3	14.3	1,497	70.3	$4,183
2015	1,762	48.8	13.7	1,563	70.1	4,360
2016	1,789	48.5	13.3	1,630	70.1	4,499
2017	1,802	48.0	12.8	1,713	70.1	4,649
2018	1,828	47.8	12.4	1,779	70.2	4,841
2019	1,847	47.6	12.0	1,844	70.3	5,024
2020	1,903	47.3	11.7	1,905	70.6	5,211
2021	1,896	47.4	11.6	1,977	70.8	5,376
2022	1,895	47.2	11.4	2,048	71.0	5,592
2023	1,955	47.1	11.0	2,117	71.4	5,752

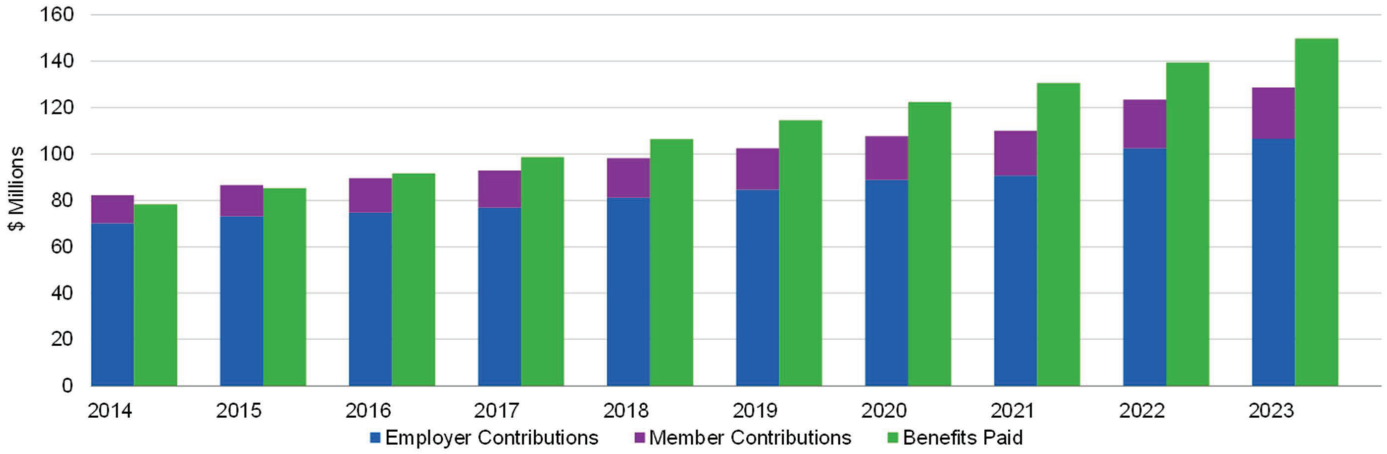
B. Financial Information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of transactions for the valuation year, is presented in *Section 3, Exhibits D, E* and *F*.

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Comparison of Contributions Made with Benefits
for Years Ended June 30, 2014 – 2023
(Pension and HIB Plans)



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended June 30, 2023

1	**Market Value of Assets**					
	(a) Pension plan					**$2,194,142,000**
	(b) HIB plan					**61,165,000**
	(c) Total					**$2,255,307,000**
2	Calculation of unrecognized return	**Actual Return**	**Expected Return**	**Investment Gain/(Loss)**	**Percent Deferred**	**Deferred Return**
a)	Year ended June 30, 2019	$91,744,000	$122,306,135	$(30,562,135)	0%	$0
b)	Year ended June 30, 2020	39,376,000	127,791,930	(88,415,930)	20	(17,683,186)
c)	Year ended June 30, 2021	491,625,000	129,314,710	362,310,290	40	144,924,116
d)	Year ended June 30, 2022	(253,930,000)	162,455,125	(416,385,125)	60	(249,831,075)
e)	Year ended June 30, 2023	217,559,000	138,262,646	79,296,354	80	63,437,083
f)	Total unrecognized return[1]					$(59,153,062)
3	**Preliminary Actuarial Value of Assets: (1c) - (2f)**					**$2,314,460,062**
4	Adjustment to be within 30% corridor of market value					0
5	**Final Actuarial Value of Assets: 3 + 4**:					**$2,314,460,062**
6	Actuarial Value of Assets as a percentage of Market Value of Assets: **5 ÷ 1c**					102.6%
7	**Valuation Value of Pension Plan Assets: 1a ÷ 1c x 5**					**$2,251,690,803**

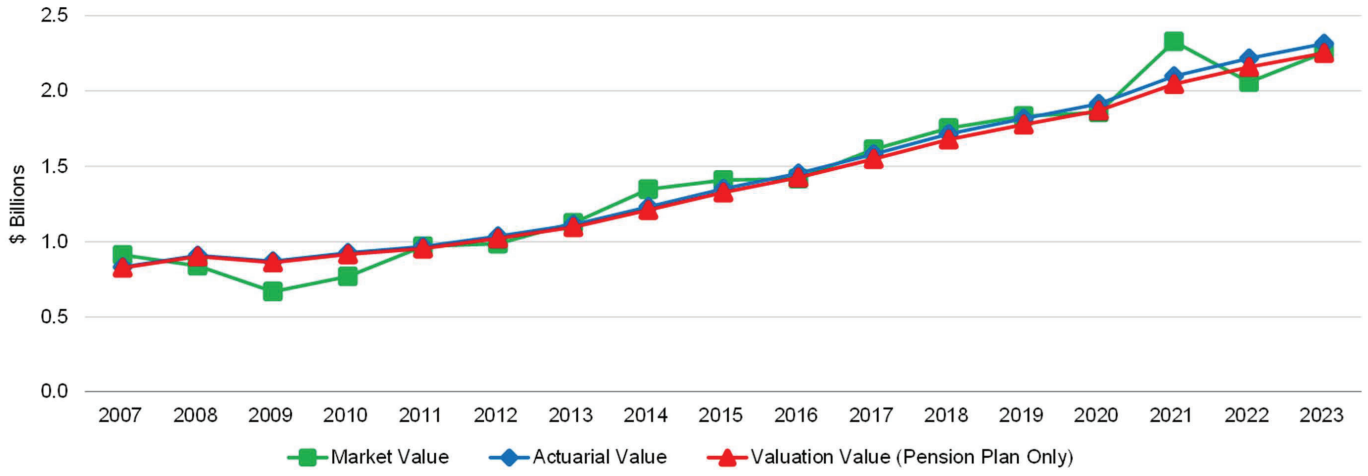
[1] Deferred return as of June 30, 2023 that will be recognized in each of the next four years (amounts may not total exactly due to rounding):

(a)	Amount recognized on June 30, 2024	$(12,638,882)
(b)	Amount recognized on June 30, 2025	5,044,304
(c)	Amount recognized on June 30, 2026	(67,417,754)
(d)	Amount recognized on June 30, 2027	15,859,271
(e)	Total unrecognized return as of June 30, 2023	$(59,153,062)

Section 2: Actuarial Valuation Results

The Market Value, Actuarial Value and Valuation Value of Assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the Actuarial Value of Assets tracks the Market Value of Assets. The Valuation Value of Assets is the actuarial value, excluding HIB assets. The Valuation Value of Assets is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the Unfunded Actuarial Accrued Liability is an important element in determining the contribution requirement.

Market Value, Actuarial Value, and Valuation Value (Pension Plan Only) of Assets
as of June 30, 2007 – 2023



C. Actuarial Experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the actuarially determined contribution will decrease from the previous year. On the other hand, the actuarially determined contribution will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years. There are no assumption changes reflected in this report.

The total loss is $80.8 million, which includes $28.6 million from investment losses (after smoothing), a loss of $0.4 million from contribution experience and $51.8 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 1.73% of the Actuarial Accrued Liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended June 30, 2023

1	Net loss from investments[1]	$(28,574,882)
2	Actual contributions less than expected	(374,644)
3	Net loss from other experience[2]	(51,868,389)
4	**Net experience loss:[3] 1 + 2 + 3**	**$(80,817,915)**

[1] Details on next page.

[2] See *Subsection E* for further details.

[3] The net loss is attributed to actual liability experience from July 1, 2022 through June 30, 2023 compared to the projected experience based on the actuarial assumptions as of June 30, 2022. It does not include the effect of plan or assumption changes as of June 30, 2023, if any.

Section 2: Actuarial Valuation Results

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the Market Value of Assets was 10.62% for the year ended June 30, 2023.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 6.75% (for the June 30, 2022 valuation). The actual rate of return on a valuation value basis (after smoothing) for the 2022/2023 plan year was 5.42%. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended June 30, 2023 with regard to its investments.

Investment Experience for Year Ended June 30, 2023

		Valuation Value (pension plan assets only)	Actuarial Value (includes pension and HIB plan assets)	Market Value (includes pension and HIB plan assets)
1	Net investment income	$116,341,275	$119,511,337	$217,559,000
2	Average value of assets	2,146,906,028	2,205,536,225	2,048,335,500
3	Rate of return: **1 ÷ 2**	5.42%	5.42%	10.62%
4	Assumed rate of return	6.75%	6.75%	6.75%
5	Expected investment income: **2 x 4**	$144,916,157	$148,873,695	$138,262,646
6	**Actuarial gain/(loss): 1 - 5**	**$(28,574,882)**	**$(29,362,358)**	**$79,296,354**

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on a valuation value, actuarial value, and market value basis for the last ten years.

Investment Return – Valuation Value, Actuarial Value and Market Value: 2014 – 2023[1]

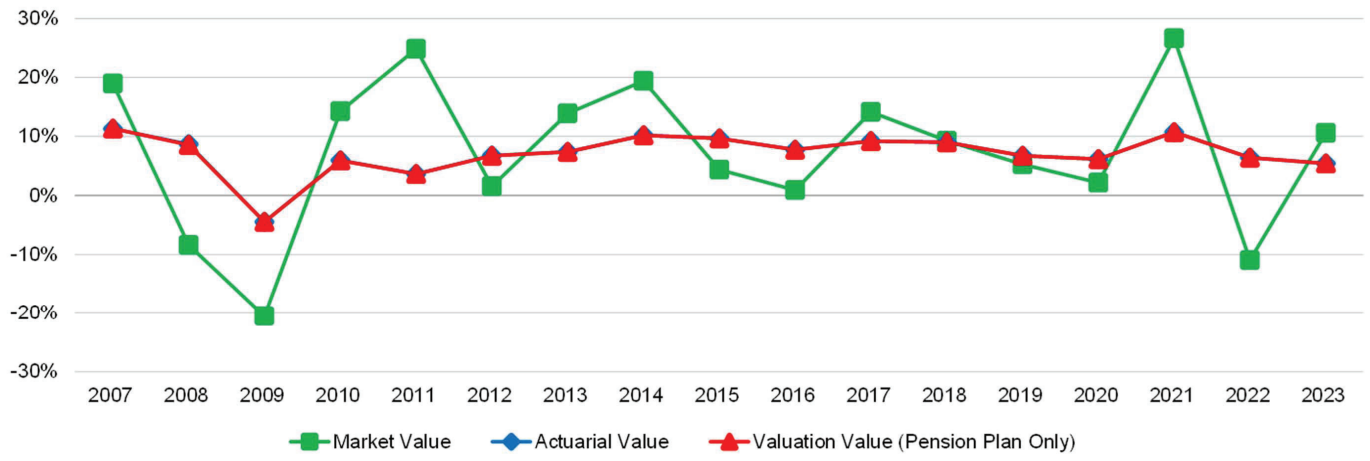
Year Ended June 30	Valuation Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2014	$112,077,589	10.22%	$113,600,558	10.19%	$218,575,000	19.41%
2015	117,145,293	9.68%	118,952,917	9.67%	58,937,000	4.37%
2016	102,598,231	7.74%	104,468,421	7.74%	12,894,000	0.92%
2017	131,217,766	9.23%	133,617,292	9.22%	200,254,000	14.15%
2018	139,184,681	9.01%	141,900,834	9.00%	148,798,000	9.25%
2019	112,719,164	6.74%	115,218,143	6.74%	91,744,000	5.25%
2020	108,905,040	6.16%	111,447,050	6.16%	39,376,000	2.16%
2021	199,446,791	10.74%	203,946,418	10.71%	491,625,000	26.61%
2022	130,591,533	6.41%	134,280,271	6.43%	(253,930,000)	(10.94)%
2023	116,341,275	5.42%	119,511,337	5.42%	217,559,000	10.62%
Most recent 5-year geometric average return		**7.08%**		**7.08%**		**6.05%**
Most recent 10-year geometric average return		**8.12%**		**8.11%**		**7.72%**

[1] Market Value and Actuarial Value of Assets are for the pension plan and the HIB plan. Valuation Value of Assets are for the pension plan only.

Section 2: Actuarial Valuation Results

Section 2, Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial and Valuation (Pension Plan Only) Rates of Return for Years Ended June 30, 2007 – 2023



Section 2: Actuarial Valuation Results

Contributions

Contributions for the year ended June 30, 2023, when adjusted for timing, totaled $120.9 million, compared to the projected amount of $121.3 million (also adjusted for timing). This resulted in a loss of $0.4 million for the year, when adjusted for timing.

Non-Investment Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among participants,
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- salary increases (greater or smaller than projected), and
- cost-of-living adjustments (COLAs; higher or lower than anticipated).

The net loss from this other experience for the year ended June 30, 2023 amounted to $51.8 million, which is 1.73% of the Actuarial Accrued Liability. This loss was mainly due to the effect of higher than expected individual salary increases for actives and higher than anticipated COLA increases for current retirees and beneficiaries. See *Subsection E* for a detailed development of the Unfunded Actuarial Accrued Liability.

D. Other Changes in the Actuarial Accrued Liability

The Actuarial Accrued Liability as of June 30, 2023 is $2.994 billion, an increase of $158.7 million, or 5.6%, from the liability as of the prior valuation date. The Actuarial Accrued Liability is expected to grow each year with Normal Cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Methods

This valuation reflects one minor actuarial methodology refinement of applying beginning of year timing of decrements for exiting from active membership status in calculating the normal cost rate. The refinement resulting in a 0.11% of payroll net decrease in the total normal cost rate.

Actuarial Assumptions

There were no assumption changes since the prior valuation.

Details on actuarial assumptions and methods are in *Section 4, Exhibit 1*.

Plan Provisions

There were no changes in plan provisions since the prior valuation.

A summary of plan provisions is in *Section 4, Exhibit 2*.

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended June 30, 2023

1	**Unfunded actuarial accrued liability at beginning of year**		**$677,308,564**
2	Total Normal Cost at beginning of year		56,378,319
3	Expected employer and member contributions at beginning of year		(113,620,903)
4	Interest		41,854,452
5	Expected Unfunded Actuarial Accrued Liability at end of year		$661,920,432
6	Changes due to:		
	a. Investment loss on smoothed value of assets	$28,574,882	
	b. Effect of anticipated one-year delay in implementing the higher contribution rates calculated in the prior valuation	374,644	
	c. Loss due to higher than expected salary increases for continuing active members	20,544,168	
	d. Loss due to higher than expected COLA increases for current retirees and beneficiaries	34,571,566	
	e. Other gains on demographic experience	(3,247,345)	
	Total changes		$80,817,915
7	**Unfunded Actuarial Accrued Liability at end of year**		**$742,738,347**

Note: The “net loss from other experience” of $51,868,389 from *Subsection C* is equal to the sum of items 6c, 6d and 6e.

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment and a payment on the Unfunded Actuarial Accrued Liability. As of June 30, 2023, the average recommended employer contribution is 40.14% of compensation, payable at the end of each pay period.

The Board sets the funding policy used to calculate the recommended contribution based on layered 20-year[1] amortization periods as a level percentage of payroll. See *Section 4, Exhibit 1* for further details on the funding policy. Based on this policy, there is no negative amortization[2] and each amortization layer is fully funded in 20 years. As shown in the graphical projection of the UAAL amortization balances and payments found in *Section 3, Exhibit H*, before taking into consideration the deferred investment gains/losses that will be recognized in the next several valuations, the UAAL of the Plan is expected to be fully amortized by 2045,[3] assuming all assumptions are realized and contributions are made in accordance with the funding policy.

The current funding policy is intended to fully fund the cost of the benefits and to allocate the cost of benefits reasonably and equitably over time while minimizing the volatility of employer contributions. The recommended contribution is expected to remain level as a percent of payroll, except when any current amortization layer is fully amortized, assuming there are no future actuarial gains or losses. Furthermore, the funded ratio is expected to increase as the UAAL is methodically funded by employer contributions.

The contribution requirement as of June 30, 2023 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

[1] Changes in UAAL as a result of actuarial gains or losses or as a result of changes in actuarial assumptions or methods (on or after July 1, 2021) for each valuation are amortized over separate 20-year periods. Changes in UAAL as a result of plan changes are amortized over separate 15-year periods.
[2] Negative amortization means that the amortization payment towards the UAAL is less than the interest on the UAAL and therefore the outstanding balance of the UAAL would increase.
[3] The UAAL is expected to be fully amortized later than the 20-year amortization period because of a prior change in assumptions base that was originally established with a 25 year amortization period and which has 22 years remaining as of June 30, 2023.

Average Recommended Employer Contribution for Year Ended June 30

All Tiers Combined		2023 Amount	2023 % of Projected Compensation	2022 Amount	2022 % of Projected Compensation
1	Total Normal Cost	$62,314,596	23.76%	$58,245,086	24.11%
2	Expected member Normal Cost contributions	23,708,690	9.04%	21,744,422	9.00%
3	Employer Normal Cost: **1 – 2**	$38,605,906	14.72%	$36,500,664	15.11%
4	Actuarial Accrued Liability	2,994,429,150		2,835,771,092	
5	Valuation Value of Assets	2,251,690,803		2,158,462,528	
6	Unfunded Actuarial Accrued Liability: **4 – 5**	$742,738,347		$677,308,564	
7	Payment on Unfunded Actuarial Accrued Liability	66,669,695	25.42%	59,152,588	24.49%
8	Total average recommended employer contribution: **3 + 7**	$105,275,601	40.14%	$95,653,252	39.60%
9	Projected compensation	$262,272,600		$241,537,720	

Note: Contributions are assumed to be paid at the end of each pay period.

Reconciliation of Average Recommended Employer Contribution Rate

The chart below details the changes in the average recommended employer contribution rate from the prior valuation to the current year's valuation.

Reconciliation from June 30, 2022 to June 30, 2023

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Adopted Employer Contribution Rate as of June 30, 2022	**39.15%**	**$102,688,095**
1. Effect of change in membership demographics	0.06%	$157,364
2. Effect of investment return less than expected on smoothed value of assets	0.77%	2,019,499
3. Effect of individual salary increases higher than expected for continuing active members	0.56%	1,468,727
4. Effect of amortizing prior year's UAAL over a larger than expected projected total payroll	(1.26)%	(3,304,635)
5. Effect of higher than expected COLA increases for current retirees and beneficiaries	0.94%	2,465,362
6. Effect of anticipated one-year delay in implementing the higher contribution rates calculated in the prior valuation	0.01%	26,227
7. Effect of other demographic experience gains on accrued liability	(0.09)%	(245,038)
Total change	0.99%	$2,587,506
Average Recommended Employer Contribution Rate as of June 30, 2023	**40.14%**	**$105,275,601**

[1] Based on June 30, 2023 projected compensation of $262,272,600.

Reconciliation of Average Recommended Member Contribution Rate

The chart below details the changes in the average recommended member contribution rate from the prior valuation to the current year's valuation.

Reconciliation from June 30, 2022 to June 30, 2023

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Member Contribution as of June 30, 2022	**9.04%**	**$23,708,690**
1. Effect of changes in member demographics	0.00%	$0
Total changes	0.00%	$0
Average Recommended Member Contribution as of June 30, 2023	**9.04%**	**$23,708,690**

[1] Based on June 30, 2023 projected compensation of $262,272,600.

Recommended Employer Contribution Rate (% of payroll; payable at the end of each pay period)

	June 30, 2023 Actuarial Valuation		June 30, 2022 Actuarial Valuation	
	Contribution Rate	Estimated Annual Dollar Amount[1]	Contribution Rate	Estimated Annual Dollar Amount[1]
1955/1980 Plan				
Total Normal Cost	27.83%	$36,036,556	27.90%	$36,127,198
Expected Employee Contributions	-8.66%[2]	-11,213,675	-8.66%[2]	-11,213,675
Employer Normal Cost	19.17%	$24,822,881	19.24%	$24,913,523
UAAL	25.42%	32,915,891	24.49%	31,711,651
Total Employer Contribution	**44.59%**	**$57,738,772**	**43.73%**	**$56,625,174**
2013 Tier				
Total Normal Cost	19.79%	$26,278,040	19.61%	$26,039,028
Expected Employee Contributions	-9.41%	-12,495,015	-9.41%	-12,495,015
Employer Normal Cost	10.38%	$13,783,025	10.20%	$13,544,013
UAAL	25.42%	33,753,804	24.49%	32,518,908
Total Employer Contribution	**35.80%**	**$47,536,829**	**34.69%**	**$46,062,921**
Combined				
Total Normal Cost	23.76%	$62,314,596	23.70%	$62,166,226
Expected Employee Contributions	-9.04%	-23,708,690	-9.04%	-23,708,690
Employer Normal Cost	14.72%	$38,605,906	14.66%	$38,457,536
UAAL	25.42%	66,669,695	24.49%	64,230,559
Total Employer Contribution	**40.14%**	**$105,275,601**	**39.15%**	**$102,688,095**

[1] Amounts are based on the following June 30, 2023 projected annual payroll:

1955/1980 Plan	$129,488,164
2013 Tier	132,784,436
Combined	$262,272,600

[2] The rate of 8.66% payable during the fiscal years 2023/2024 and 2024/2025 is calculated by taking the total employee rate payable beginning April 18, 2016 (i.e., 8.75%), less the HIB employee contribution rate of 0.09%.

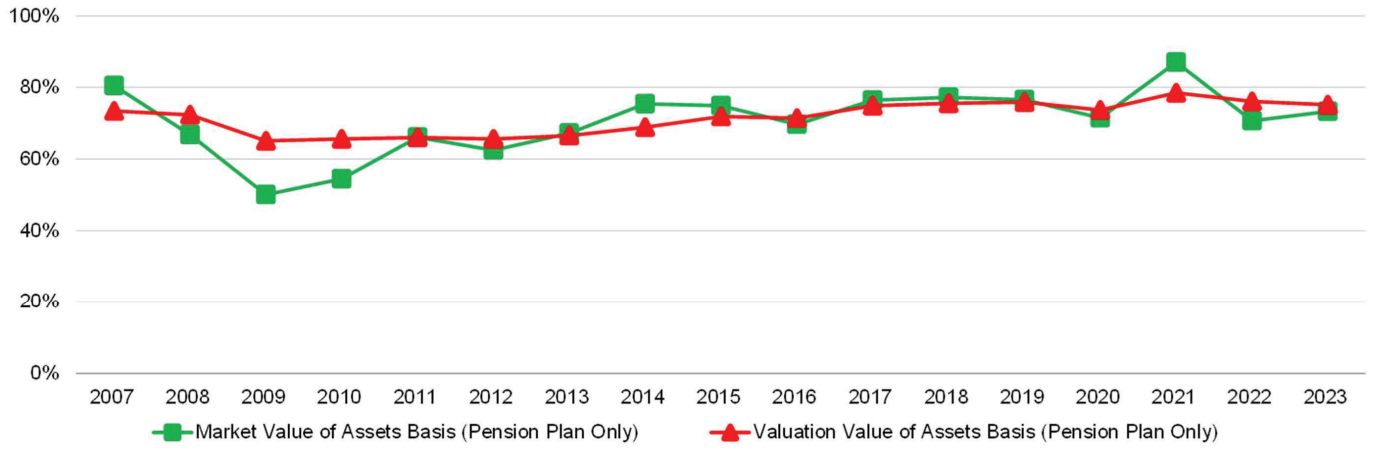
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Valuation Value of Assets and the Market Value of Assets to the Actuarial Accrued Liability of the Plan. Higher ratios indicate a relatively well-funded plan, while lower ratios may indicate recent changes to actuarial assumptions, funding of the plan below actuarial requirements, poor asset performance, or a variety of other causes.

The chart below depicts a history of the funded ratio for the Plan. The chart on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the Valuation Value or Market Value of Assets is used.

Funded Ratio for Years Ended June 30, 2007 – 2023



Section 2: Actuarial Valuation Results

Schedule of Funding Progress for Years Ended June 30, 2014 – 2023 (Dollar amounts in thousands)

Actuarial Valuation Date as of June 30,	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (%) [(b) - (a)] / (c)
2014	$1,210,321	$1,756,706	$546,385	68.9%	$167,196	326.8%
2015	1,327,113	1,845,912	518,799	71.9	174,899	296.6
2016	1,425,785	1,995,863	570,078	71.4	183,971	309.9
2017	1,549,213	2,068,015	518,802	74.9	184,859	280.6
2018	1,678,417	2,220,977	542,560	75.6	202,995	267.3
2019	1,777,065	2,340,773	563,708	75.9	212,351	265.5
2020	1,868,917	2,535,238	666,321	73.7	224,412	296.9
2021	2,045,503	2,605,614	560,111	78.5	224,392	249.6
2022	2,158,463	2,835,771	677,308	76.1	241,538	280.4
2023	2,251,691	2,994,429	742,738	75.2	262,273	283.2

H. Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the Actuarial Present Value of Future Benefits of the Plan.

Second, this Actuarial Present Value of Future Benefits is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer Normal Cost contributions, and the present value of future employer amortization payments for the Unfunded Actuarial Accrued Liability.

Actuarial Balance Sheet

	Year Ended	
	June 30, 2023	**June 30, 2022**
Actuarial Present Value of Future Benefits		
• Present value of benefits for retired members and beneficiaries	$1,959,982,363	$1,834,781,122
• Present value of benefits for inactive vested members	59,125,354	55,173,918
• Present value of benefits for active members	1,507,682,199	1,433,617,383
Total Actuarial Present Value of Future Benefits	**$3,526,789,916**	**$3,323,572,423**
Current and future assets		
• Total Valuation Value of Assets	$2,251,690,803	$2,158,462,528
• Present value of future contributions by members	219,099,771	197,570,495
• Present value of future employer contributions for:		
– Entry age Normal Cost	313,260,995	290,230,836
– Unfunded Actuarial Accrued Liability	742,738,347	677,308,564
Total of current and future assets	**$3,526,789,916**	**$3,323,572,423**

I. Volatility Ratios

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the Market Value of Assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measurement since it is based on the current level of assets.

The current AVR is about 8.4. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 8.4% of one-year's payroll. Since actuarial gains and losses are amortized over 20 years, there would be a 0.6% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions. The current LVR is about 11.4. This is about 36% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long term.

The chart below shows how the asset and liability volatility ratios have varied over time.

Volatility Ratios for Years Ended June 30, 2014 – 2023

Year Ended June 30	Asset Volatility Ratio	Liability Volatility Ratio
2014	7.9	10.5
2015	7.9	10.6
2016	7.6	10.8
2017	8.6	11.2
2018	8.5	10.9
2019	8.4	11.0
2020	8.1	11.3
2021	10.1	11.6
2022	8.3	11.7
2023	8.4	11.4

J. Risk Assessment

Because the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition. We recommend a more detailed assessment of the risks to provide the Board with a better understanding of the risks inherent in the Plan that can inform both financial preparation and future decision making. This assessment would enable us to work with the Board to highlight and illustrate particular risks or potential future outcomes they may be interested in discussing and could include scenario testing, sensitivity testing, stress testing and stochastic modeling. As noted in the valuation highlights section of this report, the results of our more detailed risk assessment through the June 30, 2020 valuation date was provided in a separate stand-alone report dated April 29, 2021. That report included investment return scenarios that demonstrated the effects of short-term market volatility on funded status and contribution rates, which may aid in illustrating the effect on the plan of market volatility that can result from events such as COVID-19.

This section provides descriptions and basic assessments of the primary risks that are likely to have an ongoing influence on the Plan's financial health, as well as a discussion of historical trends and maturity measures:

Risk Assessments

- Asset/Liability Mismatch Risk (the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge)

  The most significant asset/liability mismatch risk to the Plan is investment risk, as discussed below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations: when asset values deviate from assumptions, they are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any changes in the expected experience of asset growth rates.

  Asset/liability mismatch can also be caused by demographic assumption risk such as longevity, which affects liabilities but have no impact on asset levels. This risk is also discussed below.

- Investment Risk (the risk that investment returns will be different than expected)

  The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial condition of the Plan, affecting both

funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in *Section 2, Subsection I, Volatility Ratios*, on page 38, a 1% asset gain or loss (relative to the assumed investment return) translates to about 8.4% of one-year's payroll. Since actuarial gains and losses are amortized over 20 years, there would be a 0.6% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The year-by-year market value rate of return over the last 10 years has ranged from a low of (10.94)% to a high of 26.61%.

- Longevity Risk (the risk that mortality experience will be different than expected)

  The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. Effective with the June 30, 2020 valuation, the Board adopted mortality tables based on public plan experience that are weighted by benefits and include generational mortality projections.

- Other Risks

  In addition to longevity, the valuation includes a variety of other assumptions that are unlikely to match future experience exactly. One example is projected salary scales over time. As salary is central to the determination of benefits paid in retirement, deviations from the projected salary scales could have a material impact on the benefits anticipated for each member. Examples of demographic assumptions include retirement, termination and disability assumptions, and will likely vary in significance for different pension plans.

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the employer has a proven track-record of making at least the Actuarially Determined Contributions based on the Board's Actuarial Funding Policy, so contribution risk is minimal.

Evaluation of Historical Trends

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The funded percentage on the Valuation Value of Assets basis has increased from 68.9% to 75.2%. This is primarily due to contributions made to amortize the UAAL under the Board's actuarial funding policy. For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 35.

- The average geometric investment return on the Actuarial Value of Assets over the most recent 10-year period was 8.11%. This includes a high of a 10.71% return and a low of 5.42%. The average over the last 5 years was 7.08%. For more details see the Investment Return table in *Section 2, Subsection C* on page 25.
- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption changes in:
  - 2016 included a change in the discount rate from 7.50% to 7.25%, adding $52.6 million in unfunded liability;
  - 2018 included a change in the discount rate from 7.25% to 7.00%, adding $12.5 million in unfunded liability;
  - 2020 included the use of amount-weighted mortality tables projected generationally to better reflect future mortality improvement, adding $104.8 million in unfunded liability; and
  - 2022 includes a change in the discount rate from 7.00% to 6.75%, adding $72.1 million in unfunded liability.

  For more details on unfunded liability changes see *Section 3, Exhibit G, Table of Amortization Bases* starting on page 53.
- The plan's funding policy effectively deals with these unfunded liabilities over time.[1] This can be seen most clearly in the *Section 3, Exhibit H, Projection of UAAL Balances and Payments* provided on pages 55 and 56.

Maturity Measures

In the last 10 years the ratio of retired members and beneficiaries to active members has increased from 0.87 to 1.08. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative for understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member Data* on page 16.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities. For the prior year, benefits paid were $21.2 million more than contributions received.[2] Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, this plan currently has relatively low levels of negative cash flows. For more details on historical cash flows see the Comparison of Contributions Made with Benefits in *Section 2, Subsection B* on page 20. A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection I, Volatility Ratios* on page 38.

[1] In addition, during the last ten years, the Board had on five occasions elected to continue to carry over the higher employer contribution rates in a previous valuation even though the employer contribution rates would have come down in the absence of such action. The Board made that election for the purpose of accelerating the payment of the UAAL.

[2] Under the Retirement Board's actuarial funding policy, current assets plus the present value of future (employer and member) contributions will always be equal to the present value of benefits expected to be paid by the System. Based on the understanding that the present value of future contributions includes both the amounts required to pay the ongoing normal cost and any unfunded liabilities, it appears that the minimum contribution limit pursuant to Section 12335 of the Public Utilities Code does not apply.

Low-Default-Risk Obligation Measure (LDROM)

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. One of the revisions to ASOP 4 requires the disclosure of a Low-Default-Risk Obligation Measure (LDROM) when performing a funding valuation. The LDROM presented in this report is calculated using the same methodology and assumptions used to determine the Actuarial Accrued Liability (AAL) used for funding, except for the discount rate. The LDROM is required to be calculated using "a discount rate…derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future."

The LDROM is a calculation assuming a plan's assets are invested in an all-bond portfolio, generally lowering expected long-term investment returns. The discount rate selected and used for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate, published at the end of each week. The last published rate in June of the measurement period, by The Bond Buyer, is 3.65% for use effective June 30, 2023. This is the rate used to determine the discount rate for valuing reported public pension plan liabilities in accordance with Governmental Accounting Standards when plan assets are projected to be insufficient to make projected benefit payments, and the 20-year period reasonably approximates the duration of public pension plan liabilities. The LDROM is not used to determine a plan's funded status or Actuarially Determined Contribution Rate. The plan's expected return on assets, currently 6.75%, is used for these calculations.

As of June 30, 2023, the LDROM for the System is $4.515 billion. The difference between the System's AAL of $2.994 billion and the LDROM can be thought of as the increase in the AAL if the entire portfolio were invested in low-default-risk securities. Alternatively, this difference could also be viewed as representing the expected savings from investing in the plan's diversified portfolio compared to investing only in low-default-risk securities.

ASOP 4 requires commentary to help the intended user understand the significance of the LDROM with respect to the funded status of the plan, plan contributions, and the security of participant benefits. In general, if plan assets were invested exclusively in low-default-risk securities, the funded status would be lower and the Actuarially Determined Contribution would be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce investment volatility and the volatility of employer contributions, it also may be more likely to result in higher employer contributions or lower benefits.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended June 30 2023	2022	Change From Prior Year
Active members in valuation:			
• Number	1,955	1,895	3.2%
• Average age	47.1	47.2	-0.1
• Average years of service	11.0	11.4	-0.4
• Total projected compensation	$262,272,600	$241,537,720	8.6%
• Average projected compensation	$134,155	$127,461	5.3%
• Account balances	$248,277,401	$235,786,215	5.3%
• Total active vested members	1,338	1,297	3.2%
Inactive vested members:			
• Number[1]	381	360	5.8%
• Average Age	48.4	48.3	0.1
Retired members:			
• Number in pay status	1,704	1,656	2.9%
• Average age	71.0	70.6	0.4
• Average monthly benefit	$6,332	$6,131	3.3%
Disabled members:			
• Number in pay status	51	53	-3.8%
• Average age	67.4	66.8	0.6
• Average monthly benefit	$2,653	$2,550	4.0%
Beneficiaries:			
• Number in pay status	362	339	6.8%
• Average age	73.8	73.2	0.6
• Average monthly benefit	$3,456	$3,434	0.6%

[1] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

1955/1980 Plan

Category	Year Ended June 30 2023	2022	Change From Prior Year
Active members in valuation:			
• Number	856	924	-7.4%
• Average age	53.3	52.9	0.4
• Average years of service	18.9	18.5	0.4
• Total projected compensation	$129,488,164	$131,236,899	-1.3%
• Average projected compensation	$151,271	$142,031	6.5%
• Account balances	$192,745,940	$192,084,135	0.3%
• Total active vested members	825	887	-7.0%
Inactive vested members:			
• Number[1]	211	214	-1.4%
• Average Age	52.9	52.4	0.5
Retired members:			
• Number in pay status	1,694	1,648	2.8%
• Average age	71.1	70.7	0.4
• Average monthly benefit	$6,363	$6,156	3.4%
Disabled members:			
• Number in pay status	51	53	-3.8%
• Average age	67.4	66.8	0.6
• Average monthly benefit	$2,653	$2,550	4.0%
Beneficiaries:			
• Number in pay status	362	339	6.8%
• Average age	73.8	73.2	0.6
• Average monthly benefit	$3,456	$3,434	0.6%

[1] Includes inactive members due a refund of member contributions.

Exhibit A: Table of Plan Coverage (continued)

2013 Tier

Category	Year Ended June 30 2023	2022	Change From Prior Year
Active members in valuation:			
• Number	1,099	971	13.2%
• Average age	42.2	41.8	0.4
• Average years of service	4.9	4.6	0.3
• Total projected compensation	$132,784,436	$110,300,821	20.4%
• Average projected compensation	$120,823	$113,595	6.4%
• Account balances	$55,531,461	$43,702,080	27.1%
• Total active vested members	513	410	25.1%
Inactive vested members:			
• Number[1]	170	146	16.4%
• Average Age	42.8	42.4	0.4
Retired members:			
• Number in pay status	10	8	25.0%
• Average age	67.0	66.9	0.1
• Average monthly benefit	$1,161	$1,039	11.7%
Disabled members:			
• Number in pay status	N/A	N/A	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	N/A	N/A	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

[1] Includes inactive members due a refund of member contributions.

Exhibit B: Members in Active Service as of June 30, 2023 by Age, Years of Service, and Average Projected Compensation

Total Plan

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	7	7	—	—	—	—	—	—	—	—
	$103,361	$103,361	—	—	—	—	—	—	—	—
25 - 29	64	58	6	—	—	—	—	—	—	—
	115,649	114,229	$129,373	—	—	—	—	—	—	—
30 - 34	216	140	64	12	—	—	—	—	—	—
	120,553	113,638	131,951	$140,444	—	—	—	—	—	—
35 - 39	308	145	123	34	6	—	—	—	—	—
	124,317	114,391	129,322	145,084	$143,894	—	—	—	—	—
40 - 44	303	102	105	45	46	5	—	—	—	—
	132,971	114,892	129,190	149,576	159,895	$184,035	—	—	—	—
45 - 49	275	67	87	45	45	26	5	—	—	—
	140,548	123,635	132,342	145,664	160,702	162,891	$166,350	—	—	—
50 - 54	277	45	63	37	50	37	35	9	1	—
	142,362	121,016	134,139	149,018	149,401	150,298	152,961	$158,614	$211,945	—
55 - 59	236	30	46	22	57	24	37	19	1	—
	142,323	120,563	130,551	135,606	149,696	153,114	150,985	161,514	120,172	—
60 - 64	177	19	25	25	34	15	27	20	10	2
	143,294	121,744	122,818	153,044	146,420	146,777	153,131	146,875	148,178	$209,816
65 - 69	73	3	10	13	8	10	8	9	4	8
	135,772	113,234	112,746	142,875	125,771	107,364	144,611	151,757	153,665	171,204
70 & over	19	1	1	2	2	2	8	1	—	2
	135,823	110,935	146,042	155,142	132,275	123,222	140,847	93,888	—	140,857
Total	**1,955**	**617**	**530**	**235**	**248**	**119**	**120**	**58**	**16**	**12**
	$134,155	**$116,165**	**$130,201**	**$146,361**	**$152,023**	**$150,528**	**$151,584**	**$153,336**	**$151,785**	**$172,581**

Exhibit B: Members in Active Service as of June 30, 2023 by Age, Years of Service, and Average Projected Compensation (continued)

1955/1980 Plan

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	12	3	1	8	—	—	—	—	—	—
	$142,646	$138,544	$153,649	$142,809	—	—	—	—	—	—
35 – 39	53	5	16	26	6	—	—	—	—	—
	144,905	115,625	151,806	146,523	$143,894	—	—	—	—	—
40 – 44	108	6	16	35	46	5	—	—	—	—
	154,960	141,096	136,944	154,933	159,895	$184,035	—	—	—	—
45 – 49	131	7	13	35	45	26	5	—	—	—
	157,332	190,036	135,234	149,247	160,702	162,891	$166,350	—	—	—
50 – 54	177	3	15	27	50	37	35	9	1	—
	152,209	146,217	150,520	156,308	149,401	150,298	152,961	$158,614	$211,945	—
55 – 59	169	7	9	15	57	24	37	19	1	—
	151,117	153,027	156,486	138,424	149,696	153,114	150,985	161,514	120,172	—
60 – 64	131	—	3	20	34	15	27	20	10	2
	150,835	—	139,534	159,369	146,420	146,777	153,131	146,875	148,178	$209,816
65 – 69	58	—	—	11	8	10	8	9	4	8
	141,166	—	—	145,530	125,771	107,364	144,611	151,757	153,665	171,204
70 & over	17	—	—	2	2	2	8	1	—	2
	136,686	—	—	155,142	132,275	123,222	140,847	93,888	—	140,857
Total	**856**	**31**	**73**	**179**	**248**	**119**	**120**	**58**	**16**	**12**
	$151,271	**$150,982**	**$145,431**	**$150,802**	**$152,023**	**$150,528**	**$151,584**	**$153,336**	**$151,785**	**$172,581**

Exhibit B: Members in Active Service as of June 30, 2023 by Age, Years of Service, and Average Projected Compensation (continued)

2013 Tier

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	7	7	—	—	—	—	—	—	—	—
	$103,361	$103,361	—	—	—	—	—	—	—	—
25 – 29	64	58	6	—	—	—	—	—	—	—
	115,649	114,229	$129,373	—	—	—	—	—	—	—
30 – 34	204	137	63	4	—	—	—	—	—	—
	119,254	113,092	131,607	$135,713	—	—	—	—	—	—
35 – 39	255	140	107	8	—	—	—	—	—	—
	120,038	114,347	125,960	140,409	—	—	—	—	—	—
40 – 44	195	96	89	10	—	—	—	—	—	—
	120,792	113,255	127,795	130,826	—	—	—	—	—	—
45 – 49	144	60	74	10	—	—	—	—	—	—
	125,279	115,888	131,834	133,123	—	—	—	—	—	—
50 – 54	100	42	48	10	—	—	—	—	—	—
	124,934	119,216	129,020	129,335	—	—	—	—	—	—
55 – 59	67	23	37	7	—	—	—	—	—	—
	120,144	110,682	124,242	129,566	—	—	—	—	—	—
60 – 64	46	19	22	5	—	—	—	—	—	—
	121,819	121,744	120,539	127,741	—	—	—	—	—	—
65 – 69	15	3	10	2	—	—	—	—	—	—
	114,914	113,234	112,746	128,277	—	—	—	—	—	—
70 & over	2	1	1	—	—	—	—	—	—	—
	128,489	110,935	146,042	—	—	—	—	—	—	—
Total	**1,099**	**586**	**457**	**56**	**—**	**—**	**—**	**—**	**—**	**—**
	$120,823	**$114,323**	**$127,768**	**$132,164**	**—**	**—**	**—**	**—**	**—**	**—**

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Retired Members	Disabled Members	Beneficiaries	Total
Number as of June 30, 2022	**1,895**	**360**	**1,656**	**53**	**339**	**4,303**
• New members	166	0	0	0	34	200
• Terminations – with vested rights	-35	35	0	0	0	0
• Contribution refunds	-5	-9	0	0	0	-14
• Retirements	-67	-14	81	0	0	0
• New disabilities	0	0	0	0	0	0
• Return to work	3	-3	0	0	0	0
• Died with or without beneficiary	-2	0	-32	-2	-11	-47
• Data adjustments	0	12[2]	-1	0	0	11
Number as of June 30, 2023	**1,955**	**381**	**1,704**	**51**	**362**	**4,453**

[1] Includes inactive members due a refund of member contributions.

[2] Includes 6 members who were hired and terminated during fiscal 2022/2023, 4 members who were previously categorized as having taken a refund of member contributions, and 2 members who were classified by EBMUDERS as terminated non-vested but who had member contributions still on file.

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis for all Pension Plan and HIB Plan Assets

	Year Ended June 30, 2023		Year Ended June 30, 2022	
Net assets at market value at the beginning of the year		**$2,058,923,000**		**$2,328,722,000**
Contribution income:				
• Employer contributions	$106,523,000		$102,285,000	
• Member contributions	22,088,000		21,127,000	
Net contribution income		$128,611,000		$123,412,000
Investment income:				
• Interest, dividends and other income	$38,553,000		$28,386,000	
• Asset appreciation	187,897,000		(276,684,000)	
• Less investment and administrative fees	(8,891,000)		(5,632,000)	
Net investment income		$217,559,000		$(253,930,000)
Total income available for benefits		**$346,170,000**		**$(130,518,000)**
Less benefit payments:				
• Benefits paid	$(149,102,000)		$(138,582,000)	
• Refund of contributions	(684,000)		(699,000)	
Net benefit payments		$(149,786,000)		$(139,281,000)
Change in net assets at market value		**$196,384,000**		**$(269,799,000)**
Net assets at market value at the end of the year		**$2,255,307,000**		**$2,058,923,000**

Note: Results may be slightly off due to rounding.

Exhibit E: Summary Statement of Plan Assets

	June 30, 2023		June 30, 2022	
Cash equivalents:		$27,677,000		$25,336,000
Accounts receivable:				
• Brokers, securities sold	$2,854,000		$923,000	
• Employer and member contributions	4,493,000		3,840,000	
• Interest, dividends and recoverable taxes	4,833,000		4,700,000	
Total accounts receivable		$12,180,000		$9,463,000
Investments:				
• Equities	$1,581,310,000		$1,413,921,000	
• Fixed income investments	515,694,000		487,236,000	
• Real estate	122,000,000		125,557,000	
• Securities lending collateral	77,906,000		101,249,000	
• Capital assets	1,692,000		0	
• Prepaid expenses	575,000		568,000	
Total investments at market value		$2,299,177,000		$2,128,531,000
Total assets		$2,339,034,000		$2,163,330,000
Accounts payable:				
• Accounts payable and accrued expenses	$(3,224,000)		$(2,447,000)	
• Payables to brokers, securities purchased	(2,597,000)		(711,000)	
• Securities lending collateral	(77,906,000)		(101,249,000)	
Total accounts payable		$(83,727,000)		$(104,407,000)
Net assets at market value		**$2,255,307,000**		**$2,058,923,000**
Net assets at actuarial value		**$2,314,460,062**		**$2,216,123,725**
Net assets at valuation value (Pension Plan Only)		**$2,251,690,803**		**$2,158,462,528**

Note: Results may be slightly off due to rounding.

Exhibit F: Development of the Fund through June 30, 2023 for all Pension Plan and HIB Plan Assets

Year Ended June 30	Employer Contributions	Member Contributions	Net Investment Return[1]	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2014	$70,117,000	$12,133,000	$218,575,000	$78,265,000	$1,346,888,000	$1,229,955,379	91.3%
2015	73,141,000	13,427,000	58,937,000	85,184,000	1,407,209,000	1,350,292,296	96.0%
2016	74,672,000	14,925,000	12,894,000	91,571,000	1,418,129,000	1,452,786,717	102.4%
2017	76,860,000	16,018,000	200,254,000	98,617,000	1,612,644,000	1,580,665,009	98.0%
2018	81,096,000	17,079,000	148,798,000	106,377,000	1,753,240,000	1,714,363,843	97.8%
2019	84,551,000	17,865,000	91,744,000	114,435,000	1,832,965,000	1,817,562,986	99.2%
2020	88,734,000	18,885,000	39,376,000	122,351,000	1,857,609,000	1,914,278,036	103.1%
2021	90,624,000	19,336,000	491,625,000	130,472,000	2,328,722,000	2,097,712,454	90.1%
2022	102,285,000	21,127,000	(253,930,000)	139,281,000	2,058,923,000	2,216,123,725	107.6%
2023	106,523,000	22,088,000	217,559,000	149,786,000	2,255,307,000	2,314,460,062	102.6%

[1] On a market value basis, net of investment fees and administrative expenses.

Exhibit G: Table of Amortization Bases

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment[1]
Experience Gain	06/30/2000	$(10,871,830)	30	$(8,637,727)	7	$(1,370,198)
Change in Assumptions	06/30/2000	8,629,891	30	6,856,497	7	1,087,642
Plan Amendments	06/30/2000	13,607,265	30	10,811,046	7	1,714,950
3.5% Retiree COLA Assumption	06/30/2000	27,057,441	30	21,497,287	7	3,410,102
Experience Loss	06/30/2001	2,292,281	30	1,964,171	8	277,325
Experience Loss	06/30/2002	26,232,251	30	23,865,999	9	3,046,562
Plan Amendments	06/30/2002	5,111,914	30	4,650,796	9	593,687
Experience Loss	06/30/2003	43,692,270	30	41,691,103	10	4,871,277
Plan Amendments	06/30/2003	67,138,578	30	64,063,531	10	7,485,319
Experience Loss	06/30/2004	32,731,232	30	32,433,068	11	3,503,284
New Assumption / Domestic Partners	06/30/2004	(9,812,646)	30	(9,723,260)	11	(1,050,266)
Experience Loss	06/30/2005	26,910,233	30	27,465,202	12	2,765,133
Remove Limit Pension Base	06/30/2005	27,315,928	30	27,752,556	12	2,794,064
Experience Loss	06/30/2006	14,160,133	30	14,784,375	13	1,396,892
Experience Gain	06/30/2007	(3,098,126)	30	(3,289,907)	14	(293,428)
Experience Gain	06/30/2008	(7,800,585)	30	(8,382,940)	15	(709,330)
Change in Assumptions	06/30/2008	51,413,374	30	55,251,662	15	4,675,171
Experience Loss	06/30/2009	114,894,458	30	124,415,515	16	10,031,124
Experience Loss	06/30/2010	3,039,098	30	3,303,564	17	254,762
Change in Assumptions	06/30/2010	8,098,499	30	8,803,241	17	678,883
Experience Loss	06/30/2011	4,428,038	30	4,819,200	18	356,668
Experience Gain	06/30/2012	(15,668,764)	20	(12,239,654)	9	(1,562,426)
Change in Assumptions	06/30/2012	53,400,521	25	51,601,242	14	4,602,336

[1] Beginning of year payment, reflecting level percentage of payroll.

Exhibit G: Table of Amortization Bases (continued)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment[1]
Experience Loss	06/30/2013	$10,858,322	20	$8,924,458	10	$1,042,753
Experience Gain	06/30/2014	(26,406,581)	20	(22,610,099)	11	(2,442,248)
Change in Assumptions	06/30/2014	18,421,049	25	18,265,734	16	1,472,693
Experience Gain	06/30/2015	(28,955,525)	20	(25,678,709)	12	(2,585,273)
Experience Gain	06/30/2016	(1,408,751)	20	(1,285,146)	13	(121,426)
Change in Assumptions	06/30/2016	52,595,760	25	52,955,822	18	3,919,250
Experience Gain	06/30/2017	(50,022,788)	20	(46,710,776)	14	(4,166,153)
Experience Loss	06/30/2018	14,053,082	20	13,365,208	15	1,130,910
Change in Assumptions	06/30/2018	12,484,391	25	12,632,131	20	868,548
Experience Loss	06/30/2019	26,728,885	20	25,839,668	16	2,083,349
Experience Loss	06/30/2020	5,281,313	20	5,170,058	17	398,701
Change in Assumptions	06/30/2020	104,813,640	25	106,062,581	22	6,840,557
Experience Gain	06/30/2021	(97,336,901)	20	(96,165,305)	18	(7,117,175)
Experience Loss	06/30/2022	56,034,517	20	55,704,018	19	3,968,350
Change in Assumptions	06/30/2022	72,119,593	20	71,694,222	19	5,107,491
Experience Loss	06/30/2023	80,817,915	20	80,817,915	20	5,556,800
Total				**$742,738,347**		**$64,516,660**

Note: The equivalent single amortization period is about 14 years.

[1] Beginning of year payment, reflecting level percentage of payroll.

Exhibit H: Projection of UAAL Balances and Payments

Exhibit H: Projection of UAAL Balances and Payments (continued)

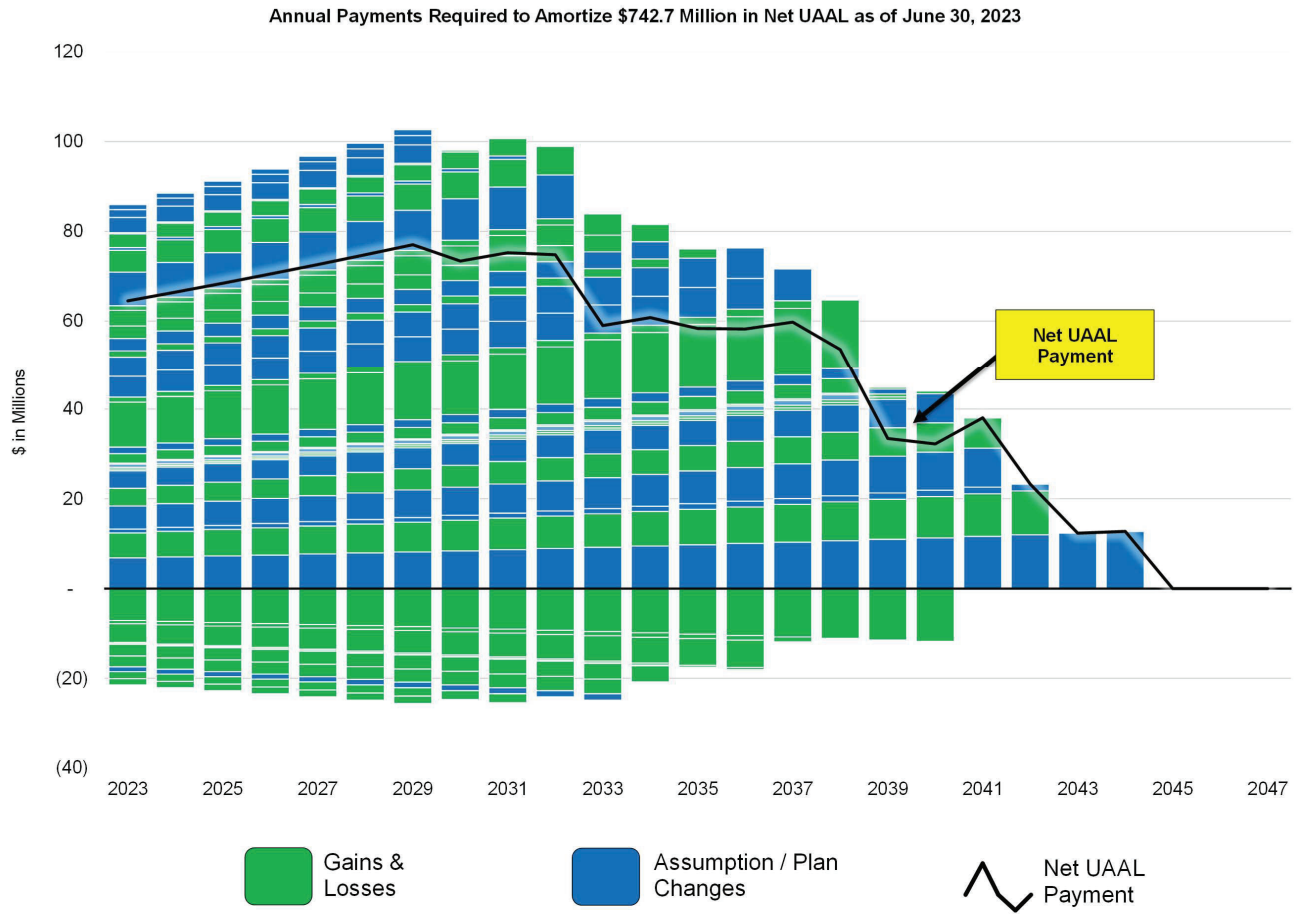


Exhibit I: Definition of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated Normal Costs allocated to the years before the Valuation Date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	The single-sum value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the Actuarially Determined Contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal Actuarial Present Value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.

Section 3: Supplemental Information

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future; Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates – the probability of disability retirement at a given age; Withdrawal rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation and productivity growth.
Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the Actuarial Value of Assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.
Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

Section 3: Supplemental Information

Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment with respect to an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit 1: Actuarial Assumptions and Methods

Rationale for Assumptions and Methods:	The information and analysis used in selecting each assumption and method that has a significant effect on this actuarial valuation is shown in the July 1, 2016 through June 30, 2020 Actuarial Experience Study report dated November 12, 2020, the Actuarial Funding Policy review letter dated September 14, 2022, and the June 30, 2022 Economic Assumptions Review report dated November 8, 2022. Unless otherwise noted, all actuarial assumptions and methods shown below apply to both tiers. These assumptions and methods were adopted by the Board.
Economic Assumptions:	
Net Investment Return:	6.75%; net of administrative and investment expenses. Based on the Economic Assumptions Review referenced above, expected administrative and investment expenses represent about 0.25% of the average Market Value of Assets.
Employee Contribution Crediting Rate:	6.75%, compounded semi-annually.
Cost of Living Adjustment (COLA):	Retiree COLA increases of 2.75% per year. For members with a sufficient COLA bank, withdrawals from the bank can be made to increase the retiree COLA up to 3.00% per year.
Payroll Growth:	Inflation of 2.50% per year plus real "across the board" salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:	Increase of 2.50% per year from the valuation date.
Increase in California Government Code Section 7522.10 Compensation Limit:	Increase of 2.50% per year from the valuation date.

Salary Increases:

The annual rate of compensation increase includes: inflation at 2.50%, plus "across the board" salary increases of 0.50% per year, plus the following merit and promotion increases:

Merit and Promotion Increases

Time from Hire (Years)	Rate (%)
Less than 1	6.25
1 – 2	6.00
2 – 3	5.00
3 – 4	3.75
4 – 5	2.50
5 – 6	1.50
6 – 7	1.25
7 – 8	1.25
8 – 9	1.00
9 – 10	1.00
10 & Over	0.75

Demographic Assumptions:

Post-Retirement Mortality Rates:

Healthy Members:

- Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020.

Disabled Members:

- Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020

Beneficiaries:

- Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Tables with rates increased by 5% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2020

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 4: Actuarial Valuation Basis

Pre-Retirement Mortality Rates:

Pub-2010 General Employee Amount-Weighted Above-Median Mortality Tables, projected generationally with the two-dimensional mortality improvement scale MP-2020

	Rate (%)	
Age	**Male**	**Female**
20	0.04	0.01
25	0.02	0.01
30	0.03	0.01
35	0.04	0.02
40	0.06	0.03
45	0.09	0.05
50	0.13	0.08
55	0.19	0.11
60	0.28	0.17
65	0.41	0.27

Generational projections beyond the base year (2010) are not reflected in the above mortality rates.

Disability Incidence:

Age	Rate (%)
25	0.000
30	0.006
35	0.022
40	0.084
45	0.150
50	0.170
55	0.182
60	0.220
65	0.288

Disabilities rates are applicable after eight years of service.

Termination:

Less Than Five Years of Service

Years of Service	Rate (%)
Less than 1	6.75
1 – 2	4.25
2 – 3	4.00
3 – 4	3.50
4 – 5	2.50

Five or More Years of Service

Age	Rate (%)
25	2.34
30	2.24
35	2.14
40	2.04
45	1.85
50	1.60
55	1.35
60	1.10

No termination is assumed after a member is eligible for retirement (as long as a retirement rate is present).

Retirement Rates:

Age	Rate (%) 1955/1980 Plan Unreduced Pension[1]	1955/1980 Plan Reduced Pension	2013 Tier
52	0.00	0.00	1.75
53	0.00	0.00	1.75
54	55.00	7.00	2.75
55	16.00	7.00	4.75
56	16.00	7.00	5.75
57	16.00	7.00	5.75
58	16.00	7.00	5.75
59	16.00	7.00	7.75
60	16.00	7.00	7.75
61	16.00	12.00	10.25
62	16.00	N/A[2]	18.00
63	16.00	N/A	15.00
64	16.00	N/A	9.00
65	16.00	N/A	23.75
66	27.00	N/A	23.75
67	27.00	N/A	32.50
68	27.00	N/A	35.00
69	27.00	N/A	38.75
70 & Over	100.00	N/A	100.00

[1] For example, a 1955/1980 Plan member age 54 with 30 or more years of service would receive the full 2.60% per year of service accrual.

[2] For ages 62 and over, all 1955/1980 Plan members who are eligible for retirement receive the full 2.60% per year of service accrual.

Section 4: Actuarial Valuation Basis

Retirement Age for Inactive Vested Members:	59 1955/1980 Plan non-reciprocal members who are currently terminated with less than five years of service and are not vested are assumed to retire at age 65 if they decide to leave their contributions on deposit.
Reciprocity:	15% of members who terminate with a vested benefit are assumed to enter a reciprocal system. For reciprocals, 3.75% compensation increases are assumed per annum.
Future Benefit Accruals:	1.0 year of service per year of employment, plus 0.038 years of additional service to anticipate conversion of unused sick leave for each year of employment. As directed by EBMUDERS, this assumption has been applied to active members in the 1955/1980 Plan and the 2013 Tier.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Percent Married/Domestic Partnership:	For all active and inactive members, 85% of male members and 60% of female members are assumed to be married or with domestic partner at pre-retirement death or retirement.
Age and Gender of Spouse/Domestic Partner:	For all active and inactive members, male members are assumed to have a female spouse who is 2 years younger than the member and female members are assumed to have a male spouse who is 3 years older than the member. Since birth dates for non-spouse/non-domestic partner contingent beneficiaries are not provided by EBMUDERS, the age differences noted above also apply to assumed contingent beneficiaries of retired members who chose an optional form of payment at retirement.
Form of Payment:	At retirement, members with spouses or domestic partners are assumed to elect the following form of payment (single members are assumed to elect the Unmodified option):

Form of Payment	Election Percentage
Unmodified or Option 1	50%
Option 2 (100% Continuance)	10%
Option 3 (50% Continuance)	20%
Option 4 (25% Continuance)	20%

Actuarial Funding Policy:	
Actuarial Cost Method:	Entry Age Cost Method. Entry Age is the age at the member's hire date. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation, as if the current benefit formula for each individual has always been in effect (i.e., "replacement life within a tier").

Section 4: Actuarial Valuation Basis

Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last five years. Unrecognized returns are equal to the difference between the actual market returns and the expected returns on the market value, and are recognized over a five-year period. The actuarial value of assets (AVA) is limited by a 30% corridor; the AVA cannot be less than 70% of MVA, nor greater than 130% of MVA.
Valuation Value of Assets:	The proportion of the Actuarial Value of Assets allocated to the pension plan, based on the proportion of the MVA attributable to the pension plan.
Amortization Policy:	Prior to July 1, 2011, the UAAL from plan changes, assumption changes, and experience gains/losses were amortized over separate decreasing 30-year periods. On or after July 1, 2011, any new UAAL resulting from plan changes are amortized over separate decreasing 15-year periods; assumption and method changes are amortized over separate decreasing 25-year periods (prior to July 1, 2021); and experience gains/losses are amortized over separate decreasing 20-year periods. On or after July 1, 2021, assumption and method changes are amortized over separate decreasing 20-year periods.
Other Actuarial Methods:	
Employer Contributions:	Employer contributions consist of two components: *Normal Cost* The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earnings rate. The contribution rate is expressed as a level percentage of the member's compensation. *Contribution to the Unfunded Actuarial Accrued Liability (UAAL)* The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.00% (i.e., 2.50% inflation plus 0.50% across-the-board salary increase). The amortization policy is described above. The recommended employer contributions are provided in *Section 2, Subsection F.*

Section 4: Actuarial Valuation Basis

Member Contributions:

1955/1980 Plan Members

Employee contribution rates for 1955/1980 Plan members are prescribed in the Ordinance. Effective April 17, 2006, the rate of member retirement contributions is 6.83%, and 6.74% of that rate is allocated to pay pension benefits. The rest, or 0.09%, is used to pay HIB benefits. The Board of Directors may adjust the employee rates solely pursuant to the terms of a negotiated collective bargaining agreement or memorandum of understanding with employee bargaining units.

Based on bargaining unit contract negotiations in 2013, members are contracted to pay the following employee rates (as a percentage of pay) beginning April 22, 2013:

	Member Rate		
Effective Date	(a) Total	(b) HIB Plan	(c) = (a) – (b) Pension Plan
April 17, 2006(1)	6.83%[1]	0.09%	6.74%
April 22, 2013	7.33%	0.09%	7.24%
April 21, 2014	7.83%	0.09%	7.74%
April 20, 2015	8.33%	0.09%	8.24%
April 18, 2016	8.75%	0.09%	8.66%

[1] Pursuant to the Ordinance.

2013 Tier Members

Pursuant to Section 7522.30(a) of the California Government Code, 2013 Tier members are required to contribute at least 50% of the Normal Cost rate. In addition, Section 7522.30(c) requires that the initial employee contribution rate be rounded to the nearest quarter of 1 percent, unless a greater contribution rate has been agreed to pursuant to Section 7522.30(e). In preparing the initial Normal Cost rates, we assumed that exactly 50% of the Normal Cost would be paid by the new members and we took into account only the requirements of Section 7522.30(c), but not requirements of Section 7522.30(e). In particular, the total Normal Cost rate of 17.56% was determined in the first CalPEPRA valuation, and this total rate has been used through the June 30, 2019 valuation to determine the 50% of the Normal Cost (rounded to one quarter of 1 percent) paid by the employees, or 8.75%.

Pursuant to Section 7522.30(d), each year we have compared the total Normal Cost rates between the current valuation and the initial CalPEPRA valuation since a rate increase (or decrease) of less than 1% of payroll would result in no change to the members' rate. Effective with the June 30, 2020 valuation, the total Normal Cost rate was determined to be 18.81%, which is a change of more than 1% of payroll compared to the rate of 17.56% that was determined in the first CalPEPRA valuation. This was the first time since the first CalPEPRA valuation that the change in the total Normal Cost rate has exceeded the 1% of payroll threshold. Consequently, the member contribution rate for 2013 Tier members was increased to 9.41%, which is 50% of the total Normal Cost rate.

	For the June 30, 2023 valuation, the 2013 Tier member contribution rate remains at 9.41% for the Pension Plan, because the total Normal Cost rate for this tier of 19.79% has remained within 1% of payroll of the new 18.81% threshold noted above. As stated in our Actuarial Experience Study Report dated November 12, 2020, once the 1% threshold has been exceeded an adjustment to the members' rate is required as was the case in the June 30, 2020 valuation. Upon consulting with the Retirement System, the final member contribution rate determined in that valuation was calculated without the quarter of 1 percent rounding based on the Retirement System's direction that the rounding does not apply after the initial calculation. However, the rate paid by the employee was rounded to the nearest one/one hundredth of one percent (two decimals) consistent with the rounding methods used throughout the June 30, 2020 valuation report to ensure that the employees would pay at least 50% of the Normal Cost. Accumulation for all members includes crediting of interest at the assumed investment earnings rate. The member contribution rates are provided in *Section 2, Subsection F*.
Internal Revenue Code Section 415:	Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan. A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active members could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets. In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $265,000 for 2023. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions. Benefits for members in the non-CalPEPRA plan in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m). Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard. Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.
Changes in Actuarial Assumptions:	There have been no changes in actuarial assumptions since the last valuation.

Exhibit 2: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions.

Plan Year:	July 1 through June 30
Census Date:	June 30
Membership Eligibility:	
1955/1980 Plan	All employees who first become members before January 1, 2013.
2013 Tier	All employees who first become members on or after January 1, 2013.
Final Compensation for Benefit Determination:	
1955/1980 Plan	Highest two consecutive years of compensation earnable (FAS2).
2013 Tier	Highest thirty-six consecutive months of pensionable compensation (FAS3).
Compensation Limit:	
1955/1980 Plan	IRC Section 401(a)(17) compensation limit applies to all employees who began membership in EBMUDERS on or after January 1, 1996.
2013 Tier	$146,042 for 2023
Service:	Years of service (Yrs) are generally based on a member's employment during a period of time in which retirement contributions are deducted from their compensation.
Normal or Unreduced Retirement Eligibility:	
Age and Service Requirement	
1955/1980 Plan	Age 65; Age 62 with 5 years of service; Age 59 with 20 years of service; Age 54 with 30 years of service; Other combinations of age and service between ages 54 and 59.
2013 Tier	Age 67 with 5 years of service (for unreduced benefit).

Early Retirement Eligibility:	
Age and Service Requirement	
1955/1980 Plan	Age 54 with 5 years of service.
2013 Tier	Age 52 with 5 years of service.
Benefit Formula:	
1955/1980 Plan:	
1955 Formula	2.42% (2.82% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service including all service extension credit.
1955/80 Formula	2.42% (2.82% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service up to August 1, 1980 including all service extension credit, plus 2.20% (2.60% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service after August 1, 1980. Applies to members who elected to convert to the 1980 Formula in 1980.
1955/90 Formula	2.42% (2.82% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service up to January 1, 2000 including all service extension credit, plus 2.20% (2.60% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service after January 1, 2000. Applies to members who elected to convert to the 1980 Formula in 1989.
1980 Formula	2.20% (2.60% if member is credited with District Service on or after January 1, 2004) times Final Compensation per year of service including all service extension credit. Applies to all members hired on or after January 1, 1980.
Service Extension Credit	2.42% (2.82% if member is credited with District Service on or after January 1, 2004) for members with any service under the 1955 Formula or 2.20% (2.60% if member is credited with District Service on or after January 1, 2004) for members with service only under the 1980 Formula times Final Compensation per year of Service Extension Credit. Service extension credit is the number of unused sick leave days credited to a member at the time of retirement converted on a 260-day basis. The number of such days is then doubled for the benefit calculation and for service retirements to meet the early retirement provision of the Ordinance.
Benefit Adjustments	Reduced by 3% per year under the age of eligibility for an unreduced benefit, based on service at retirement, for retirements before age 63 (before age 62 commencing November 1, 2000). Effective July 1, 1999, Service Extension Credit is included in the years of service calculation of service for determining eligibility for unreduced retirement.

Section 4: Actuarial Valuation Basis

Benefit Formula: (continued)		
2013 Tier:	**Retirement Age**	**Benefit Formula**
	52	1.00% x FAS3 x Yrs
	55	1.30% x FAS3 x Yrs
	60	1.80% x FAS3 x Yrs
	62	2.00% x FAS3 x Yrs
	65	2.30% x FAS3 x Yrs
	67 & Over	2.50% x FAS3 x Yrs
Disability:		
Eligibility	Eight years of service (not available for Directors).	
Benefit	Greater of: 1.5% times Final Compensation per year of service. One-third of Final Compensation.	
Vesting:		
Requirements	Five years of service, must leave contributions on deposit, reciprocal service counts for vesting purposes.	
Pre-Retirement Death:		
Eligibility	Eligible for retirement.	
Benefit	50% of the unmodified service retirement benefit to eligible surviving spouse/surviving domestic partner plus the lump sum payment of accumulated retirement contributions OR	
Eligibility	None.	
Benefit	Lump sum payment of accumulated retirement contributions.	
Post-Retirement Death Benefit:	50% of the unmodified service retirement benefit to surviving spouse or registered domestic partner (tied to the implementation of the AB 205 legislation).	

Post-Retirement Cost of Living Benefits:

Payable July 1 of each year, the basic minimum COLA benefit is the lesser of 3% and the actual change in the cost of living index.

Excess of the actual change of cost of living index over 3% is accumulated in individual retiree COLA banks.

Withdrawals from the bank are made in years when the index increases less than 3%.

Increases of up to 5% are granted in years when the Retirement Board determines that the System is more than 85% funded on a Projected Benefit Obligation basis. In those years when the System is more than 85% funded and the cost of living index exceeds 5%, any excess cost of living over 5% is accumulated in the COLA bank.

Effective October 1, 2000, in those years when the system is more than 85% funded on a Projected Benefit Obligation basis and the cost of living is less than 4%, withdrawals from the bank are made to allow cost of living increases up to 4%.

Member Contributions:

1955/1980 Plan

Effective April 17, 2006, retirement system members contribute at a rate of 6.83% of pay, as prescribed in the Ordinance. Based on bargaining unit contract negotiations in 2013, members are contracted to pay the following employee rates (as a percentage of pay) beginning April 22, 2013:

	Member Rate		
Effective Date	(a) Total	(b) HIB Plan	(c) = (a) – (b) Pension Plan
April 17, 2006[1]	6.83%[1]	0.09%	6.74%
April 22, 2013	7.33%	0.09%	7.24%
April 21, 2014	7.83%	0.09%	7.74%
April 20, 2015	8.33%	0.09%	8.24%
April 18, 2016	8.75%	0.09%	8.66%

[1] Pursuant to the Ordinance.

2013 Tier

Initial member contribution rate is set at 50% of the total 2013 Tier Normal Cost rate, rounded to the nearest quarter of 1%. Once established, the member contribution rate will be adjusted annually to reflect the change in the 2013 Tier Normal Cost rate, but only if the change is more than 1% of payroll.

Effective with the June 30, 2020 valuation, the member contribution rate for the Pension Plan is 9.41% of pay.

Changes in Plan Provisions:

There have been no changes in plan provisions since the last valuation.

Note: The summary of major plan provisions is designed to outline principal plan benefits as interpreted for purposes of the actuarial valuation. If the System should find the plan summary not in accordance with the actual provisions, the System should alert the actuary so they can both be sure the proper provisions are valued.

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East Bay Municipal Utility District Employees' Retirement System

Health Insurance Benefit Valuation

Review of Contribution Rates and Funding Status
as of June 30, 2023

Segal

Segal

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T 415.263.8200
segalco.com

January 5, 2024

Ms. Sophia Skoda
Director of Finance
East Bay Municipal Utility District
375 Eleventh Street
Oakland, California 94607-4240

Dear Sophia:

We are pleased to submit our Health Insurance Benefit (HIB) Valuation as of June 30, 2023 for the prefunded $450 ($550 for a retiree with a spouse or EBMUD domestic partner) monthly health insurance subsidy. The Governmental Accounting Standards Board (GASB) requires employers, such as EBMUD, that pool health insurance premium rates for actives and retirees under age 65 to also calculate the liability associated with such pooled premiums for retirees under age 65 on an accrual basis. While that liability referred to as the implicit subsidy has to be disclosed, it is not required to be prefunded. The contribution rate developed in this report only includes the prefunding requirement for the $450/$550 benefit. The obligation required for financial disclosure purposes under GASB Statements No. 74 (plan reporting) and 75 (employer reporting) will be provided in separate reports.

This valuation is based on financial statements and census data furnished by East Bay Municipal Utility District Employees' Retirement System (EBMUDERS). The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, EA and Mehdi Riazi, FSA, MAAA, FCA, EA. The health care trend and other related medical assumptions have been reviewed by Mary Kirby, FSA, MAAA, FCA. The undersigned are members of the American Academy of Actuaries and meet the qualification requirements to render the actuarial opinion contained herein.

Sincerely,

Segal

Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

Mehdi Riazi, FSA, MAAA, FCA, EA
Vice President and Actuary

Mary Kirby, FSA, MAAA, FCA
Senior Vice President and Actuary

TTT/jl

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Section 1: Actuarial Valuation Summary

Contribution recommendations and funding status

- The funded ratio measured on a valuation value of assets basis increased from 44.0% at June 30, 2022 to 47.7% at June 30, 2023. The funded ratio if measured on a market value of assets basis increased from 40.9% to 46.5%. The Unfunded Actuarial Accrued Liability (UAAL) decreased from $73.29 million as of June 30, 2022 to $68.86 million as of June 30, 2023 on valuation value of asset basis. The increase to the funded ratio and the reduction to the UAAL were both consistent with the expected changes based on the plan's funding policy, as contributions were continued to be made to pay down the UAAL. Overall, the results of the June 30, 2023 valuation were very much in-line with the June 30, 2022 valuation. As shown on page 15, the new UAAL amortization base related to the June 30, 2023 valuation was relatively small.
- The recommended aggregate employer contribution rate is 4.35% based on the June 30, 2023 valuation. The new rate is 0.28% lower than the 4.63% aggregate rate developed in the June 30, 2022 valuation. Note, the 4.63% aggregate/blended rate has been restated based on projected June 30, 2023 payrolls, which is why it is slightly lower than the 4.64% aggregate rate shown in the June 30, 2022 valuation. As shown in Section 2, Subsection E, 0.24% of the 0.28% decrease to the employer contribution rate was attributable to having a larger projected payroll than expected to amortize the prior years' UAAL. We have maintained the allocation of 0.09% of the member contribution to the HIB plan used in last year's valuation.
- As indicated in Section 2, Subsection B of this report, the total unrecognized investment loss as of June 30, 2023 is $59.2 million for the assets for the pension and HIB plans (note that in the previous valuation, this amount was a deferred loss of $157.2 million). This investment loss will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years. This implies that earning the assumed rate of investment return of 6.75% per year (net of expenses) on a market value basis will produce investment losses on the actuarial value of assets after June 30, 2023.

  The deferred losses of $59.2 million represent 2.6% of the market value of assets as of June 30, 2023. Unless offset by future investment gains or other favorable experience, the recognition of the $59.2 million market loss is expected to have an impact on the System's future funded percentage and contribution rate requirements. This potential impact may be illustrated as follows:
  - If the HIB plan portion of the deferred losses were recognized immediately and entirely in the valuation value of assets, the funded percentage would decrease from 47.7% to 46.5%.
  - If the HIB plan portion of the deferred losses were recognized immediately and entirely in the valuation value of assets, the aggregate recommended employer rate would increase from 4.35% to about 4.39% of payroll.

Section 1: Actuarial Valuation Summary

- This valuation report reflects one minor actuarial methodology refinement of applying beginning of year timing of decrements for exiting from active membership status in calculating the normal cost rate. The refinement resulted in a 0.03% of payroll net decrease in the total normal cost rate.
- This report assumes the HIB subsidy limit will remain at the current levels of $450/$550. Future increases in the HIB subsidy will increase the cost of the plan as a percent of pay.

Section 1: Actuarial Valuation Summary

- The following tables summarizes the contribution rate recommendations for the employer and the employee:

	June 30, 2023		June 30, 2022	
Employer	**Total Rate[1]**	**Estimated Annual Amount[2]**	**Total Rate[1]**	**Estimated Annual Amount[2]**
1955/1980 Plan	4.43%	$5,733,000	4.75%	$6,151,000
2013 Tier	4.27%	5,670,000	4.52%	6,002,000
Combined	4.35%	$11,403,000	4.63%	$12,153,000
Average Member	**Total Rate[1]**	**Estimated Annual Amount[2]**	**Total Rate[1]**	**Estimated Annual Amount[2]**
1955/1980 Plan	0.09%	$117,000	0.09%	$117,000
2013 Tier	0.09%	120,000	0.09%	120,000
Combined	0.09%	$237,000	0.09%	$237,000

The following table compares the valuation value of assets and liabilities for the Health Insurance Benefit as of June 30, 2023 and June 30, 2022:

	June 30, 2023	June 30, 2022
1. Valuation Value of Assets	$62,769,259	$57,661,197
2. Actuarial Accrued Liabilities:		
Current Recipients	97,330,438	96,305,707
Future Recipients	34,297,017	34,645,603
Total	$131,627,455	$130,951,310
3. Liabilities minus Valuation Value of Assets (2) – (1)	$68,858,196	$73,290,113
4. Funding Ratio (1) ÷ (2)	47.69%	44.03%

[1] Payable at the **end** of each pay period.
[2] Based on June 30, 2023 projected annual payroll of:

1955/1980 Plan	$129,488,164
2013 Tier	132,784,436
Combined	$262,272,600

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of an OPEB plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	This valuation is based on the market value of assets as of the valuation date, as provided by System. The System uses an "Actuarial Value of Assets" that differs from market value to gradually reflect year-to-year changes in the Market Value of Assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to health care plan trend and enrollment. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The valuation is prepared at the request of the Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If the Board is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.
- Sections of this report include actuarial results that are not rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Introduction

Pursuant to Section 36 of the Ordinance, the Retirement Board is authorized to administer a Health Insurance Benefit (HIB) through an IRC Section 401(h) account. The HIB may be used for the payment of sickness, accident, hospitalization, and medical expenses as permitted under the IRC and as authorized by the Retirement Board. In particular, the Retirement Board has authorized the use of the HIB towards the payment of medical insurance premiums.

This report does not provide information required for disclosure under GASB Statements 74 and 75. Such information will be provided in separate reports.

In this valuation, we have used a layered amortization approach to determine the contribution rate to fund the Unfunded Actuarial Accrued Liability (UAAL).

Plan changes, assumption changes and experience gains/losses prior to July 1, 2011 are amortized over separate decreasing 30-year amortization periods. On or after July 1, 2011, through June 30, 2021, plan changes are amortized over separate decreasing 15-year periods; assumption changes from the experience study are amortized over separate decreasing 25-year periods; and experience gains/losses (including year-to-year health assumption changes) are amortized over separate decreasing 20-year periods. On or after July 1, 2021, assumption changes from the experience study or interim review of the economic assumptions are amortized over 20 years. The above payments would continue to be expressed as a level percent of a growing payroll base.

The cost of the HIB is funded by both employer and employee contributions. The contribution rates for the employer are calculated to provide for the ongoing normal cost, plus any amounts necessary to fund any shortfall between the valuation value of assets and the actuarial accrued liabilities.

A summary of the Health Insurance Benefit provisions is displayed in Section 4, Exhibit 2.

B. Determination of actuarial value of assets

To minimize volatility in the calculation of the Actuarially Determined Contribution, the Board has approved an asset valuation method that gradually adjusts to market value over a five-year period. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Determination of Actuarial Value of Assets for Year Ended June 30, 2023 (for pension and HIB plans)

1. Market value of assets:					
(a) Pension plan					**$2,194,142,000**
(b) HIB plan					**61,165,000**
(c) Total					**$2,255,307,000**
2. Calculation of unrecognized return:	**Actual Return**	**Expected Return**	**Investment Gain / (Loss)**	**Percent Deferred**	**Deferred Return**
(a) Year ended June 30, 2019	$91,744,000	$122,306,135	(30,562,135)	0%	$0
(b) Year ended June 30, 2020	39,376,000	127,791,930	(88,415,930)	20%	(17,683,186)
(c) Year ended June 30, 2021	491,625,000	129,314,710	362,310,290	40%	144,924,116
(d) Year ended June 30, 2022	(253,930,000)	162,455,125	(416,385,125)	60%	(249,831,075)
(e) Year ended June 30, 2023	217,559,000	138,262,646	79,296,354	80%	63,437,083
(f) Total unrecognized return[1]					($59,153,062)
3. Preliminary actuarial value: (1c) - (2f)					**$2,314,460,062**
4. Adjustment to be within 30% corridor of market value					0
5. Final actuarial value of assets for pension and HIB plans: (3) + (4)					**$2,314,460,062**
6. Actuarial value as a percentage of market value: (5) ÷ (1c)					102.6%
7. Valuation value of HIB plan assets: (1b) ÷ (1c) x (5)					**$62,769,259**

[1] Deferred return as of June 30, 2023 that will be recognized in each of the next four years (amounts may not total exactly due to rounding):

(a) Amount recognized on June 30, 2024	($12,638,882)
(b) Amount recognized on June 30, 2025	5,044,304
(c) Amount recognized on June 30, 2026	(67,417,754)
(d) Amount recognized on June 30, 2027	15,859,271
(e) Total unrecognized return as of June 30, 2023	($59,153,062)

C. Funding ratio

The funding of the Health Insurance Benefit comes from the following sources:

1. The valuation value of HIB assets, which equals $62,769,259 as of June 30, 2023;
2. Contributions from the employer; and
3. Contributions from the employees.

The following table provides the funding status of the Health Insurance Benefit as of June 30, 2023 and June 30, 2022:

		June 30, 2023	June 30, 2022
1.	Valuation Value of Assets	$62,769,259	$57,661,197
2.	Actuarial Accrued Liabilities:		
	Current Recipients	97,330,438	96,305,707
	Future Recipients	34,297,017	34,645,603
	Total	$131,627,455	$130,951,310
3.	Liabilities minus Valuation Value of Assets (2) – (1)	$68,858,196	$73,290,113
4.	Funding Ratio (1) ÷ (2)	47.69%	44.03%

The contribution requirements are determined based on the Entry Age Funding Method. The excess of the actuarial accrued liability over assets (Item 3 in the above table) is amortized as a level percentage of payroll for current active members. The employer contribution rates are derived on the following page.

D. Recommended contribution

The amount of annual contribution required to fund the HIB is comprised of a net employer normal cost payment and a payment on the unfunded actuarial accrued liability. This total amount is then divided by the projected payroll for active members to determine the contribution rate of 4.35% of payroll for this year's valuation compared to 4.63% of payroll recommended for last year's valuation. The 4.63% aggregate rate from June 30, 2022 has been restated based on projected June 30, 2023 payrolls, which is why it is slightly lower than the 4.64% aggregate rate shown in the June 30, 2022 valuation.

Recommended Contribution (% of Payroll) Payable at End of Pay Period

	June 30, 2023			June 30, 2022		
	1955/1980 Plan	2013 Tier	Combined[1]	1955/1980 Plan	2013 Tier	Combined[1]
1. Total Normal Cost	0.95%	0.79%	0.87%	1.08%	0.85%	0.96%
2. Expected employee contributions	(0.09)%	(0.09)%	(0.09)%	(0.09)%	(0.09)%	(0.09)%
3. Employer normal cost: (1) - (2)	**0.86%**	**0.70%**	**0.78%**	**0.99%**	**0.76%**	**0.87%**
4. Unfunded actuarial accrued liability	3.57%	3.57%	3.57%	3.76%	3.76%	3.76%
5 Total recommended contribution, end of each pay period	**4.43%**	**4.27%**	**4.35%**	**4.75%**	**4.52%**	**4.63%**

[1] Based on June 30, 2023 projected annual payroll of:

1955/1980 Plan	$129,488,164
2013 Tier	132,784,436
Combined	$262,272,600

E. Reconciliation of recommended employer contribution

The chart below details the changes in the recommended employer contribution from the prior valuation to the current year's valuation. The 4.63% aggregate rate from June 30, 2022 has been restated based on projected June 30, 2023 payrolls, which is why it is slightly lower than the 4.64% aggregate rate shown in the June 30, 2022 valuation.

	Contribution Rate
Average Recommended Employer Contribution Rate as of June 30, 2022	**4.63%**
Effect of actuarial experience during fiscal 2022/2023	
1. Effect of investment loss (after smoothing)	0.02%
2. Effect of higher than expected growth in total payroll to amortize the prior years' UAAL	(0.24)%
3. Effect of one-year lag in implementing contribution rates	(0.01)%
4. Effect of demographic experience, including change to average HIB subsidy paid and HIB subsidy trend assumptions	(0.05)%
Total change	-0.28%
Average Recommended Employer Contribution Rate as of June 30, 2023	**4.35%**

F. Table of amortization bases

Type	Date Established	Initial Years	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[1]
Initial HIB Base	6/30/1997	30	$15,829,000	$8,558,405	4	$2,255,702
Combined Base	6/30/1998	30	(195,000)	(124,318)	5	(26,673)
Combined Base	6/30/1999	30	6,467,754	4,668,079	6	849,188
Combined Base	6/30/2000	30	5,543,694	4,404,492	7	698,682
Combined Base	6/30/2001	30	794,097	680,433	8	96,072
Combined Base	6/30/2002	30	18,413,242	16,752,297	9	2,138,478
Combined Base	6/30/2003	30	6,628,441	6,324,850	10	739,009
Combined Base	6/30/2004	30	1,942,176	1,972,772	11	213,091
Combined Base	6/30/2005	30	8,019,739	8,011,102	12	806,539
Combined Base	6/30/2006	30	(1,769,952)	(1,847,976)	13	(174,605)
Experience Loss	6/30/2007	30	2,878,105	3,056,269	14	272,590
Combined Base	6/30/2008	30	12,125,015	13,030,212	15	1,102,564
Combined Base	6/30/2009	30	(1,240,538)	(1,343,337)	16	(108,308)
Combined Base	6/30/2010	30	463,026	503,321	17	38,815
Combined Base	6/30/2011	30	(60,151)	(65,464)	18	(4,845)
Experience Gain	6/30/2012	20	(1,251,821)	(977,859)	9	(124,826)
Assumption Changes	6/30/2012	25	3,374,832	3,261,120	14	290,861
Experience Gain	6/30/2013	20	(1,155,658)	(949,836)	10	(110,981)
Experience Loss	6/30/2014	20	21,287	18,228	11	1,969
Assumption Changes	6/30/2014	25	2,555,790	2,534,242	16	204,326
Experience Gain	6/30/2015	20	(810,969)	(719,196)	12	(72,407)
Assumption Changes	6/30/2016	25	2,459,846	2,476,685	18	183,299
Experience Gain	6/30/2016	20	(1,569,600)	(1,431,880)	13	(135,290)
Assumption Changes	6/30/2017	25	(403,768)	(408,083)	19	(29,072)
Experience Gain	6/30/2017	20	(664,072)	(620,104)	14	(55,307)

[1] Beginning of year payment, reflecting level percentage of payroll.

F. Table of amortization bases (continued)

Type	Date Established	Initial Years	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[1]
Experience Gain	6/30/2018	20	$(2,295,237)	(2,182,889)	15	(184,707)
Assumption Changes	6/30/2018	25	2,931,560	2,966,251	20	203,951
Experience Gain	6/30/2019	20	(504,689)	(487,900)	16	(39,337)
Assumption Changes	6/30/2020	25	1,899,682	1,922,318	22	123,981
Experience Gain	6/30/2020	20	(542,065)	(530,646)	17	(40,922)
Experience Gain	6/30/2021	20	(6,818,716)	(6,736,642)	18	(498,578)
Assumption Changes	6/30/2022	20	3,202,074	3,183,188	19	226,770
Experience Loss	6/30/2022	20	2,976,293	2,958,739	19	210,780
Experience Loss	6/30/2023	20	1,323	1,323	20	91
Total				**$68,858,196**		**$9,050,900**

Note: The equivalent single amortization period is about 9 years.

[1] Beginning of year payment, reflecting level percentage of payroll.

Section 3: Supplemental Information

Exhibit A: Summary of participant data

	June 30, 2023	June 30, 2022
Retired Members		
Number	1,653	1,609
Average age	71.1	70.8
Surviving Spouses		
Number	217	197
Average age	78.9	78.1
Eligible for Deferred Benefit		
Number[1]	381	360
Average age	48.4	48.3
Active Participants		
Number	1,955	1,895
Average age	47.1	47.2
Average years of service	11.0	11.4
Average expected retirement age	62.4	62.3

[1] Includes inactive members due a refund of Pension Plan member contributions.

Section 4: Actuarial Valuation Basis

Exhibit 1: Actuarial assumptions and methods

Rationale for Assumptions and Methods:	The information and analysis used in selecting each assumption and method that has a significant effect on this actuarial valuation is shown in the July 1, 2016 through June 30, 2020 Actuarial Experience Study report dated November 12, 2020, the Actuarial Funding Policy review letter dated September 14, 2022, the June 30, 2022 Economic Assumptions Review report dated November 8, 2022, and the Retiree Health assumptions letter dated November 10, 2023. Unless otherwise noted, all actuarial assumptions and methods shown below apply to both tiers.
Economic Assumptions	
Net Investment Return:	6.75%, net of investment and administrative expenses.
Inflation:	2.50%
Across the Board Salary Increases:	0.50%
Payroll Growth:	Inflation of 2.50% per year plus real "across the board" salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Salary Increases:	The annual rate of compensation Increase includes inflation at 2.50%, plus "across the board" salary increases of 0.50% per year, plus the following merit and promotional increases:

Years of Service	Rate (%)
Less than 1	6.25
1 – 2	6.00
2 – 3	5.00
3 – 4	3.75
4 – 5	2.50
5 – 6	1.50
6 – 7	1.25
7 – 8	1.25
8 – 9	1.00
9 – 10	1.00
10 & Over	0.75

Section 4: Actuarial Valuation Basis

Demographic Assumptions

Mortality:

Post-Retirement Healthy Members:

- Pub-2010 General Healthy Retiree Headcount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020.

Post-Retirement Disabled Members:

- Pub-2010 Non-Safety Disabled Retiree Headcount-Weighted Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020.

Pre-Retirement:

- Pub-2010 General Employee Headcount-Weighted Above-Median Mortality Tables, projected generationally with the two-dimensional mortality improvement scale MP-2020.

Beneficiaries:

- Pub-2010 Contingent Survivor Headcount-Weighted Above-Median Mortality Tables with rates increased by 5% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2020

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Disability Incidence:

Age	Rate (%)
25	0.000
30	0.006
35	0.022
40	0.084
45	0.150
50	0.170
55	0.182
60	0.220
65	0.288

Note: Disability rates are applicable after eight years of service.

Section 4: Actuarial Valuation Basis

Termination:

Less Than Five Years of Service

Years of Service	Rate (%)
Less than 1	6.75
1 – 2	4.25
2 – 3	4.00
3 – 4	3.50
4 – 5	2.50

Five or More Years of Service

Years of Service	Rate (%)
25	2.34
30	2.24
35	2.14
40	2.04
45	1.85
50	1.60
55	1.35
60	1.10

No termination is assumed after a member is eligible for retirement (as long as a retirement rate is present).

Section 4: Actuarial Valuation Basis

Retirement:

	Rate (%)		
	1955/1980 Plan		
Age	Unreduced Pension[1]	Reduced Pension	**2013 Tier**
52	0.00	0.00	1.75
53	0.00	0.00	1.75
54	55.00	7.00	2.75
55	16.00	7.00	4.75
56	16.00	7.00	5.75
57	16.00	7.00	5.75
58	16.00	7.00	5.75
59	16.00	7.00	7.75
60	16.00	7.00	7.75
61	16.00	12.00	10.25
62	16.00	N/A[2]	18.00
63	16.00	N/A	15.00
64	16.00	N/A	9.00
65	16.00	N/A	23.75
66	27.00	N/A	23.75
67	27.00	N/A	32.50
68	27.00	N/A	35.00
69	27.00	N/A	38.75
70 & Over	100.00	N/A	100.00

[1] For example, a 1955/1980 Plan member age 54 with 30 or more years of service would be eligible for an unreduced pension benefit.

[2] For ages 62 and over, all 1955/1980 Plan members who are eligible for retirement are eligible for an unreduced pension benefit.

Section 4: Actuarial Valuation Basis

Unknown Data for Participants:	Same as those exhibited by members are similar known characteristics. If not specified, members are assumed to be male.
Retirement Age for Inactive Vested Participants:	59
Percent Married/Domestic Partnership:	For all active and inactive vested participants: 70% of male members and 35% of female members are assumed to elect spouse/domestic partner HIB coverage at retirement. For retired participants: Actual data included in census. Based on past practice this is not necessarily the same as the percent married/domestic partnership assumption used in the pension valuation. Some of those members may not elect HIB spouse/domestic partner coverage upon retirement due to the additional cost to the member.
Age of Spouse/Domestic Partner:	For all active and inactive vested participants, male participants are assumed to have a female spouse who is 3 years younger than the participant and female participants are assumed to have a male spouse who is 2 years older than the participant.
Future Benefit Accruals:	1.0 year of service per year. We have not applied the 0.038 years of additional service for each year of employment, applied in the pension valuation to anticipate conversion of unused sick leave, based on our understanding of the HIB plan provisions.
Actuarial Funding Policy	
Actuarial Cost Method:	Entry Age Cost Method. Entry Age is the age at the member's hire date. Actuarial Accrued Liability is calculated on an individual basis and is based on costs allocated as a level percentage of compensation. The Normal Cost is calculated on an individual basis where the Entry Age Normal Cost is calculated as the sum of the individual Normal Costs.
Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last five years. Unrecognized returns are equal to the difference between the actual market returns and the expected returns on the market value, and are recognized over a five-year period. The actuarial value of assets (AVA) is limited by a 30% corridor; the AVA cannot be less than 70% of MVA, nor greater than 130% of MVA.
Valuation Value of Assets:	The proportion of the Actuarial Value of Assets allocated to the HIB plan, based on the proportion of the MVA attributable to the HIB plan.
Amortization Method:	Level percent of payroll
Remaining Amortization Period:	Plan changes, assumption changes, and experience gains/losses prior to July 1, 2011 are amortized over separate decreasing 30-year amortization periods. On or after July 1, 2011, through June 30, 2021, plan changes are amortized over separate decreasing 15-year periods; assumption changes are amortized over separate decreasing 25-year periods; and experience gains/losses and retiree health assumption changes are amortized over separate decreasing 20-year periods. On or after July 1, 2021, assumption changes from the experience study or interim review of the economic assumptions are amortized over 20 years.

Section 4: Actuarial Valuation Basis

Retiree Health Assumptions	
Participation:	95% of future eligible retirees are assumed to enroll in the HIB plan. All current pensioners and beneficiaries with a retiree health insurance cash subsidy were valued. For deferred vested members, we assume an election equal to 50% of the future retiree election percent.
Average HIB Subsidy:	The enrollment percent of 70% is used to estimate the proportion of future retirees expected to participate in the EBMUD medical insurance plans (Kaiser, Blue Cross, Sutter Health Plus<65, and UHC Medicare Advantage PPO 65+). The difference between the 95% of all future retirees expected to be provided with an HIB subsidy and 70% (i.e. 25%) is what we used to anticipate future retirees who receive reimbursement for medical expenses through the HIB plan without being enrolled in an EBMUD medical insurance plan. The HIB subsidy may be used to defray any other allowed health benefits (e.g., Medicare Part B premiums, dental costs) in addition to medical premiums. For current retirees, we have used the HIB on record. For the expected 95% future retirees who received an HIB, we have assumed, based on the average HIB on record for current retirees at 100% vesting level, that: • Retirees at 100% vesting level under age 65 with single HIB coverage will receive an average $444 monthly benefit as of July 1, 2023, • Retirees at 100% vesting level under age 65 with spouse HIB coverage will receive an average $518 monthly benefit as of July 1, 2023, • Retirees at 100% vesting level age 65 and over with single HIB coverage will receive an average $437 monthly benefit as of July 1, 2023, and • Retirees at 100% vesting level age 65 and over with spouse HIB coverage will receive an average $539 monthly benefit as of July 1, 2023. The maximum (100% vesting level) monthly HIB subsidy is $450 for a retiree with single coverage and $550 for a retiree with spouse/domestic partner coverage
Projected HIB Subsidy Increase:	We have projected the HIB medical benefit to increase with medical trend until it reaches the limits described in the Summary of Plan Provisions. The benefit limits are projected to remain unchanged at the current levels of $450/$550.

Section 4: Actuarial Valuation Basis

Health Care Cost Trend Rates:

Trend is to be applied to premium for shown fiscal year to calculate next fiscal year's projected premium.
First Fiscal Year (July 1, 2023 through June 30, 2024)

	Rate (%)				
Plan	Anthem Blue Cross PPO, Under Age 65	Sutter Health Plus HMO, Under Age 65	Kaiser HMO, Under Age 65	Kaiser Senior Advantage	UHC Medicare Advantage PPO
Trend to be applied to 2023-2024 Fiscal Year premium	9.62	6.10	14.15	9.27	4.23

The fiscal year trend rates are based on the following calendar year trend rates:

	Approximate Trend Rate (%)			Trend Rate Applied to Calculate Following Year Premium (%)	
Fiscal Year	Non-Medicare	Medicare	Calendar Year	Non-Medicare	Medicare
2024-2025	7.375	6.375	2024	7.50	6.50
2025-2026	7.125	6.125	2025	7.25	6.25
2026-2027	6.875	5.875	2026	7.00	6.00
2027-2028	6.625	5.625	2027	6.75	5.75
2028-2029	6.375	5.375	2028	6.50	5.50
2029-2030	6.125	5.125	2029	6.25	5.25
2030-2031	5.875	4.875	2030	6.00	5.00
2031-2032	5.625	4.625	2031	5.75	4.75
2032-2033	5.375	4.500	2032	5.50	4.50
2033-2034	5.125	4.500	2033	5.25	4.50
2034-2035	4.875	4.500	2034	5.00	4.50
2035-2036	4.625	4.500	2035	4.75	4.50
2036 and later	4.500	4.500	2036	4.50	4.50

Section 4: Actuarial Valuation Basis

Medical Carrier Election

Non-Medicare Medical Carrier	Election (%)
Kaiser HMO	70
Anthem Blue Cross PPO	25
Sutter Health Plus HMO	5

Medicare Medical Carrier	Election (%)
Kaiser Senior Advantage HMO (High Option)	67
UHC Medicare Advantage PPO	33

Assumption Changes Since Prior Valuation:

The following assumptions were changed since the prior valuation:

- The average HIB subsidy for future retirees was updated.
- The future trend for projecting medical costs below the subsidy limit were updated.

Per the plan's funding policy, the impact of the year-to-year retiree healthcare assumption changes (such as this year's assumption changes) are amortized as part of the annual experience gain/loss.

Exhibit 2: Summary of plan

This exhibit summarizes the major benefit provisions as included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions

Normal or Unreduced Retirement Eligibility:	
1955/1980 Plan	Age 65; Age 62 with 5 years of service; Age 59 with 20 years of service; Age 54 with 30 years of service; Other combinations of age and service between ages 54 and 59.
2013 Tier	Age 67 with 5 years of service (for unreduced benefit)
Early Retirement Eligibility:	
1955/1980 Plan	Age 54 with 5 years of service.
2013 Tier	Age 52 with 5 years of service.
Covered Members:	All members with at least 5 years of service.
Member Contribution Rate:	0.09%
Employer Contribution Rate:	100% of total cost net of the 0.09% rate paid by the employee.

Section 4: Actuarial Valuation Basis

Benefit Formula:

For members entering

For members entering the System prior to July 1, 1996, a monthly allowance of up to $450 ($550 for married retirees and retirees with EBMUD domestic partners) is paid to retirees with at least five years of full-time service to reimburse member-paid medical expenses.

For members entering the System after June 30, 1996, the members shall receive the full monthly allowance multiplied by the applicable percentage below based on years of full-time service.

Effective January 1, 1999, retired members who had separated from the District prior to their retirement and who had at least five years of service also become eligible for the post-employment healthcare benefits based on the same vesting schedule.

Years of Full-time Service	Percent of HIB
Less than 5	0%
5-9	25%
10-14	50%
15-19	75%
20 or more	100%

An eligible surviving spouse/domestic partner may receive a Health Insurance Benefit of up to $450 per month.

Changes in Plan Provisions:

None since the prior valuation.

5800954v1/10419.001

East Bay Municipal Utility District Employees' Retirement System

Governmental Accounting Standards Board Statement (GASBS) 67 Actuarial Valuation for the Pension Plan

As of June 30, 2023

Segal

Segal

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San Francisco, CA 94105-6147
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segalco.com

January 5, 2024

Ms. Sophia Skoda
Director of Finance
East Bay Municipal Utility District
375 Eleventh Street
Oakland, CA 94607-4240

Dear Sophia:

We are pleased to submit this Governmental Accounting Standards Board Statement (GASBS) 67 Actuarial Valuation as of June 30, 2023 for the pension plan. It contains various information that will need to be disclosed in order to comply with GASBS 67 for the pension plan. Please refer to the funding Actuarial Valuation and Review of Pension Plan Benefits as of June 30, 2023, for the data, assumptions, and plan of benefits underlying these calculations.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the East Bay Municipal Utility District Employees' Retirement System (EBMUDERS). The census and financial information on which our calculations were based was prepared by the EBMUDERS. That assistance is gratefully acknowledged.

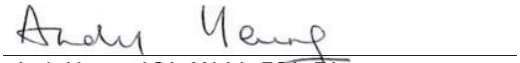
The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and expectations for the Plan.

We look forward to reviewing this report with you and to answering any questions.

Sincerely,

Segal



Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

DNA/jl

Segal

Table of Contents

Section 1: Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Statement No. 67 of the Governmental Accounting Standards Board (GASB) as of June 30, 2023. This report is based on financial information as of June 30, 2023 and the funding Actuarial Valuation and Review of Pension Plan Benefits as of June 30, 2023, which reflects:

- The benefit provisions of the Pension Plan, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of June 30, 2023, provided by EBMUDERS;
- The assets of the Plan as of June 30, 2023, provided by EBMUDERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the June 30, 2023 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. that the Board has adopted for the June 30, 2023 valuation.

General observations on GASBS 67 actuarial valuation

1. The GASB rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans should develop and adopt funding policies under current practices.
2. When measuring pension liability, GASB uses the same actuarial cost method (Entry Age) and the same type of discount rate (expected return on assets) as EBMUDERS uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on the same basis as EBMUDERS' Actuarial Accrued Liability (AAL) measure for funding. We note that the same is true for the Normal Cost component of the annual plan cost for funding and financial reporting.
3. The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan Fiduciary Net Position. The Plan Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is the same as the Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis. The NPL reflects all investment gains and losses as of the measurement date. This is different from the UAAL calculated on a valuation value of assets basis in the funding valuation that reflects investment gains and losses over a five-year period.

Highlights of the valuation

1. The NPLs measured as of June 30, 2023 and 2022 have been determined based upon the actuarial valuations as of June 30, 2023 and June 30, 2022, respectively.
2. Section 33 of the Employees' Retirement System Ordinance ("Ordinance") references a funded ratio based on the ratio of the market value of assets to the projected benefit obligation (PBO) for purposes of determining post-retirement cost of living adjustments (COLA). As noted in the plan provisions section of the June 30, 2023 Retirement Plan funding valuation report dated January 5, 2024 (*Section 4, Exhibit 2*), the basic minimum COLA benefit is the lesser of 3% and the actual change in the cost of living index. Any excess of the actual change in the cost of living index over 3% is accumulated in individual retiree COLA banks, and withdrawals from the bank are made in years when the index increases less than 3%. However, increases of up to 5% are granted in years when the Retirement Board determines that the System is more than 85% funded on a PBO basis. In those years when the System is more than 85% funded and the cost of living index exceeds 5%, any excess cost of living over 5% is accumulated in the COLA bank. Furthermore, effective October 1, 2000, in those years when the system is more than 85% funded on a PBO basis and the cost of living is less than 4%, withdrawals from the bank are made to allow cost of living increases up to 4%.

   For the June 30, 2023 Retirement Plan and HIB Plan valuations, we note that the funded ratio on the PBO (and market value) basis is 73.6% for both plans combined, as shown in the Supplemental Exhibits report dated January 5, 2024.
3. The NPL decreased from $830 million as of June 30, 2022 to $800 million as of June 30, 2023. This was mainly due to (a) the approximate return on the market value of assets for the Pension Plan of 10.75% during 2022/2023 that was more than the assumption of 6.75% used in the June 30, 2023 valuation (that gain was about $80 million for the Pension Plan), offset somewhat by (b) higher than expected salary increases for continuing active members (that loss was about $21 million) and (c) higher than expected cost of living adjustment increases for payees (that loss was about $35 million). Changes in these values during the last two fiscal years ending June 30, 2022 and June 30, 2023 can be found in *Section 2, Schedule of Changes in Net Pension Liability* on page 16.
4. The discount rates used to determine the TPLs and NPLs as of June 30, 2023 and 2022 was 6.75%, following the same assumption used by the System in the pension funding valuations as of the same dates. The detailed calculations used in the derivation of the discount rate of 6.75% used in the calculation of the TPL and NPL as of June 30, 2023 can be found in *Section 3, Appendix A*. Various other information that is required to be disclosed can be found throughout *Section 2*.
5. It is important to note that this actuarial valuation is based on plan assets as of June 30, 2023. The Plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the Plan Year. Moreover, this actuarial valuation is based on Plan data as of June 30, 2023 and it does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after June 30, 2023 due to COVID-19. Segal is available to prepare projections of potential outcomes on market conditions and other demographic experience upon request.

Summary of key valuation results

Measurement Date		June 30, 2023	June 30, 2022
Disclosure elements:	• Service cost[1]	$56,378,319	$51,705,682
	• Total Pension Liability	2,994,429,150	2,835,771,092
	• Plan Fiduciary Net Position	2,194,142,000	2,005,352,000
	• Net Pension Liability	800,287,150	830,419,092
Schedule of contributions:	• Actuarially determined contributions	$95,103,000	$91,393,000
	• Actual contributions	95,103,000	91,393,000
	• Contribution deficiency / (excess)	0	0
Demographic data:	• Number of retired members and beneficiaries	2,117	2,048
	• Number of vested terminated members[2]	381	360
	• Number of active members	1,955	1,895
Key assumptions:	• Investment rate of return	6.75%	6.75%
	• Inflation rate	2.50%	2.50%
	• Real across-the-board salary increase	0.50%	0.50%
	• Projected salary increases[3]	Ranges from 9.25% to 3.75% based on time from hire	Ranges from 9.25% to 3.75% based on time from hire
	• Cost of living adjustments	2.75%	2.75%

[1] The service cost is based on the previous year's valuation, meaning the June 30, 2023 and June 30, 2022 measurement date values are based on the valuations as of June 30, 2022 and June 30, 2021, respectively. The June 30, 2023 measurement date service cost has been calculated using the actuarial assumptions shown in the June 30, 2022 column and the June 30, 2022 measurement date service cost has been calculated using the following assumptions:

Key assumptions as of June 30, 2021:

Investment rate of return	7.00%
Inflation rate	2.75%
Projected salary increases*	Ranges from 9.50% to 4.00%, based on time from hire
Cost of living adjustments	2.75%

* Includes inflation of 2.75% plus real across-the-board salary increases of 0.50% plus merit and promotion increases.

[2] Includes inactive members due a refund of contributions.

[3] Includes inflation at 2.50% plus real across-the-board salary increase of 0.50% plus merit and promotion increases.

Important information about actuarial valuations

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary in this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	This valuation is based on the market value of assets as of the valuation date, as provided by the System.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.
Actuarial Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared at the request of the Board to assist the System in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
Actuarial results in this report are not rounded, but that does not imply precision.
If the System is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
Segal's report shall be deemed to be final and accepted by the System upon delivery and review. The System should notify Segal immediately of any questions or concerns about the final content.

As Segal has no discretionary authority with respect to the management or assets of EBMUDERS, it is not a fiduciary in its capacity as actuaries and consultants with respect to EBMUDERS.

Section 2: GASBS 67 Information

General information about the pension plan

Plan Description

Plan administration. The East Bay Municipal Utility District (the District) Employees' Retirement System (EBMUDERS or the System) was established in 1937 to administer a single-employer, contributory, defined benefit pension plan (the Pension Plan). The System provides retirement, disability, survivorship, and post-employment health insurance benefits[1] for eligible directors, officers, and employees of the District. The System is administered by a Retirement Board composed of three members appointed by the board of directors of the District, two members elected by and from the active membership, and one (nonvoting) member elected by and from the retired membership of the System. Retirement Ordinance No. 40 (Ordinance) assigns the authority to establish Plan benefit provisions to the District's board of directors. It should be noted that there are two systems in EBMUDERS (i.e., Water System and Wastewater System).

The System is exempt from the regulations of the Employee Retirement Income Security Act of 1974. The System is also exempt from federal income taxes and California franchise taxes.

The System is an integral part of the District and the District appoints the majority of the retirement board of the System and provides for its funding. Accordingly, the System's operations have been reported as a Pension and Other Employee Benefit Trust Fund in the District's basic financial statements.

Plan membership. All regular full-time employees of the District are members of the Plan, in addition to certain job share and intermittent employees. Eligible employees become members on the first day they are physically on the job. At June 30, 2023, Pension Plan membership consisted of the following:

Retired members and beneficiaries currently receiving benefits	2,117
Vested terminated members entitled to, but not yet receiving benefits[2]	381
Active members	1,955
Total	4,453

[1] The liabilities and expenses associated with providing post-employment health insurance benefits are reportable under GASB Statements 74 and 75. They have not been included in this report.

[2] Includes inactive members due a refund of contributions.

Section 2: GASBS 67 Information

Benefits provided. EBMUDERS provides service retirement, disability, death and survivor benefits to eligible employees.

There are two tiers in effect currently, the 1955/1980 Plan and the 2013 Tier. Employees who became members of the retirement system prior to January 1, 2013, or who have reciprocal membership are in the 1955/1980 Plan. Employees who became members on or after January 1, 2013 are in the 2013 Tier.

1955/1980 Plan members may elect voluntary reduced service retirement upon attaining the age of 54 and completing 5 years of continuous full-time employment. Members may elect voluntary unreduced service retirement upon attaining the age of 62 and completing 5 years of continuous full-time employment or age 65 without restriction. Members who continue to work upon attaining the normal retirement age of 65 continue to contribute to the Plan, and at the time they retire, computation of their retirement allowance is based upon their compensation and length of service as of the date of retirement. Service retirement allowances are computed by formulas specified in the Ordinance and are based on date of employment, length of employment, age at date of retirement, and compensation earned during employment.

2013 Tier members may elect voluntary reduced service retirement upon attaining the age of 52 and completing 5 years of continuous full-time employment. Members may elect voluntary unreduced service retirement upon attaining the age of 67, and completing 5 years of continuous full-time employment. Members who continue to work upon attaining the normal retirement age of 67 continue to contribute to the Plan, and at the time they retire, computation of their allowance is based upon their compensation and length of service as of the date of retirement. Service retirement allowances are computed by formulas specified in the Ordinance and are based on length of service, age at retirement, and compensation earned during employment.

Members may receive disability retirement benefits prior to age 65 if the member is determined to be physically or mentally incapacitated, provided the member has 8 or more years of continuous full-time employment. The allowance for disability retirement is computed by a formula specified in the Ordinance and is based upon compensation earnable during employment, years of continuous service, and date upon which the retiring individual became a member. There is a guaranteed minimum disability benefit equal to the greater of one-third of terminal compensation (final average salary) or the retirement allowance, based on the disability formula.

Death benefits are payable to the estate or beneficiary of a member who dies before retirement. Survivorship benefits are payable to the spouse/domestic partner of a member who dies after retirement, or who was eligible but had not retired from service, provided the spouse/domestic partner was married to/established domestic partnership with the member at the date of retirement and for at least one year prior to the member's death.

EBMUDERS provides an annual cost of living benefit to all retirees. The cost of living adjustment is capped at 3.0% unless the System is more than 85% funded on a Projected Benefit Obligation (PBO) basis, in which case the cost of living adjustment is capped at 5.0%.[3]

The East Bay Municipal Utility District contributes to the Pension Plan based upon actuarially determined contribution rates adopted by the Retirement Board. Employer contribution rates are adopted annually based upon recommendations received from

[3] Effective October 1, 2000, when the System is 85% funded on a PBO basis and the cost-of-living is less than 4%, withdrawals from the accumulated COLA bank are made to allow cost-of-living increases up to 4%.

Section 2: GASBS 67 Information

EBMUDERS' actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of June 30, 2023 for 2022-2023 (based on contribution rates adopted for the June 30, 2021 valuation) was 38.62% of covered payroll.

All members are required to make contributions to EBMUDERS regardless of the Pension Plan or tier in which they are included. The average member contribution rate as of June 30, 2023 for 2022-2023 (based on the June 30, 2021 valuation) was 8.88% of covered payroll.

Net Pension Liability

Measurement Date	June 30, 2023	June 30, 2022
Components of the Net Pension Liability		
Total Pension Liability	$2,994,429,150	$2,835,771,092
Plan Fiduciary Net Position	(2,194,142,000)	(2,005,352,000)
Net Pension Liability	$800,287,150	$830,419,092
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	73.27%	70.72%

The Net Pension Liability was measured as of June 30, 2023 and 2022. The Plan Fiduciary Net Position (plan assets) was valued as of the measurement date, while the Total Pension Liability was determined based upon the results of the actuarial valuations as of June 30, 2023 and 2022, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of June 30, 2023 and 2022 are the same as those used in the EBMUDERS funding valuations as of June 30, 2023 and 2022, respectively.

Actuarial assumptions. The TPLs as of June 30, 2023 and June 30, 2022 were determined by actuarial valuations as of June 30, 2023 and June 30, 2022, respectively. The actuarial assumptions used in both the June 30, 2023 and June 30, 2022 valuations were based on the July 1, 2016 through June 30, 2020 Actuarial Experience Study report dated November 12, 2020 and the June 30, 2022 Economic Assumptions Review dated November 8, 2022. They are the same as the assumptions used in the June 30, 2023 funding actuarial valuation for EBMUDERS. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Investment rate of return:	6.75%, net of Pension Plan investment expense, including inflation
Inflation rate:	2.50%
Real across-the-board salary increase:	0.50%
Projected salary increases:	Ranges from 9.25% to 3.75% based on time from hire, including inflation and real across-the-board salary increases
Cost of living adjustments:	Retiree COLA increases of 2.75% per year. For members with a sufficient COLA bank, withdrawals from the bank can be made to increase the retiree COLA up to 3.00% per year.
Other assumptions:	See the experience study report for the period July 1, 2016 through June 30, 2020 and the June 30, 2022 economic assumptions review report.

Determination of discount rate and investment rates of return

The long-term expected rate of return on Pension Plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation but before deducting investment expenses, are summarized in the following table. These values were used in the derivation of the long-term expected investment rate of return assumption that was used in the actuarial valuation as of June 30, 2023. This information is subject to change every four years based on the actuarial experience study, or every two years based on the interim economic actuarial assumptions study.

Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
Domestic Large Cap Equity	21.75%	5.60%
Domestic Small Cap Equity	3.25%	6.63%
Developed International Large Cap Equity	17.50%	6.39%
Emerging Market Equity	7.50%	8.34%
Core Bonds	20.00%	0.59%
High Yield Bonds	2.50%	3.22%
Bank Loans	2.50%	2.76%
Real Estate	5.00%	5.00%
Covered Calls	20.00%	5.07%
Total	**100.00%**	**4.71%**

Discount rate. The discount rate used to measure the Total Pension Liability was 6.75% as of June 30, 2023 and June 30, 2022. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Pension Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on Pension Plan investments was applied to all periods of projected benefit payments to determine the Total Pension Liability as of both June 30, 2023 and June 30, 2022.

Discount rate sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the Net Pension Liability of EBMUDERS as of June 30, 2023, calculated using the discount rate of 6.75%, as well as what EBMUDERS' Net Pension Liability would be if it were calculated using a discount rate that is 1-percentage-point lower (5.75%) or 1-percentage-point higher (7.75%) than the current rate:

	1% Decrease (5.75%)	Current Discount Rate (6.75%)	1% Increase (7.75%)
Net Pension Liability as of June 30, 2023	$1,190,975,910	$800,287,150	$477,232,932

Schedule of changes in Net Pension Liability – Last two fiscal years

Measurement Date	June 30, 2023	June 30, 2022
Total Pension Liability		
• Service cost[1]	$56,378,319	$51,705,682
• Interest	190,492,351	181,464,461
• Change of benefit terms	0	0
• Differences between expected and actual experience	51,868,388	54,807,594
• Changes of assumptions	0	72,119,593
• Benefit payments, including refunds of member contributions	(140,081,000)	(129,940,000)
Net change in Total Pension Liability	**$158,658,058**	**$230,157,330**
Total Pension Liability – beginning	**2,835,771,092**	**2,605,613,762**
Total Pension Liability – ending	**$2,994,429,150**	**$2,835,771,092**
Plan Fiduciary Net Position		
• Contributions – employer	$95,103,000	$91,393,000
• Contributions – member	21,865,000	20,915,000
• Net investment income	214,117,000	(245,904,000)
• Benefit payments, including refunds of member contributions	(140,081,000)	(129,940,000)
• Administrative expense	(2,214,000)	(1,875,000)
• Other	0	0
Net change in Plan Fiduciary Net Position	**$188,790,000**	**$(265,411,000)**
Plan Fiduciary Net Position – beginning	**2,005,352,000**	**2,270,763,000**
Plan Fiduciary Net Position – ending	**$2,194,142,000**	**$2,005,352,000**
Net Pension Liability – ending	**$800,287,150**	**$830,419,092**
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	**73.27%**	**70.72%**
Covered payroll[2]	**$246,230,567**	**$233,939,981**
Net Pension Liability as percentage of covered payroll	**325.02%**	**354.97%**

[1] The service cost is based on the previous year's valuation, meaning the June 30, 2023 and June 30, 2022 measurement date values are based on the valuations as of June 30, 2022 and June 30, 2021, respectively. The June 30, 2023 measurement date service cost has been calculated using the actuarial assumptions shown in the June 30, 2022 column on page 7 and the June 30, 2022 measurement date service cost has been calculated using the following assumptions:

Key assumptions as of June 30, 2021:	
Investment rate of return	7.00%
Inflation rate	2.75%
Projected salary increases*	Ranges from 9.50% to 4.00%, based on time from hire
Cost of living adjustments	2.75%

* Includes inflation of 2.75% plus real across-the-board salary increases of 0.50% plus merit and promotion increases.

[2] Pensionable payroll reported by EBMUDERS.

Schedule of contributions – Last ten fiscal years

Year Ended June 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[1]	Contributions as a Percentage of Covered Payroll
2014	$61,660,000	$61,660,000	$0	$159,513,251	38.66%
2015	64,177,000	64,177,000	0	166,886,146	38.46%
2016	65,218,000	65,218,000	0	174,586,444	37.36%
2017	67,096,000	67,096,000	0	182,031,838	36.86%
2018	71,221,000	71,221,000	0	193,717,364	36.77%
2019	74,033,000	74,033,000	0	203,541,207	36.37%
2020	77,645,000	77,645,000	0	215,109,948	36.10%
2021	79,252,000	79,252,000	0	221,809,447	35.73%
2022	91,393,000	91,393,000	0	233,939,981	39.07%
2023	95,103,000	95,103,000	0	246,230,567	38.62%

[1] These are the pensionable payroll amounts reported by EBMUDERS.

See accompanying notes to this schedule on the next page.

Section 2: GASBS 67 Information

Notes to Schedule:

Methods and assumptions used to establish "actuarially determined contribution" (ADC) rates:

Valuation date:	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method:	Entry Age Cost Method
Amortization method:	Level percent of payroll
Remaining amortization period:	Prior to July 1, 2011, the UAAL from plan changes, assumption changes, and experience gains/losses were amortized over separate decreasing 30-year amortization periods. On or after July 1, 2011, any new UAAL resulting from plan changes are amortized over separate decreasing 15-year periods; assumption and method changes are amortized over separate decreasing 25-year periods (prior to July 1, 2021); and experience gains/losses are amortized over separate decreasing 20-year periods. On or after July 1, 2021, assumption and method changes are amortized over separate decreasing 20-year periods.
Asset valuation method:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five year period, further adjusted, if necessary, to be within 30% of the market value.

Section 2: GASBS 67 Information

Actuarial assumptions:

Valuation Date:	June 30, 2021 (for the year ended June 30, 2023 ADC)	June 30, 2020 (for the year ended June 30, 2022 ADC)
Investment rate of return:	7.00%	7.00%
Inflation rate:	2.75%	2.75%
Real across-the-board salary increase:	0.50%	0.50%
Projected salary increases:[1]	Ranges from 9.50% to 4.00% based on time from hire	Ranges from 9.50% to 4.00% based on time from hire
Cost of living adjustments:	Retiree COLA increases of 2.75% per year. For members with a sufficient COLA bank, withdrawals from the bank can be made to increase the retiree COLA up to 3.00% per year.	Retiree COLA increases of 2.75% per year. For members with a sufficient COLA bank, withdrawals from the bank can be made to increase the retiree COLA up to 3.00% per year.
Mortality:	Healthy: Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020	Healthy: Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020
Other assumptions:	Same as those used in the June 30, 2021 funding actuarial valuation	Same as those used in the June 30, 2020 funding actuarial valuation

[1] Includes inflation at 2.75% plus across-the-board salary increases of 0.50% plus merit and promotion increases.

Section 3: Appendices

Appendix A: Projection of Plan Fiduciary Net Position for use in the Calculation of Discount Rate as of June 30, 2023 ($ in millions)

Year Beginning July 1,	Projected Beginning Plan's Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan's Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2022	$2,005	$117	$140	$2	$214	$2,194
2023	2,194	124	158	2	146	2,305
2024	2,305	126	162	3	154	2,420
2025	2,420	127	171	3	161	2,534
2026	2,534	132	179	3	169	2,653
2027	2,653	132	187	3	176	2,771
2028	2,771	133	196	3	184	2,889
2029	2,889	134	204	3	192	3,007
2030	3,007	128	212	3	199	3,119
2031	3,119	129	221	3	207	3,230
2057	3,168	11 *	310	3	203	3,068
2058	3,068	10 *	307	3	196	2,964
2059	2,964	10 *	302	3	189	2,857
2060	2,857	9 *	298	3	182	2,748
2061	2,748	9 *	292	3	175	2,636
2087	220	3 *	55	0 **	13	180
2088	180	2 *	47	0 **	10	145
2089	145	2 *	40	0 **	8	116
2090	116	2 *	33	0 **	7	91
2091	91	2 *	27	0 **	5	70
2120	0 **	0 *,**	0 **	0 **	0 **	0 **
2121	0 **	0 *,**	0 **	0 **	0 **	0 **
2122	0 **	0 *,**	0 **	0 **	0 **	0 **
2123	0 **	0 *,**	0 **	0 **	0 **	0 **
2124	0 **	0 *,**	0 **	0 **	0 **	0 **

* Mainly attributable to employer contributions to fund each year's annual administrative expenses.
** Less than $1 million, when rounded.

Note that in preparing the above projections, we have not taken into consideration the one-year delay between the date of the contribution rate calculation and the implementation.

Section 3: Appendices

Notes:

(1) Amounts may not total exactly due to rounding.

(2) Amounts shown for the year beginning July 1, 2022 row are actual amounts, based on the financial statements provided by EBMUDERS.

(3) Years 2032-2056, 2062-2086, and 2092-2119 have been omitted from this table.

(4) Column (a): None of the projected beginning Plan Fiduciary Net Position amounts shown have been adjusted for the time value of money.

(5) Column (b): Projected total contributions include employee and employer normal cost contributions based on closed group projections (based on covered active members as of June 30, 2023); plus employer contributions to the unfunded actuarial accrued liability; plus contributions to fund each year's annual administrative expenses reflecting a 20-year amortization schedule. Contributions are assumed to occur halfway through the year, on average.

(6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of June 30, 2023. The projected benefit payments reflect the cost of living increase assumptions used in the June 30, 2023 funding valuation report. Benefit payments are assumed to occur halfway through the year, on average. In accordance with paragraph 31.b.(1)(e) of GASB Statement No. 67, the long-term expected rate of return on Plan investments of 6.75% was applied to all periods of projected benefit payments to determine the discount rate.

(7) Column (d): Projected administrative expenses are calculated as approximately 0.11% of the projected beginning Plan Fiduciary Net Position amount. The 0.11% portion was based on the actual fiscal year 2022 - 2023 administrative expenses as a percentage of the beginning Plan Fiduciary Net Position amount as of July 1, 2022. Administrative expenses are assumed to occur halfway through the year, on average.

(8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 6.75% per annum.

(9) As illustrated in this Exhibit, the Plan Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected 'cross-over date' when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.75% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of June 30, 2023 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

(10) This projection is based on a model developed by our Actuarial Technology and Systems unit, comprised of both actuaries and programmers. The model allows the client team, under the supervision of the responsible actuary, control over the entry of future expected contribution income, benefit payments and administrative expenses. The projection of fiduciary net position and the discounting of benefits is part of the model.

Appendix B: Definition of Terms

Definitions of certain terms as they are used in Statement 67. The terms may have different meanings in other contexts.

Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.
Ad Hoc Cost-of-Living Adjustments (Ad Hoc COLAs):	Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.
Ad Hoc Postemployment Benefit Changes:	Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.
Automatic Cost-of-Living Adjustments (Automatic COLAs):	Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Automatic Postemployment Benefit Changes:	Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).
Cost-of-Living Adjustments:	Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan (Cost-Sharing Pension Plan):	A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.
Covered Payroll:	Payroll on which contributions to the pension plan are based.
Defined Benefit Pension Plans:	Pension plans that are used to provide defined benefit pensions.

Section 3: Appendices

Defined Benefit Pensions:	Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 67.)
Defined Contribution Pension Plans:	Pension plans that are used to provide defined contribution pensions.
Defined Contribution Pensions:	Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.
Discount Rate:	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension Plan Fiduciary Net Position is projected (under the requirements of Statement 67) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.
Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.
Inactive Employees:	Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.
Multiple-Employer Defined Benefit Pension Plan:	A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.
Net Pension Liability (NPL):	The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit pension plan.

Section 3: Appendices

Other Postemployment Benefits:	All postemployment benefits other than retirement income (such as death benefits, life insurance, disability, and long-term care) that are provided separately from a pension plan, as well as postemployment healthcare benefits, regardless of the manner in which they are provided. Other postemployment benefits do not include termination benefits.
Pension Plans:	Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed and benefits are paid as they come due.
Pensions:	Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.
Plan Members:	Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).
Postemployment:	The period after employment.
Postemployment Benefit Changes:	Adjustments to the pension of an inactive employee.
Postemployment Healthcare Benefits:	Medical, dental, vision, and other health-related benefits paid subsequent to the termination of employment.
Projected Benefit Payments:	All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.
Public Employee Retirement System:	A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.
Real Rate of Return:	The rate of return on an investment after adjustment to eliminate inflation.
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Single-Employer Defined Benefit Pension Plan (Single-Employer Pension Plan):	A defined benefit pension plan that is used to provide pensions to employees of only one employer.
Termination Benefits:	Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.
Total Pension Liability (TPL):	The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 67.

East Bay Municipal Utility District Employee's Retirement System

Governmental Accounting Standards Board Statement (GASBS) 74 Actuarial Valuation for the Health Insurance Benefit Plan

As of June 30, 2023

Segal

Segal

180 Howard Street, Suite 1100
San Francisco, CA 94105-6147
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T 415.263.8200

January 5, 2024

Ms. Sophia Skoda
Director of Finance
East Bay Municipal Utility District
375 Eleventh Street
Oakland, CA 94607-4240

Dear Sophia:

We are pleased to submit this Governmental Accounting Standards Board Statement (GASBS) 74 Actuarial Valuation as of June 30, 2023 for the health insurance benefit (HIB) plan or Other Post Employment Benefits (OPEB) Plan. It contains various information that will need to be disclosed in order to comply with GASBS 74 for the health plan.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the East Bay Municipal Utility District Employees' Retirement System (EBMUDERS). The census and financial information on which our calculations were based was prepared by EBMUDERS. That assistance is gratefully acknowledged.

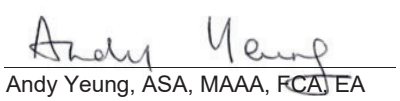
The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, EA and Mehdi Riazi, FSA, MAAA, FCA, EA. The health care trend and other related medical assumptions have been reviewed by Mary Kirby, FSA, MAAA, FCA. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and expectations for the Plan.

We look forward to reviewing this report at your next meeting and to answering any questions.

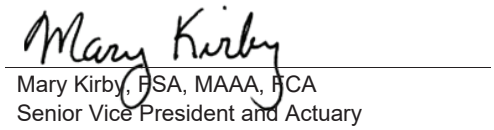
Sincerely,

Segal



Andy Yeung, ASA, MAAA, FCA, EA
Vice President and Actuary

Mehdi Riazi, FSA, MAAA, FCA, EA
Vice President and Actuary



Mary Kirby, FSA, MAAA, FCA
Senior Vice President and Actuary

TTT/jl

Segal

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Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present certain disclosure information required by Statement No. 74 of the Governmental Accounting Standards Board (GASB) as of June 30, 2023. This valuation is based on:

- The benefit provisions of the Health Insurance Benefit (HIB) or Other Postemployment Benefits (OPEB) Plan, as administered by the Board;
- The characteristics of covered active members, terminated vested members, and retired members and beneficiaries as of June 30, 2023, provided by EBMUDERS;
- The assets of the Plan as of June 30, 2023, provided by EBMUDERS;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other (health and non-health) actuarial assumptions, regarding employee terminations, retirement, death, health care trend and enrollment, etc. that the Board has adopted for the June 30, 2023 valuation.

General observations on GASBS 74 actuarial valuation

1. The GASB rules only define OPEB liability and expense for financial reporting purposes, and do not apply to contribution amounts for OPEB funding purposes. Employers and plans still develop and adopt funding policies under current practices.
2. When measuring the Total OPEB Liability, GASB uses the same actuarial cost method (Entry Age) for benefits that are being funded on an actuarial basis[1] and the same expected return on Plan assets as EBMUDERS uses for funding. This means that the Total OPEB Liability (TOL) measure for financial reporting shown in this report is determined on the same basis as EBMUDERS Actuarial Accrued Liability (AAL) measure for funding with the exception discussed below on the “implicit subsidy”. We note that the same is true for the Normal Cost component of the annual plan cost for funding and financial reporting again with the exception discussed below on the “implicit subsidy”.
   a. Pursuant to Paragraph 46 of GASB Statement No. 74, projected benefit payments should be based on claims costs or age-adjusted premiums approximating claims costs. In effect, GASB requires employers, such as EBMUD, that pool health insurance premium rates for actives and retirees under age 65 to calculate on an accrual basis the liability associated with

[1] The $450/$550 HIB subsidy has been funded on an actuarial basis.

such pooled premiums for retirees under age 65. That liability, referred to as the implicit subsidy, is included in this valuation in addition to the liability for the $450/$550 subsidy.

b. Pursuant to Paragraph 48 of the GASB Statement No. 74 and based on our understanding of subsequent guidance provided in Implementation Guide No. 2017-2, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, OPEB plans that are not being fully funded on an actuarial basis (such as the implicit subsidy component of the HIB for EBMUDERS that are being paid on a pay-as-you go basis) are required to go through a cross-over test in determining the discount rate that would be used in the valuation

3. The Net OPEB Liability (NOL) is equal to the difference between the TOL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets. The NOL reflects all investment gains and losses as of the measurement date. This is different from the Unfunded Actuarial Accrued Liability (UAAL) calculated on a valuation value of assets basis in the funding valuation that reflects investment gains and losses over a five-year period.

Highlights of the valuation

1. The NOLs measured as of June 30, 2023 and 2022 have been determined from the actuarial valuations as of June 30, 2023 and June 30, 2022, respectively.
2. Following the method outlined in the Implementation Guide, we have calculated a discount rate of 5.23% instead of 6.75% used in the June 30, 2023 funding valuation.
3. The discount rates used to determine the TOL and NOL as of June 30, 2023 and 2022 were 5.23% and 5.35%, respectively. The detailed calculations in the derivation of the "cross-over date" to determine the discount rate of 5.23% used in the calculation of the TOL and NOL as of June 30, 2023 can be found in Appendix A of Section 3. Various other information that is required to be disclosed can be found throughout Section 2.
4. The discount rate used in the valuation for financial disclosure purposes as of June 30, 2023 is a blend of the assumed investment return on Plan assets (e.g. 6.75% for the June 30, 2023 valuation) and the rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (e.g. 3.65% as of June 30, 2023[1]). Because EBMUDERS is not prefunding the implicit subsidy, Plan assets, when projected in accordance with the method prescribed by GASBS 74, are expected to be sufficient to make benefit payment through June 30, 2048 (the projected beginning balance at July 1, 2048 is less than the projected benefit payments for the 2048/2049 year, before including projected contributions for the year). Projected benefit payments are discounted by the Plan investment return assumption of 6.75% until June 30, 2048. Benefit payments after

[1] The comparable rate was 3.54% in the last valuation as of June 30, 2022.

June 30, 2048 are then discounted by the 20-year municipal bond rate of 3.65%. The 5.23% discount rate used in this valuation is the blended discount rate reflecting benefits discounted by the Plan investment return assumption rate and the bond rate.

5. The NOL has increased from $127.7 million as of June 30, 2022 to $132.4 million as of June 30, 2023. The increase in NOL was primarily due to larger than expected premium increases. The premium increases had very little impact on the plan's fixed future explicit subsidies but resulted in a higher liability attributable to future implicit subsidies. The liability loss from the premium experience contributed to the change in the blended discount rate, from 5.35% to 5.23%, which also increased the NOL. The increase in liability from these assumption changes was partially offset by an investment gain, exceeding the expected return, roughly $2.0 million.
6. The following assumptions were changed since the prior valuation:
   - The estimated per capita retiree claims costs and associated trend assumptions were updated to reflect 2024 calendar year premiums and updated trend assumptions for 2025 and after. As part of the update to the retiree claims estimates, the actuarial factors used to estimate individual retiree and spouse costs by age and gender were updated. The new factors are based on a review of historical claims experience by age, gender, and status (active vs. retired) from Segal's claims data warehouse. The updated claims and associated trend assumptions had a combined impact of increasing the TOL.
   - The discount rate decreased from 5.35% to 5.23%. This change increased the TOL.
   - The average HIB for future retirees was updated. This change had a very minor impact.

Summary of key valuation results

Measurement Date		June 30, 2023	June 30, 2022
Disclosure elements for fiscal year ending June 30:	• Service cost[1]	$5,088,059	$6,725,127
	• Total OPEB Liability	193,546,328	181,229,193
	• Plan Fiduciary Net Position	61,165,000	53,571,000
	• Net OPEB Liability	132,381,328	127,658,193
Schedule of contributions for fiscal year ending June 30:	• Actuarially determined contributions	$11,420,000	$10,892,000
	• Actual contributions	11,420,000	10,892,000
	• Contribution deficiency / (excess)	0	0
Demographic data for plan year ending June 30:	• Number of retired members and beneficiaries receiving a health subsidy	1,870	1,806
	• Number of vested terminated members[2]	381	360
	• Number of active members	1,955	1,895
Key assumptions as of June 30:	• Discount Rate	5.23%	5.35%
	• Health care premium trend rates		
	– Non-Medicare medical plans	Actual premium increases for 2023-2024, then 7.375% graded down to 4.50% over 12 years.	Actual premium increases for 2022-2023, then 7.125% graded down to 4.50% over 11 years.
	– Medicare medical plans	Actual premium increases for 2023-2024, then 6.375% graded down to 4.50% over 8 years	Actual premium increases for 2022-2023, then 6.125% graded down to 4.50% over 7 years
	• Health Insurance Benefit (HIB) subsidy increase	0.00%	0.00%

1 The service cost is based on the previous year's valuation, meaning the June 30, 2023 value is based on the valuation results as of June 30, 2022, whereas the June 30, 2022 value is based on the June 30, 2021 valuation results. As a result, this year's decrease in service cost was due to the liability decrease in last year's valuation, which was primarily due to the change in the discount rate from 3.99% as of June 30, 2021 to 5.35% as of June 30, 2022.

2 Includes inactive members due a refund of Pension Plan member contributions.

Important information about actuarial valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan description in this report (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the System. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the System.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, termination, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to health care trends and member enrollment in retiree health benefits. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan's assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

Section 1: Actuarial Valuation Summary

Models	Segal valuation results are based on proprietary actuarial modeling software. The accounting valuation models generate a comprehensive set of liability and cost calculations that are presented to meet accounting standards and client requirements. Our Actuarial Technology and Systems unit, comprising both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary. Our claims costs assumptions are based on proprietary modeling software as well as models that were developed by others. These models generate per capita claims cost calculations that are used in our valuation software. Our Health Technical Services Unit, comprised of actuaries and programmers, is responsible for the initial development and maintenance of our health models. They are also responsible for testing models that we purchase from other vendors for reasonableness. The client team inputs the paid claims, enrollments, plan provisions and assumptions into these models and reviews the results for reasonableness, under the supervision of the responsible actuary.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The valuation is prepared at the request of the Board. Segal is not responsible for the use or misuse of its report, particularly by any other party.
An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
If the Board is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.
Sections of this report include actuarial results that are not rounded, but that does not imply precision.
Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: GASBS 74 Information

General information about the OPEB plan

Plan Description

Plan administration. The East Bay Municipal Utility District (the District) Employees' Retirement System (EBMUDERS or the System) was established in 1937 to administer a single-employer, contributory, defined benefit OPEB plan (the OPEB Plan). The System provides retirement, disability, survivorship, and post-employment health insurance benefits[1] for eligible directors, officers, and employees of the District. The System is administered by a Retirement Board composed of three members appointed by the board of directors of the District, two members elected by and from the active membership, and one (nonvoting) member elected by and from the retired membership of the System. Retirement Ordinance No. 40 (Ordinance) assigns the authority to establish Plan benefit provisions to the District's board of directors. It should be noted that there are two systems in EBMUDERS (i.e., Water System and Wastewater System).

The System is exempt from the regulations of the Employee Retirement Income Security Act of 1974. The System is also exempt from federal income taxes and California franchise taxes.

The System is an integral part of the District and the District appoints the majority of the Retirement Board of the System and provides for most of its funding. Accordingly, the System's operations have been reported as a Pension and Other Employee Benefit Trust Fund in the District's basic financial statements.

Plan membership. All regular full-time employees of the District are members of the Plan, in addition to certain job share and intermittent employees. Eligible employees become members on the first day they are physically on the job. At June 30, 2023, OPEB Plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	1,870
Vested terminated members entitled to but not yet receiving benefits[2]	381
Active members	1,955
Total	4,206

[1] The liabilities and expenses associated with providing retirement, disability and survivorship benefits are reportable under GASB Statements 67 and 68. They have not been included in this report.
[2] Includes inactive members due a refund of Pension Plan member contributions.

Section 2: GASBS 74 Information

Benefits provided. EBMUDERS provides post-employment health insurance benefits to eligible employees.

There are two tiers in effect currently, the 1955/1980 Plan and the 2013 Tier. Employees who became members of the retirement system prior to January 1, 2013, or who have reciprocal membership are in the 1955/1980 Plan. Employees who became members on or after January 1, 2013 are in the 2013 Tier.

1955/1980 Plan members may elect voluntary service retirement upon attaining the age of 54 and completing 5 years of continuous full-time employment.

2013 Tier members may elect voluntary reduced service retirement upon attaining the age of 52 and completing 5 years of continuous full-time employment.

Members may receive disability retirement benefits prior to age 65 if the member is determined to be physically or mentally incapacitated, provided the member has 8 or more years of continuous full-time employment.

Death benefits are payable to the eligible beneficiary of a member who dies before retirement. Survivorship benefits are payable to the spouse/domestic partner of a member who dies after retirement, or who was eligible but had not retired from service, provided the spouse/domestic partner was married to/established domestic partnership with the member at the date of retirement and for at least one year prior to the member's death.

The District provides post-employment health benefits assistance (administered by the Employees' Retirement System) for employees who retire from the District or their surviving spouses. As of June 30, 2023 there were 1,870 participants receiving these health care benefits.

Effective July 1, 1996, a 20-year vesting schedule for full benefits was implemented for all new participants with a lesser benefit paid for less than 20 years of service. Effective January 1, 1999, retired members who had separated from the District prior to their retirement and who had at least 5 years of service also became eligible for the post-employment health benefits based on the same sliding scale. The scale provides for 25% of healthcare benefits for service from 5 through 10 years, 50% of healthcare benefits for service from 10 to 15 years, 75% of healthcare benefits for service from 15 through 20 years, and 100% of healthcare benefits for service of 20 years or more. Effective July 1, 2003, the District reimburses up to $450 per month ($550 per month effective July 1, 2004, for members with a spouse or registered domestic partner) for any health, dental, or long-term care insurance premiums paid by the retiree for themselves, current spouse, or domestic partner, or any health, dental, or long-term care insurance premiums paid by the eligible surviving spouse of a retiree. These benefits are paid from a separate post-employment healthcare benefits fund which up until June 17, 2002, was advance funded entirely by the District on an actuarially determined basis without considering the implicit subsidy. Cash reimbursement of these benefits totaled $9,705,000 in the year ended June 30, 2023. Effective June 18, 2002, a portion of the post-employment healthcare benefit costs is recovered through employee contributions.

Section 2: GASBS 74 Information

The District contributes to the Plan based upon actuarially determined contribution rates adopted by the Retirement Board. Employer contribution rates are adopted annually based upon recommendations received from EBMUDERS' actuary (Segal) after the completion of the annual actuarial valuation. The average employer contribution rate (not reflecting any estimated implicit subsidies) as of June 30, 2023 for 2022-2023 (based on contribution rates adopted for the June 30, 2021 valuation) was 4.64% of pensionable compensation.

All members are required to make contributions to EBMUDERS regardless of the OPEB Plan or tier in which they are included. The average member contribution rate as of June 30, 2023 for 2022-2023 (based on the June 30, 2021 valuation) was 0.09% of pensionable compensation.

Net OPEB liability

Measurement Date	June 30, 2023	June 30, 2022
Components of the Net OPEB Liability		
Total OPEB Liability	$193,546,328	$181,229,193
Plan Fiduciary Net Position	(61,165,000)	(53,571,000)
Net OPEB Liability	$132,381,328	$127,658,193
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	31.60%	29.56%

The Net OPEB Liability (NOL) was measured as of June 30, 2023 and 2022. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement date, while the Total OPEB Liability (TOL) was determined based upon the results of the funding actuarial valuations as of June 30, 2023 and 2022, respectively, with the following exceptions:

- Discount rate has been calculated as a blend of the investment return on plan assets and municipal bond rate in accordance with GASBS 74 and Illustration 2 of Implementation Guide No. 2017-2, Financial Reporting Postemployment Benefit Plans Other Than Pension Plans.
- The implicit subsidy benefit payments are valued based on the age-based costs, which are provided for sample ages in Section 3, Appendix B.

Plan provisions. The plan provisions used in the measurement of the TOL as of June 30, 2023 and 2022 are the same as those used in the EBMUDERS funding valuations as of June 30, 2023 and 2022, respectively.

Actuarial assumptions. The TOL as of June 30, 2023 was determined by an actuarial valuation as of June 30, 2023. The actuarial assumptions used in the June 30, 2023 valuation were based on the results of an experience study (dated November 12, 2020) for the period from July 1, 2016 through June 30, 2020, the June 30, 2022 Economic Assumptions Review report (dated November 8, 2022), and the Retiree Health assumptions letter (dated November 10, 2023). They are the same as the assumptions used in the June 30, 2023 funding actuarial valuation for EBMUDERS except the discount rate is calculated as a blend of the investment return on plan assets and municipal bond rate in accordance with GASBS 74, and implicit subsidy benefit payments are valued based on the age-based costs. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Section 2: GASBS 74 Information

Inflation	2.50%
Salary increases	Ranges from 9.25% to 3.75% based on time from hire, including inflation and real "across the board" salary increases
Discount rate	5.23%, net of OPEB Plan investment expense, including inflation
Other assumptions	Same as those used in the June 30, 2023 funding actuarial valuation
Medical cost trend rates:	
Non-Medicare medical plans	Actual premium increases for 2023-2024, then 7.375% graded down to 4.50% over 12 years.
Medicare medical plans	Actual premium increases for 2023-2024, then 6.375% graded down to 4.50% over 8 years

The TOL as of June 30, 2022 was determined by an actuarial valuation as of June 30, 2022. The actuarial assumptions used in the June 30, 2022 valuation were based on the results of an experience study for the period from July 1, 2016 through June 30, 2020 dated November 12, 2020, the June 30, 2022 Economic Assumptions Review report dated November 8, 2022, and the Retiree Health assumptions letter dated January 12, 2023. They are the same as the assumptions used in the June 30, 2022 funding actuarial valuation for EBMUDERS except the discount rate is calculated as a blend of the investment return on plan assets and municipal bond rate in accordance with GASBS 74, and implicit subsidy benefit payments are valued based on the age-based costs. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Inflation	2.50%
Salary increases	Ranges from 9.25% to 3.75% based on time from hire, including inflation and real "across the board" salary increases
Discount rate	5.35%, net of OPEB Plan investment expense, including inflation
Other assumptions	Same as those used in the June 30, 2022 funding actuarial valuation
Medical cost trend rates:	
Non-Medicare medical plans	Actual premium increases for 2022-2023, then 7.125% graded down to 4.50% over 11 years.
Medicare medical plans	Actual premium increases for 2022-2023, then 6.125% graded down to 4.50% over 7 years

Determination of discount rate and investment rates of return

The 6.75% long-term expected rate of return on OPEB Plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, and by adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before deducting investment expenses, are summarized in the following table. These values were used in the derivation of the 6.75% long-term expected investment rate of return assumption for the actuarial valuation as of June 30, 2023. This information is subject to change every four years based on the actuarial experience study, or every two years based on the interim economic actuarial assumptions study.

Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
Domestic Large Cap Equity	21.75%	5.60%
Domestic Small Cap Equity	3.25%	6.63%
Developed International Large Cap Equity	17.50%	6.39%
Emerging Market Equity	7.50%	8.34%
Core Bonds	20.00%	0.59%
High Yield Bonds	2.50%	3.22%
Bank Loans	2.50%	2.76%
Real Estate	5.00%	5.00%
Covered Calls	20.00%	5.07%
Total	**100.00%**	**4.71%**

Municipal Bond Rate. 3.65% and 3.54% based on the 20-year municipal bond rate for the Bond Buyer 20-Bond GO Index as of June 30, 2023 and June 30, 2022, respectively.

Discount rate. The discount rates used to measure the Total OPEB Liability were 5.23% as of June 30, 2023 and 5.35% as of June 30, 2022. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates for the $450/$550 HIB Subsidy excluding the implicit subsidy that will continue to be paid on a pay-as-you go basis. For this

purpose, only employer contributions that are intended to fund benefits of current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs of future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Only the implicit subsidies for current members were included as employer contributions since the employer is funding the implicit subsidy on a pay-as-you go basis[1]. Based on those assumptions, the OPEB Plan's assets were projected to be sufficient to make projected future benefit payments for current plan members through June 30, 2048. Payments after that date would be funded by employer assets. Therefore, the long-term expected rate of return on OPEB Plan investments (6.75%) was applied to periods of projected benefit payments through June 30, 2048, and the 20-year municipal bond rate (3.65%) was applied to periods after June 30, 2048 to determine the Total OPEB Liability.

[1] See Section 3, Appendix A for derivation

Discount rate and trend sensitivity

Sensitivity of the Net OPEB Liability (NOL) to changes in the discount rate. The following presents the NOL of EBMUDERS as of June 30, 2023, calculated using the discount rate of 5.23%, as well as what EBMUDERS NOL would be if it were calculated using a discount rate that is 1-percentage-point lower (4.23%) or 1-percentage-point higher (6.23%) than the current rate:

	1% Decrease (4.23%)	Current Discount Rate (5.23%)	1% Increase (6.23%)
Net OPEB Liability (Asset)	$152,404,690	$132,381,328	$115,293,853

Sensitivity of the NOL to changes in the trend rate (only applied to implicit subsidy and not the $450/$550 cash subsidy). The following presents the NOL of EBMUDERS as of June 30, 2023, calculated using the current trend rates as well as what EBMUDERS NOL would be if it were calculated using a trend rate that is 1-percentage-point lower or 1-percentage-point higher than the current rate:

	1% Decrease[1]	Current Trend Rate[1]	1% Increase[1]
Net OPEB Liability (Asset)	$128,362,248	$132,381,328	$137,019,557

[1] Current trend rates: Actual premium increases for fiscal year 2023-2024, then 7.375% in 2024-2025 graded down to 4.50% over 12 years for Non-Medicare medical plan costs and 6.375% in 2024-2025 graded down to 4.50% over 8 years for Medicare medical plan costs.

Schedule of changes in EBMUDERS OPEB Liability – Last two fiscal years

Measurement Date	June 30, 2023	June 30, 2022
Total OPEB Liability		
Service cost[1]	$5,088,059	$6,725,127
Interest	9,646,268	8,060,939
Change of benefit terms	- -	- -
Differences between expected and actual experience	(438,245)	5,101,873
Changes of assumptions	10,206,178	(28,015,634)
Benefit payments, including implicit subsidies[2]	(12,185,125)	(11,777,860)
Net change in Total OPEB Liability	**$12,317,135**	**($19,905,555)**
Total OPEB Liability – beginning	**181,229,193**	**201,134,748**
Total OPEB Liability – ending	**$193,546,328**	**$181,229,193**
Plan Fiduciary Net Position		
Contributions – employer	$11,420,000	$10,892,000
Contributions – member	223,000	212,000
Net investment income	5,715,000	(6,105,000)
Benefit payments, including implicit subsidies[2]	(12,185,125)	(11,777,860)
Administrative expense	(59,000)	(46,000)
Other[3]	2,480,125	2,436,860
Net change in Plan Fiduciary Net Position	**$7,594,000**	**($4,388,000)**
Plan Fiduciary Net Position – beginning	**53,571,000**	**57,959,000**
Plan Fiduciary Net Position – ending	**$61,165,000**	**$53,571,000**
Net OPEB Liability – ending	**$132,381,328**	**$127,658,193**
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	**31.60%**	**29.56%**
Covered payroll[4]	**$246,230,567**	**$233,939,981**
Plan Net OPEB Liability as percentage of covered payroll	**53.76%**	**54.57%**

1 The service cost is based on the previous year's valuation, meaning the June 30, 2023 and June 30, 2022 value is based on valuation results as of June 30, 2022 and June 30, 2021, respectively.
2 Sum of cash benefit payments ($9,705,000) and estimated implicit subsidy benefit payments ($2,480,125) for 2023. Sum of cash benefit payments ($9,341,000) and estimated implicit subsidy benefit payments ($2,436,860) for 2022.
3 The total employer contributions for estimated implicit subsidy calculated based on assumptions disclosed in Note 4 of Appendix A.
4 Pensionable payroll reported by EBMUDERS.

Schedule of EBMUDERS contributions – Last ten fiscal years

Year Ended June 30	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll[1]	Contributions as a Percentage of Covered Payroll
2014	$8,457,000	$8,457,000	0	$159,513,251	5.30%
2015	8,964,000	8,964,000	0	166,886,146	5.37%
2016	9,454,000	9,454,000	0	174,586,444	5.42%
2017	9,764,000	9,764,000	0	182,031,838	5.36%
2018	9,875,000	9,875,000	0	193,717,364	5.10%
2019	10,518,000	10,518,000	0	203,541,207	5.17%
2020	11,089,000	11,089,000	0	215,109,948	5.16%
2021	11,372,000	11,372,000	0	221,809,447	5.13%
2022	10,892,000	10,892,000	0	233,939,981	4.66%
2023	11,420,000	11,420,000	0	246,230,567	4.64%

See accompanying notes to this schedule on next page.

[1] These amounts are the pensionable payroll amounts reported by EBMUDERS.

Section 2: GASBS 74 Information

Notes to Schedule:

Methods and assumptions used to establish "actuarially determined contribution" (ADC) rates:

Valuation date	Actuarially determined contribution rates are calculated as of June 30, two years prior to the end of the fiscal year in which contributions are reported
Actuarial cost method	Entry Age Cost Method
Amortization method	Level percent of payroll
Remaining amortization period	Plan changes, assumption changes, and experience gains/losses prior to July 1, 2011 are amortized over separate decreasing 30-year amortization periods. On or after July 1, 2011, plan changes are amortized over separate decreasing 15-year periods; assumption changes are amortized over separate decreasing 25-year periods; and experience gains/losses and retiree health assumption changes are amortized over separate decreasing 20-year periods. The amortization methodology described above was first applied beginning with the June 30, 2021 valuation, which determined the ADC for fiscal year ending June 30, 2022.
Asset valuation method	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized over a five year period, further adjusted, if necessary, to be within 30% of the market value.

Section 2: GASBS 74 Information

Actuarial assumptions:

June 30, 2021 (for the year ended June 30, 2023 ADC)	
Investment rate of return	7.00%
Inflation rate	2.75%
Real across-the-board salary increase	0.50%
Projected salary increases[1]	Ranges from 9.50% to 4.00% based on years of service
Mortality	Healthy: Pub-2010 General Healthy Retiree Headcount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020
Other assumptions	Same as those used in the June 30, 2021 funding actuarial valuation
Medical cost trend rates:	
Non-Medicare medical plans	Actual premium increases for 2021-2022, then 7.375% graded down to 4.50% over 12 years.
Medicare medical plans	Actual premium increases for 2021-2022, then 6.375% graded down to 4.50% over 8 years
June 30, 2020 (for the year ended June 30, 2022 ADC)	
Investment rate of return	7.00%
Inflation rate	2.75%
Real across-the-board salary increase	0.50%
Projected salary increases[1]	Ranges from 9.50% to 4.00% based on years of service
Mortality	Healthy: Pub-2010 General Healthy Retiree Headcount-Weighted Above-Median Mortality Tables with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2020
Other assumptions	Same as those used in the June 30, 2020 funding actuarial valuation
Medical cost trend rates:	
Non-Medicare medical plans	Actual premium increases for 2020-2021, then 6.625% graded down to 4.50% over 9 years.
Medicare medical plans	Actual premium increases for 2020-2021, then 6.125% graded down to 4.50% over 7 years

[1] Includes inflation at 2.75 plus across the board salary increases of 0.50% plus merit and promotional increases.

Section 3: Appendices

Appendix A: Table 1 – Projection of plan fiduciary net position for use in the calculation of discount rate as of June 30, 2023

Year Beginning July 1,	Projected Beginning Plan Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan Fiduciary Net Position (e) = (a) + (b) – (c) – (d) + (e)
2023	$61,165	$14,351	$12,932	$67	$4,174	$66,691
2024	66,691	14,815	13,543	73	4,542	72,432
2025	72,432	14,924	13,763	80	4,926	78,439
2026	78,439	15,269	13,995	86	5,335	84,961
2027	84,961	12,900	14,332	93	5,683	89,119
2028	89,119	13,069	14,545	98	5,962	93,507
2029	93,507	11,951	14,532	103	6,221	97,045
2030	97,045	11,187	14,708	107	6,428	99,845
2031	99,845	11,053	14,775	110	6,610	102,624
2032	102,624	8,364	14,827	113	6,705	102,753
2043	59,354	3,654	16,056	65	3,586	50,472
2044	50,472	3,569	16,138	56	2,981	40,829
2045	40,829	3,139	16,053	45	2,319	30,188
2046	30,188	2,952	16,144	33	1,591	18,554
2047	18,554	2,788	16,029	20	805	6,097
2048	6,097	2,650	15,980	7	0	0
2049	0	2,243	15,660	0	0	0
2050	0	1,871	15,347	0	0	0
2051	0	1,491	15,016	0	0	0
2102	0	0	11	0	0	0
2103	0	0	7	0	0	0
2104	0	0	5	0	0	0
2105	0	0	3	0	0	0
2106	0	0	2	0	0	0

Note that in preparing the projections in the table above, we have not taken into consideration the one-year delay between the date of the contribution rate calculation and the implementation.

Notes

1. Amounts are in $000's and may not total exactly due to rounding.
2. Years 2033-2042 and 2052-2101, have been omitted from this table.
3. Column (b): Projected total contributions include employee and employer normal cost contributions based on closed group projections (based on covered active members as of June 30, 2023); plus employer contributions to the unfunded actuarial accrued liability; plus contributions to fund each year's annual administrative expenses reflecting a 20-year amortization schedule; plus implicit subsidy payments for current plan members as shown on the next page, based on Illustration 2 of Implementation Guide No. 2017-2, Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans. Contributions are assumed to occur halfway through the year, on average.
4. Column (c): Projected benefit payments have been determined in accordance with paragraphs 43-47 of GASB Statement No. 74, and are based on the closed group of active, inactive vested, retired participants, and beneficiaries as of June 30, 2023. The projected benefit payments reflect the health care trend assumptions used in the June 30, 2023 funding valuation report. Benefit payments are assumed to occur halfway through the year, on average. In accordance with paragraph 48 of GASB Statement No. 74, the long-term expected rate of return on Plan investments of 6.75% was applied to periods of projected benefit payments through June 30, 2048, and the index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (3.65%) was applied to periods after June 30, 2048, to determine the discount rate of 5.23%. See the following pages for details.
5. Column (d): Projected administrative expenses are calculated as approximately 0.11% of the projected beginning Plan Fiduciary Net Position amount. The 0.11% portion was based on the actual fiscal year 2022/2023 administrative expenses as a percentage of the beginning Plan Fiduciary Net Position amount as of July 1, 2022. Administrative expenses are assumed to occur halfway through the year, on average.
6. Column (e): Projected investment earnings are based on the assumed investment rate of return on Plan investments of 6.75% per annum.
7. As illustrated in this Appendix, the Plan's Fiduciary Net Position was projected to be available to make projected future benefit payments for current Plan members through June 30, 2048. In other words, the projected 'cross-over date' when projected benefits are not covered by projected assets (before reflecting contributions and investment earnings) occurs between June 30, 2048 and June 30, 2049. Therefore, the long-term expected rate of return on Plan investments of 6.75% per annum was applied to periods of projected benefit payments through June 30, 2048. Benefit payments after June 30, 2048 were discounted at 3.65%, the index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher.

Section 3: Appendices

8. The blended discount rate used for calculating total OPEB liability is based on a model developed by our Actuarial Technology and Systems unit. The model allows the client team, under the supervision of the responsible actuary, control over the entry of future expected contribution income, benefit payments and administrative expenses. The projection of fiduciary net position and the discounting of benefits is part of the model.

Appendix A: Table 2
Projection of contributions – Implicit subsidy only

	Projected Payroll			Projected Contributions		
Year Beginning July 1,	Payroll for Current Plan Members (a)	Payroll for Future Plan Members[1] (b) = (c) – (a)	Total Payroll[2] (c)	Total Implicit Subsidy Contributions = Implicit Subsidy Benefit Payments (d)	Implicit Subsidy Contributions Related to Payroll of Future Plan Members[3] (e) = (b) x 0.93%	Implicit Subsidy Contributions for Current Plan Members[4] (f) = (d) - (e)
2023	$262,273	$0	$262,273	$2,875	$0	$2,875
2024	254,629	15,512	270,141	3,244	144	3,100
2025	248,909	29,336	278,245	3,280	273	3,007
2026	242,636	43,956	286,592	3,372	409	2,963
2027	236,468	58,722	295,190	3,583	546	3,037
2028	229,480	74,566	304,046	3,707	693	3,013
2029	223,032	90,135	313,167	3,615	838	2,777
2030	215,973	106,589	322,562	3,747	991	2,756
2031	209,160	123,079	332,239	3,767	1,145	2,622
2032	201,796	140,410	342,206	3,814	1,306	2,508
2043	118,035	355,659	473,693	5,754	3,308	2,446
2044	109,744	378,160	487,904	5,968	3,517	2,452
2045	101,208	401,333	502,541	6,041	3,732	2,309
2046	93,268	424,349	517,618	6,295	3,946	2,348
2047	85,292	447,855	533,146	6,361	4,165	2,196
2048	77,466	471,674	549,141	6,498	4,387	2,111
2049	69,737	495,878	565,615	6,370	4,612	1,758
2050	62,027	520,557	582,583	6,269	4,841	1,427
2051	54,617	545,444	600,061	6,157	5,073	1,084
2052	47,502	570,560	618,063	5,516	5,306	210

[1] Future plan members assumed to enter plan at the end of the year.
[2] Initial payroll based on June 30, 2023 funding valuation. Future payrolls are projected with assumed annual 3.00% increase.
[3] Normal cost rate adjusted for timing of implicit subsidy benefit of 2013 Tier members.
[4] Numbers may not add up due to rounding.

Appendix A: Table 3
Projection of contributions and benefit payments – Total

	Contributions for Current Plan Members			Benefit Payments		
Year Beginning July 1,	Prefunding (a)	Implicit Subsidy (b)	Total Contributions (c) = (a) + (b)	Cash Subsidy (HIB Subsidy) (d)	Implicit Subsidy (e) = column (d) from Table 2	Total Benefit Payments (f) = (d) + (e)
2023	$11,476	$2,875	$14,351	$10,057	$2,875	$12,932
2024	11,715	3,100	14,815	10,299	3,244	13,543
2025	11,917	3,007	14,924	10,483	3,280	13,763
2026	12,306	2,963	15,269	10,623	3,372	13,995
2027	9,863	3,037	12,900	10,749	3,583	14,332
2028	10,056	3,013	13,069	10,838	3,707	14,545
2029	9,174	2,777	11,951	10,917	3,615	14,532
2030	8,431	2,756	11,187	10,961	3,747	14,708
2031	8,431	2,622	11,053	11,008	3,767	14,775
2032	5,856	2,508	8,364	11,013	3,814	14,827
2043	1,208	2,446	3,654	10,302	5,754	16,056
2044	1,117	2,452	3,569	10,170	5,968	16,138
2045	830	2,309	3,139	10,012	6,041	16,053
2046	604	2,348	2,952	9,849	6,295	16,144
2047	592	2,196	2,788	9,668	6,361	16,029
2048	539	2,111	2,650	9,482	6,498	15,980
2049	485	1,758	2,243	9,290	6,370	15,660
2050	444	1,427	1,871	9,078	6,269	15,347
2051	407	1,084	1,491	8,859	6,157	15,016
2052	370	210	580	8,631	5,516	14,147

Appendix B: Actuarial assumptions and methods for implicit subsidy calculation

Carrier Election and Monthly Premiums — Participants Under Age 65:[1]

These monthly premiums apply to the 70% of future retirees assumed to enroll in an EBMUDERS medical insurance plan.

2023 Calendar Year

Carrier	Single Party	Married/With Domestic Partner	Eligible Survivor
Kaiser HMO	$761.58	$1,523.17	$761.58
Anthem Blue Cross PPO	876.62	1,753.24	876.62
Sutter Health Plus HMO	933.70	1,867.40	933.70

2024 Calendar Year

Carrier	Single Party	Married/With Domestic Partner	Eligible Survivor
Kaiser HMO	$931.22	$1,862.44	$931.22
Anthem Blue Cross PPO	981.81	1,963.62	981.81
Sutter Health Plus HMO	977.00	1,954.00	977.00

2023-2024 Fiscal Year

Carrier[2]	Election Percent	Single Party	Married/With Domestic Partner	Eligible Survivor
Kaiser HMO	70	$846.40	$1,692.81	$846.40
Anthem Blue Cross PPO	25	929.22	1,858.43	929.22
Sutter Health Plus HMO	5	955.35	1,910.70	955.35

[1] We only use monthly premiums for participants under age 65 to determine the implicit subsidy.
[2] We assume 0% of future retirees will enroll in the Kaiser CDHP, Sutter CDHP, and Blue Cross CDHP plans.

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Implicit Subsidy:

Retiree under age 65 and active health insurance premiums have been underwritten together. Under GASBS 74, the health care costs must be valued as if the under age 65 retirees had been underwritten separately from the actives. Any excess of the retiree only per capita costs over the blended active/retiree premiums is the implicit subsidy. The tables below show the annual implicit subsidies for sample ages under different carriers. No implicit subsidy exists for retirees over age 65.

The adjustment of per capita premium medical costs for age and gender and spouse/domestic partner status, are in accordance with Actuarial Standard of Practice (ASOP) No. 6. The actuarial factors used to estimate individual retiree and spouse costs by age and by gender were updated. The new factors are based on a review of historical claims experience by age, gender, and status (active vs retired) from Segal's claims data warehouse.

Amounts shown in the tables below are for both retirees and spouses, at selected ages:

Kaiser HMO

Annual Blended Active/Retiree Premium: $10,157

	Annual Per Capita Costs		Annual Implicit Subsidy Rates	
Age	Male	Female	Male	Female
50	$12,316	$13,005	$2,159	$2,848
55	13,898	14,117	3,741	3,960
60	16,001	15,304	5,844	5,147
64	19,447	16,614	9,290	6,457

Sutter Health Plus HMO

Annual Blended Active/Retiree Premium $11,464

	Annual Per Capita Costs		Annual Implicit Subsidy Rates	
Age	Male	Female	Male	Female
50	$12,059	$12,733	$595	$1,269
55	13,608	13,823	2,144	2,359
60	15,667	14,984	4,203	3,520
64	19,041	16,267	7,577	4,803

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Implicit Subsidy: *(continued)*

Amounts shown in the tables below are for both retirees and spouses, at selected ages:

Anthem Blue Cross PPO

Annual Blended Active/Retiree Premium $11,151

	Annual Per Capita Costs		Annual Implicit Subsidy Rates	
Age	Male	Female	Male	Female
50	$11,969	$12,638	$818	$1,487
55	13,506	13,720	2,355	2,569
60	15,551	14,873	4,400	3,722
64	18,899	16,146	7,748	4,995

WEIGHTED AVERAGE - Use for future retirees

Annual Blended Active/Retiree Premium $10,471

	Annual Per Capita Costs		Annual Implicit Subsidy Rates	
Age	Male	Female	Male	Female
50	$12,217	$12,900	$1,746	$2,429
55	13,785	14,003	3,314	3,532
60	15,872	15,180	5,401	4,709
64	19,289	16,480	8,818	6,009

Appendix C: Definition of terms

Definitions of certain terms as they are used in Statement 75. The terms may have different meanings in other contexts.

Actuarial Present Value of Projected Benefit Payments:	Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.
Actuarial Valuation:	The determination, as of a point in time (the actuarial valuation date), of the service cost, Total OPEB Liability, and related actuarial present value of projected benefit payments for OPEB performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.
Actuarial Valuation Date:	The date as of which an actuarial valuation is performed.
Actuarially Determined Contribution:	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Plan is calculated including: a) Investment return — the rate of investment yield that the Plan will earn over the long-term future; b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates; c) Retirement rates — the rate or probability of retirement at a given age; d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Covered Payroll:	The payroll of the employees that are provided OPEB benefits
Discount Rate:	The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following: 1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the OPEB Plan Fiduciary Net Position is projected (under the requirements of Statement 74) to be greater than the benefit payments that are projected to be made in that period and (b) OPEB plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on OPEB plan investments. 2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

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Entry Age Actuarial Cost Method:	A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the actuarial accrued liability.
Healthcare Cost Trend Rates:	The rate of change in per capita health costs over time
Net OPEB Liability (NOL):	The Total OPEB Liability less the Plan Fiduciary Net Position
Plan Fiduciary Net Position:	Market Value of Assets
Real Rate of Return:	The rate of return on an investment after removing inflation
Service Costs:	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Total OPEB Liability (TOL):	Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Cindy Charan, Director of Human Resources

FROM: Lisa Sorani, Manager of Employee Services

SUBJECT: Approve Retirement Board Resolution Amending Retirement Board Meeting Schedule

SUMMARY

This memo outlines the request to authorize the Retirement Board Resolution amending the Retirement Board meeting schedule.

DISCUSSION

California Government Code Section 54954(a) which requires that each legislative body provide for the time and place of regular meetings by ordinance, resolution or by-laws. The Retirement Board holds meetings based on Retirement Board Rule A-1 which states that "the Retirement Board shall schedule meetings for discharging its responsibilities under the Retirement Ordinance and other applicable laws and regulations. Meetings will be held at times and locations to be determined and shall be announced at least 72 hours in advance."

In 2006, the Retirement Board approved Retirement Board Resolution No. 6631-2 which authorized Retirement Board meetings to continue to be held on the third Thursday of every odd-numbered month beginning in January. In January 2023, the Retirement Board approved Retirement Board Resolution No. 6982 which authorized where a Retirement Board meeting and District Board meeting fall within the same week based on the third Thursday schedule, that staff adjust the Retirement Board schedule forward one week to the 2nd Thursday of the month. Resolution 6982 was intended to avoid requiring members of the Retirement Board who are also members of the Board of Directors to attend two meetings of the governing bodies in the same week.

In further consideration of the schedule, there are also other reasons a Retirement Board meeting may need to be moved to a different date. For example, a Retirement Board member may have a conflict with a conference they need to attend or other business-related conflicts. In addition, at the last Board meeting, there was also a request from a retirement board member to consider moving the start time of meetings to 9 a.m. Thus, the Retirement Board may consider changes to the scheduled regular meeting of the Retirement Board provided that: (1) the Retirement Board

member requesting the schedule change make the request in advance and at least at 2 regular meetings of the Retirement Board prior to the schedule change; and (2) the Retirement Board vote to authorize the schedule change at a prior regular meeting, at least one regular meeting prior to the regular meeting to be rescheduled. The Retirement Board may also authorize, in advance, to start a regular meeting at 9:00 a.m. rather than 8:30 a.m., given the request is made at a prior regular meeting of the Retirement Board.

Attached is an updated Resolution that would allow Retirement Board members the ability to request a change to a meeting date, to 2nd, 3rd, or 4th Thursday of the scheduled month, or change the starting time of a meeting to 9:00 a.m.

NEXT STEPS

Staff requests authorization of the resolution to reflect the changes in the Retirement Board meeting schedule as discussed above.

CC:LS

R.B. RESOLUTION NO. _____

DECLARING THE SCHEDULE OF REGULAR MEETINGS OF
THE RETIREMENT BOARD

Introduced by : _____ Seconded by: _____

WHEREAS, California Government Code Section 54954(a) requires that each legislative body provide for the time and place of regular meetings by ordinance, resolution or by-laws; and

WHEREAS, Retirement Board Rule A-1 authorizes the Retirement Board to schedule meetings for discharging its responsibilities under the Retirement Ordinance and other applicable laws and regulations; and

WHEREAS, pursuant to Retirement Board Rule A-1, the Retirement Board adopted Resolution No. 6631-2, which authorized the Retirement Board to hold its regular meetings six time per year at the East Bay Municipal Utility District Administrative Building, located at 375 11th Street in Oakland, California, at 8:30 a.m. on the third Thursday of every odd-numbered month, beginning with the month of January by majority vote on a motion at the December 1996 regular meeting of the Retirement Board; and

WHEREAS, pursuant to Retirement Board Rule A-1 the Retirement Board adopted Resolutions No. 6982, by majority vote on a motion at the January 19, 2023 regular meeting of the Retirement Board, which authorized the Retirement Board to hold its regular meetings six time per year at the East Bay Municipal Utility District Administrative Building, located at 375 11th Street in Oakland, California, at 8:30 a.m. on the third Thursday of every odd-numbered month, beginning with the month of January, except in months where when the Retirement Board meeting falls on the same week as a regular meeting of the District's Board of Directors; and

WHEREAS, Resolution 6982 authorized that in such instances where the Retirement Board meeting falls on the same week as a regular meeting of the District's Board of Directors, that the Retirement Board meeting shall be held on the second Thursday of that month rather than the third Thursday, and that such schedule will be reviewed and determined at each September Retirement Board meeting; and

WHEREAS, the Retirement Board wishes to have additional flexibility in accommodating the schedules of the members of the Retirement Board; and

WHEREAS, the Retirement Board wishes to further allow itself, under certain circumstances, to hold a meeting on the fourth Thursday of a month on which the regular meeting of the Retirement Board falls, provided that the Retirement Board votes to hold such meeting at a regular meeting of the Retirement Board; and

WHEREAS, the Retirement Board also wishes to allow the Retirement Board to vote to hold a future regular meeting of the Retirement Board to begin at 9:00 am rather than at 8:30 am;

NOWTHEREFORE, BE IT RESOLVED that the Retirement Board does hereby declare that the regular meetings of the Retirement Board shall be held six times per year at the East Bay Municipal Utility District Administrative Building, located at 375 11th Street in Oakland, California at 8:30 a.m. on the third Thursday of every odd-numbered month beginning with the month of January, except where the third Thursday falls on the same week as a regular meeting of the District's Board of Directors. In such circumstance, the meeting of the Retirement Board shall be held on second Thursday of that month.

And while the Retirement Board wishes to keep the schedule as noted above, they have elected to allow a Retirement Board member to request a review of the meeting calendar if said member has a conflict that cannot otherwise be resolved and /or the particular meeting requires full participation. Board members may request to move such meeting to either the second, third or fourth Thursday, and also may request a later start time of 9 a.m. if needed. The Retirement board will review the request and vote, no later than the regular meeting of the Retirement Board immediately prior to the meeting to be changed, to authorize the requested change to the calendar.

President

ATTEST:

Secretary

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Cindy Charan, Director of Human Resources

FROM: Lisa Sorani, Manager of Employee Services

SUBJECT: Confirm Date for the May 2024 Retirement Board Meeting

SUMMARY

This memo outlines the request to consider a change to the date of the May 2024 Retirement Board Meeting from May 9, 2024 to May 23, 2024.

DISCUSSION

The May 2024 Retirement Board meeting was moved from the 3rd Thursday to the 2nd Thursday based on the recently updated Resolution 6982 which was intended was intended to avoid requiring members of the Retirement Board who are also members of the Board of Directors to attend two meetings of the governing bodies in the same week.

The May 2024 Retirement Board Meeting is scheduled to include the Asset Allocation Study, which is an important review that is only done every five years. It is important to have all Retirement Board members present if possible.

At this time, one of the Retirement Board members has a work-related conflict with the scheduled May 9, 2024 meeting date. A move to May 23, 2024 would accommodate both the request that Retirement Board and Board of Director's meetings are not in the same week and this work-related conflict.

NEXT STEPS

Staff suggests the Retirement Board move the May meeting from May 9, 2024 to May 23, 2024 to ensure all Retirement Board members can be present and participate in the Asset Allocation Study.

CC:LS

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Approve Additional Asset Allocation Training

RECOMMENDATION

Consider taking action to direct staff and the Investment Consultant to add additional asset allocation training topics at future Retirement Board meetings.

SUMMARY

Over the past year, the Retirement Board has received training from its Investment Consultant, Meketa, on various asset classes in anticipation of developing a new Asset Allocation Study. A Retirement Board member has asked to explore two additional asset allocation topics: investments in Africa and investments in emerging technologies, including artificial intelligence.

Currently, Meketa plans to conduct modeling at the Retirement Board's May 2024 meeting. Adding the new asset allocation trainings can be done and would delay the May 2024 modeling by one or more meetings (or two to four months). Representatives from Meketa will be available to discuss the timing of introducing new asset allocation trainings.

SDS:RLH

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Meketa Performance and Economic Review

SUMMARY

Under section III, part D of the Retirement System's Statement of Investment Policy and Procedures (the Investment Policy), the Retirement System's investment consultant is required to present quarterly performance reports to the Board. The attached report from the Retirement System's investment consultant, Meketa, provides information on portfolio performance through September 30, 2023.

DISCUSSION

The Retirement System's portfolio had a market value of $2.18 billion as of September 30, 2023 – down from $2.25 billion at the end of the second quarter. The portfolio return was -3.0 percent for the third quarter of 2023. Over a one-year period, the portfolio had a return of 13.9 percent, slightly below the total plan benchmark return of 14.2 percent. The portfolio return remains above the plan benchmark by 0.3 percent over a 20-year period.

SDS:RLH:SGL

Attachment: Q3 2023 Performance Report

MEKETA
INVESTMENT GROUP

East Bay Municipal Utility District Employees' Retirement System

January 18, 2024

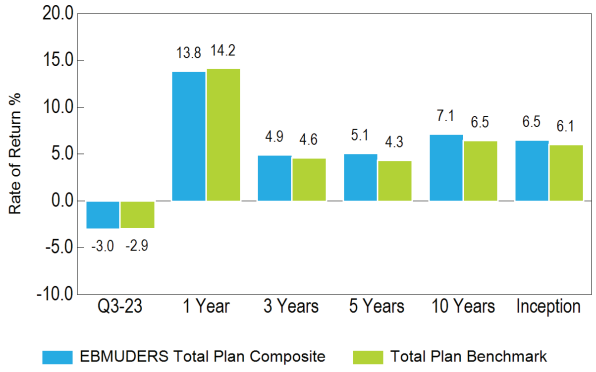
Q3 2023 Performance Report

Agenda

1. Introduction
2. Economic and Market Update as of September 30, 2023
3. Third Quarter Performance Review
4. November 30, 2023 Flash Report
5. Manager Watch Screens
6. Manager Compliance Certification Responses
7. Appendix

Introduction

Return Summary*
Ending September 30, 2023



* Performance is gross of fees.

Summary of Cash Flows

	Third Quarter	One Year
Beginning Market Value	$2,248,004,762	$1,937,045,018
Net Cash Flow	-$3,119,268	-$25,480,984
Capital Appreciation	-$67,604,330	$265,717,131
Ending Market Value	$2,177,281,164	$2,177,281,164

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)
EBMUDERS Total Plan Composite - Gross	**-3.0**	**13.8**	**4.9**	**5.1**	**7.1**	**7.4**
EBMUDERS Total Plan Composite - Net	**-3.0**	**13.7**	**4.8**	**4.9**	**6.9**	--
Total Plan Benchmark	*-2.9*	*14.2*	*4.6*	*4.3*	*6.5*	*7.1*
InvMetrics Public DB > $1B Gross Median	*-2.1*	*10.3*	*5.7*	*5.7*	*6.6*	*7.0*

Historical net returns for the Total Portfolio Aggregate are currently available from 2Q 2011.
InvMetrics Public DB >$1B Universe includes BNY Mellon Public>$1B Fund Universe and IM client data.

Performance Summary

	Market Value ($)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)
EBMUDERS Total Plan Composite	**2,177,281,164**	**100.0**	**-3.0**	**13.8**	**4.9**	**5.1**	**7.1**	**7.4**
Total Plan Benchmark			*-2.9*	*14.2*	*4.6*	*4.3*	*6.5*	*7.1*
US Equity Composite	**568,630,500**	**26.1**	**-3.2**	**20.4**	**9.4**	**9.1**	**11.5**	**9.7**
Russell 3000 Hybrid			*-3.3*	*20.5*	*9.4*	*9.1*	*11.3*	*9.8*
Non-US Equity Composite	**524,849,374**	**24.1**	**-3.8**	**21.5**	**4.3**	**2.6**	**3.5**	**6.5**
MSCI ACWI xUS (blend)			*-3.7*	*21.0*	*4.2*	*3.1*	*3.8*	*6.3*
Covered Calls Composite	**452,961,877**	**20.8**	**-1.5**	**18.7**	**8.3**	**6.5**	--	--
CBOE S&P 500 BuyWrite USD			*-2.8*	*14.6*	*7.2*	*3.0*	--	--
Real Estate Composite	**115,478,269**	**5.3**	**-4.8**	**-5.7**	**7.3**	**5.8**	**8.5**	--
Real Estate Composite Benchmark			*-4.5*	*-1.5*	*6.9*	*5.0*	*7.3*	--
Fixed Income Composite	**510,632,717**	**23.5**	**-2.9**	**1.9**	**-2.8**	**1.1**	**1.7**	**3.4**
Fixed Income Composite Benchmark			*-2.3*	*1.7*	*-2.9*	*0.8*	*1.7*	*3.2*
Cash Composite	**4,728,427**	**0.2**	**1.0**	**4.2**	**1.7**	**2.0**	**1.3**	**1.8**
FTSE T-Bill 3 Months TR			*1.4*	*4.7*	*1.8*	*1.7*	*1.1*	*1.4*

Benchmark composition and history provided at the end of this report.

Economic and Market Update

Data as of September 30, 2023

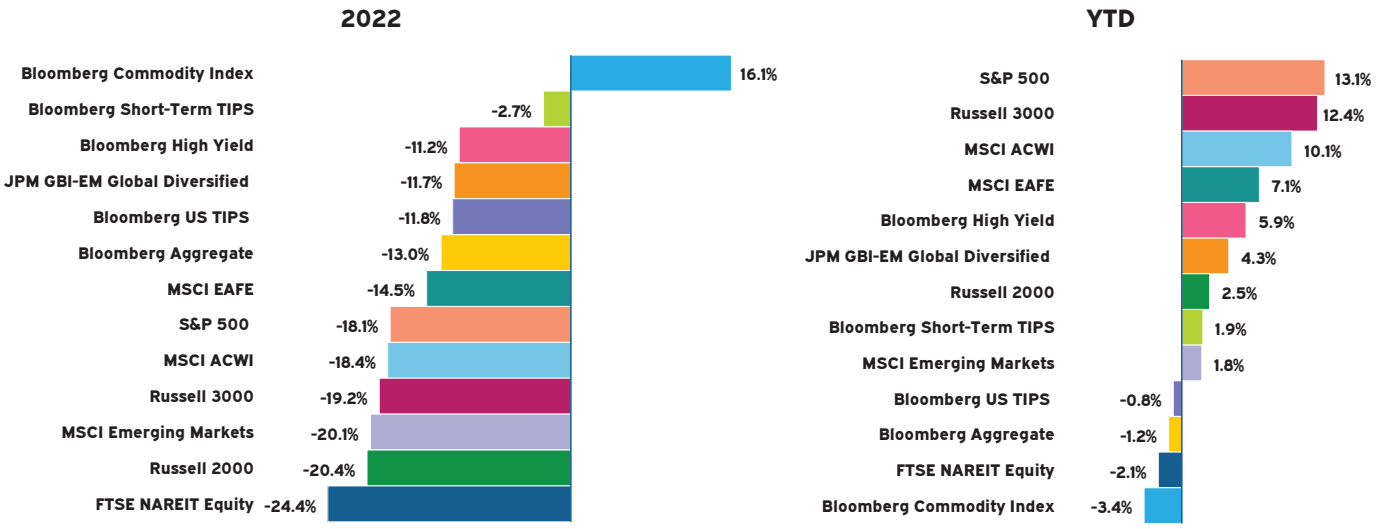
Commentary

→ After a strong July, global assets turned negative in August and September as expectations shifted to the Fed keeping interest rates higher for longer. Weakening economic data from Europe and China, as well as further instability in the Chinese real estate sector and a strong US dollar, weighed on results.

- The Federal Open Markets Committee (FOMC) increased policy rates in July by 0.25% to a range of 5.25% - 5.5% and kept rates at that level at their September meeting. Markets are now largely expecting the FOMC to maintain interest rates at this level through the first half of next year.
- US equity markets (Russell 3000 index) fell in the third quarter (-3.3%), bringing the year-to-date gains to 12.4%. The technology sector remains the key driver of results this year, helped by artificial intelligence optimism.
- Non-US developed equity markets declined more than the US in the third quarter (MSCI EAFE -4.1%) with the strength of the US dollar adding 2.8% to the quarterly declines. This widened the gap between US and international developed equities for the year (12.4% versus 7.1%).
- Emerging market equities experienced the smallest declines in the third quarter (-2.9%). Negative results were driven by China and again the strong US dollar. Emerging markets continue to significantly trail developed market equities year-to-date, returning just 1.8%, again driven by China.
- Interest rates generally rose over the quarter, particularly for longer-dated maturities. The broad US bond market fell (-3.2%) for the quarter and turned negative (-1.2%) year-to-date, as higher income has offset capital losses from rising rates.

→ For the rest of this year, the paths of inflation and monetary policy, slowing global growth, and the wars in Ukraine and Israel will all be key.

Index Returns[1]



→ After a particularly difficult 2022, most public market assets are up thus far in 2023, led by developed market equities.

→ While hopes for a soft landing remain in place, the prospect of higher interest rates for longer weighed on market sentiment in August and September.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Domestic Equity Returns[1]

Domestic Equity	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-4.8	-3.3	13.1	21.6	10.2	9.9	11.9
Russell 3000	-4.8	-3.3	12.4	20.5	9.4	9.1	11.3
Russell 1000	-4.7	-3.1	13.0	21.2	9.5	9.6	11.6
Russell 1000 Growth	-5.4	-3.1	25.0	27.7	8.0	12.4	14.5
Russell 1000 Value	-3.9	-3.2	1.8	14.4	11.1	6.2	8.4
Russell MidCap	-5.0	-4.7	3.9	13.4	8.1	6.4	9.0
Russell MidCap Growth	-4.9	-5.2	9.9	17.5	2.6	7.0	9.9
Russell MidCap Value	-5.1	-4.5	0.5	11.0	11.0	5.2	7.9
Russell 2000	-5.9	-5.1	2.5	8.9	7.2	2.4	6.6
Russell 2000 Growth	-6.6	-7.3	5.2	9.6	1.1	1.6	6.7
Russell 2000 Value	-5.2	-3.0	-0.5	7.8	13.3	2.6	6.2

US Equities: The Russell 3000 Index fell 3.3% in the third quarter but is up 12.4% YTD.

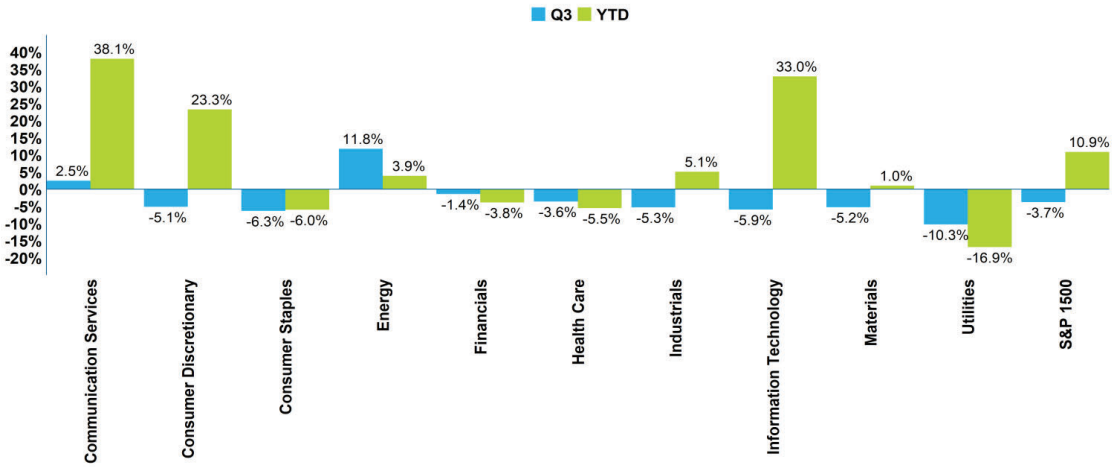
→ US stocks fell 3.3% in the third quarter as healthy economic data and comments from the Fed caused investors to expect interest rates to remain higher for longer.

→ Large cap stocks outperformed small cap stocks during the quarter, bringing their year-to-date outperformance to over 10%. The so called "Magnificent Seven" within the large cap market drove most of this outperformance despite a weak third quarter.

→ Energy strongly led the way during the quarter posting double-digit gains while most other sectors declined. Oil prices rose after Saudi Arabia and Russia extended output cuts.

[1] Source: Bloomberg. Data is as of September 30, 2023.

S&P 1500 Sector Returns[1]



→ Except for energy, which benefited from rising oil prices, all sectors were down in the third quarter.

→ So far in 2023, the communication services (+38.1%) and technology (+33.0%) sectors had the best results on artificial intelligence optimism. Given the continued strength in the US consumer the consumer discretionary sector followed (+23.3%), while more defensive sectors like utilities (-16.9%) and consumer staples (-6.0%) have trailed.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Foreign Equity Returns[1]

Foreign Equity	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-3.2	-3.8	5.3	20.4	3.7	2.6	3.3
MSCI EAFE	-3.4	-4.1	7.1	25.6	5.8	3.2	3.8
MSCI EAFE (Local Currency)	-1.1	-1.3	10.7	20.3	10.8	5.7	6.8
MSCI EAFE Small Cap	-4.4	-3.5	1.8	17.9	1.1	0.8	4.3
MSCI Emerging Markets	-2.6	-2.9	1.8	11.7	-1.7	0.6	2.1
MSCI Emerging Markets (Local Currency)	-1.8	-1.4	4.0	10.9	0.6	2.7	4.9
MSCI China	-2.8	-1.9	-7.3	5.2	-14.3	-4.2	1.7

Foreign Equity: Developed international equities (MSCI EAFE) fell 4.1% in the third quarter bringing the YTD gain to 7.1%. Emerging market equities (MSCI EM) fell 2.9% in the period, rising 1.8% YTD.

→ Outside of the US, equities were also weak during the third quarter with the continued strength of the US dollar being a key driver.

→ Eurozone shares felt pressure from slowing GDP growth and an interest rate hike by the ECB, although inflation continued to ease. By contrast, the UK saw modest gains amid promising economic data including slowing inflation and GDP back around pre-pandemic levels. Japan outperformed regional peers for the quarter due in part to strong earnings.

→ Emerging market performance, while negative, outpaced developed peers. Chinese markets saw losses in-line with other emerging market countries, driven largely by unease surrounding property company Evergrande and a continued lackluster reopening of the economy.

[1] Source: Bloomberg. Data is as of September 30, 2023.

Fixed Income Returns[1]

Fixed Income	September (%)	Q3 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-2.4	-2.9	-0.6	1.6	-4.7	0.3	1.4	5.7	6.0
Bloomberg Aggregate	-2.5	-3.2	-1.2	0.6	-5.2	0.1	1.1	5.4	6.2
Bloomberg US TIPS	-1.8	-2.6	-0.8	1.2	-2.0	2.1	1.7	5.0	6.6
Bloomberg Short-term TIPS	-0.2	0.4	1.9	3.2	1.9	2.8	1.7	5.4	2.5
Bloomberg High Yield	-1.2	0.5	5.9	10.3	1.8	3.0	4.2	8.9	4.0
JPM GBI-EM Global Diversified (USD)	-3.4	-3.3	4.3	13.1	-2.7	0.0	-0.8	6.9	4.9

Fixed Income: The Bloomberg Universal index declined 2.9% in the third quarter and -0.6% YTD.

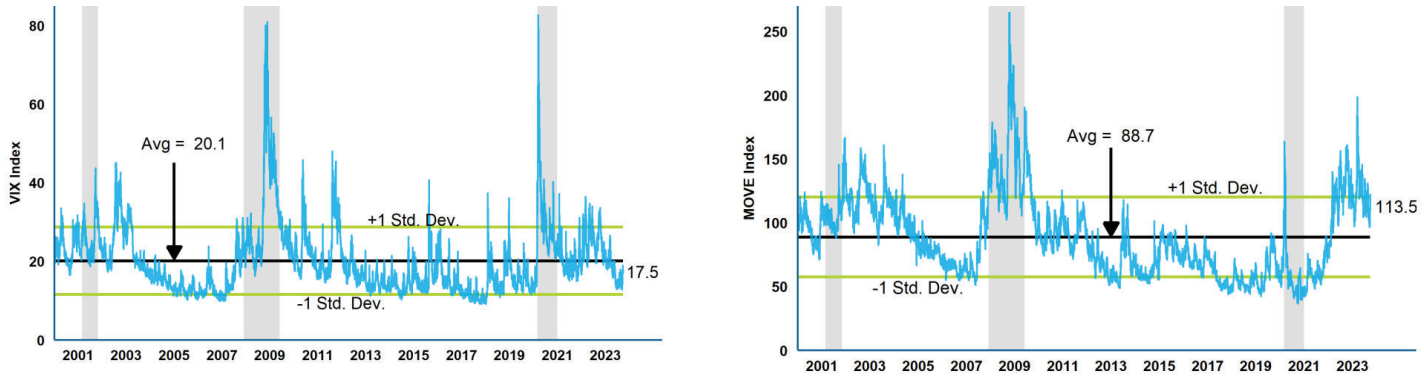
→ The downgrade of US government debt from AAA to AA+ by Fitch combined with expectations for higher borrowing put upward pressure on longer-term rates for the quarter and weighed on overall results. Expectations for policy rates to remain higher for longer than previously expected also contributed to the decline in bonds.

→ The broad US bond market (Bloomberg Aggregate) fell 3.2% for the quarter bringing YTD results into negative territory. The broader TIPS index fell by 2.6%, while the less interest-rate-sensitive short-term TIPS index outperformed most sectors, up 0.4%.

→ High yield bonds were the strongest quarterly performers, up 0.5%, while emerging market bonds were the weakest performer, falling 3.3%. The two asset classes remain the top performers for the year as risk appetite in credit markets remains robust.

[1] Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of September 30, 2023. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.

Equity and Fixed Income Volatility[1]

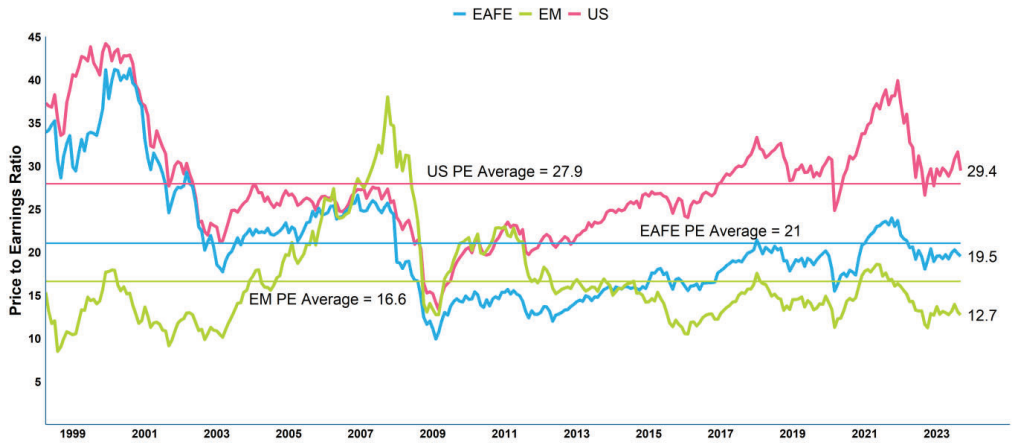


→ Volatility in equities (VIX) increased over the quarter but finished at a level below the long-term average. The recent increase in equity volatility has largely been driven by investors coming to terms that interest rates might remain higher for a longer period.

→ In comparison, volatility in the bond market (MOVE) remains well above its long-run average (88.7) after last year's historic losses and due to continued policy uncertainty. Over the quarter, fixed income volatility finished slightly higher compared to where it started, like equities, driven by expectations for rates to stay higher for longer.

[1] Equity Volatility – Source: FRED. Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of September 2023. The average line indicated is the average of the VIX and MOVE values between January 2000 and September 2023.

Equity Cyclically Adjusted P/E Ratios[1]

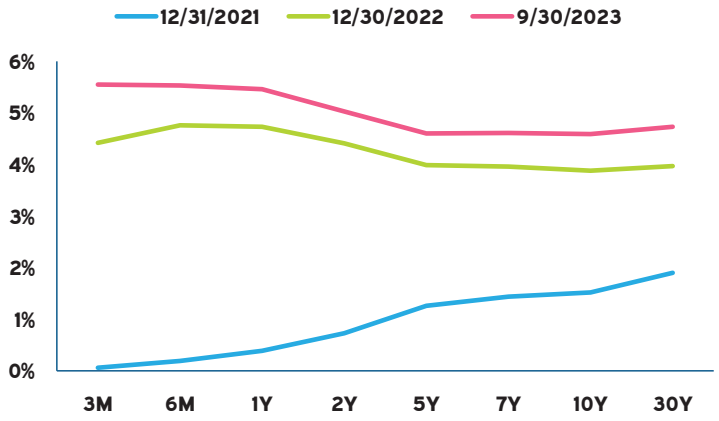


→ Given the strong technology-driven rally this year, the US equity price-to-earnings ratio increased above its long-run (21st century) average. With the equity market decline in August and September the P/E ratio fell from its recent peak.

→ International developed market valuations are below their own long-term average, with those for emerging markets the lowest and well under the long-term average (close to one standard deviation below).

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of September 2023. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end respectively.

US Yield Curve[1]



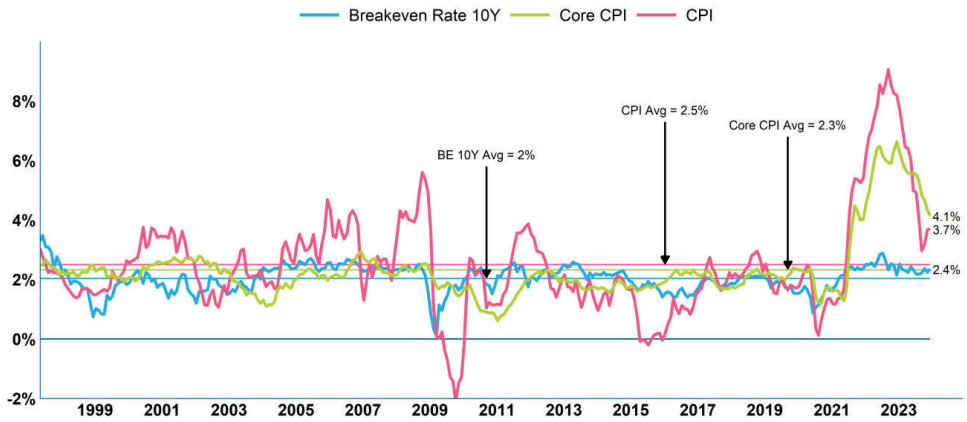
→ Overall rates have continued to increase this year, particularly at the policy sensitive front-end of the yield curve, but at much slower pace compared to last year.

→ Over the quarter, very short-term interest rates (two years or less) increased only slightly as monetary policy has likely reached close to its terminal rate for this cycle. By contrast, longer-term rates rose dramatically as US debt was downgraded and investors came to terms with rates remaining higher for longer. The ten-year Treasury yield increased from 3.8% to 4.6% over the quarter.

→ Because of the dynamic above, the yield curve's inversion decreased with the spread between two-year and ten-year Treasuries finishing the quarter at -0.47% (it started the quarter at -1.05%).

[1] Source: Bloomberg. Data is as of September 30, 2023.

Ten-Year Breakeven Inflation and CPI[1]



→ After the steady decline in inflation from the June 2022 peak, consumer prices recently increased driven by energy prices.

→ Year-over-year headline inflation was flat at 3.7% coming in slightly higher than expectations as improvements in energy prices were offset by higher shelter costs.

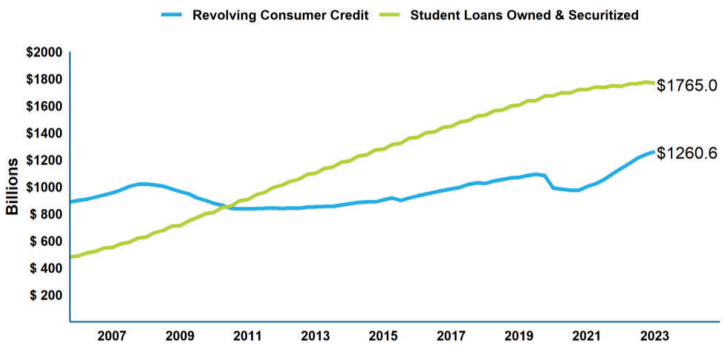
→ Core inflation – excluding food and energy – continued its decline (4.3% to 4.1%) year-over-year. It remains stubbornly high, though, driven by shelter costs (+7.2%), particularly owners' equivalent rent, and transportation services (+9.1%).

→ Inflation expectations (breakevens) remain well below current inflation as investors continue to expect inflation to track back toward the Fed's 2% average target.

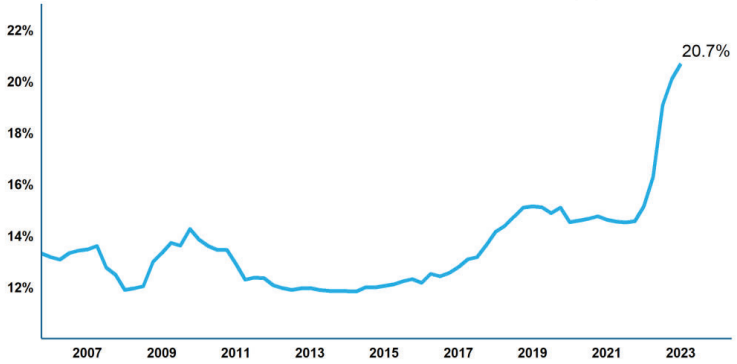
[1] Source: FRED. Data is as September 30, 2023. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

US Consumer Under Stress[1]

Revolving Consumer Credit & Student Loans ($B)



Consumer Credit Card Interest Rates (%)



→ Despite the strong labor market and higher wages, pressures have started to build on the US consumer. This is an important consideration as consumer spending has been an important driver of economic growth.

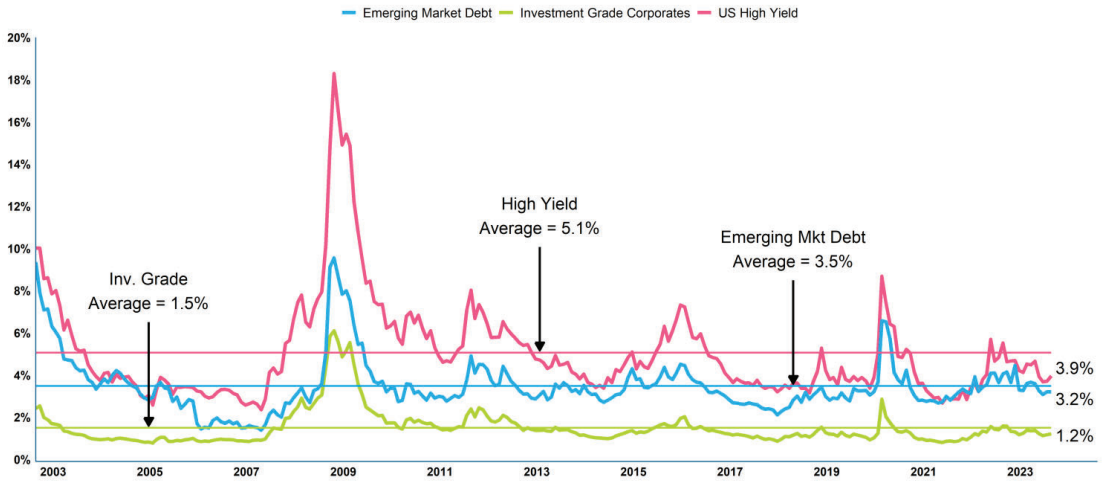
→ Revolving consumer credit surged to new highs in 2023 even as credit card interest rates hit levels not seen before (the prior peak was around 19% in the 1980s).

→ The return of student loan repayments after a three-year pandemic-related reprieve could add to pressures on consumers' budgets. This might be partially balanced by recently initiated repayment and forgiveness programs.

→ As we look ahead, the strength of the US consumers will remain key as they make up most of domestic growth (GDP).

[1] Source: FRED. The most recent data is as June 30, 2023. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.

Credit Spreads vs. US Treasury Bonds[1]

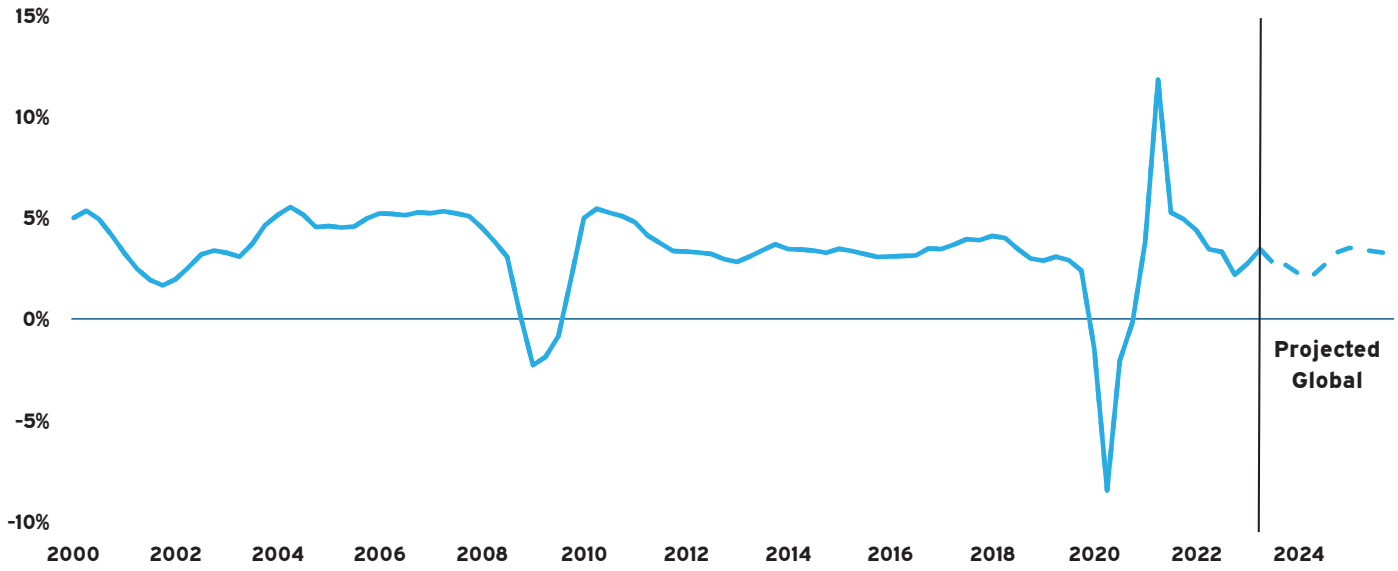


→ Credit spreads (the added yield above a comparable maturity Treasury) largely remained unchanged over the quarter.

→ High yield spreads remain well below the long-term average given the overall risk appetite this year. Investment grade and emerging market spreads are also below their respective long-term averages, but by smaller margins.

[1] Sources: Bloomberg. Data is as of September 30, 2023. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.

Global Real Gross Domestic Product (GDP) Growth[1]



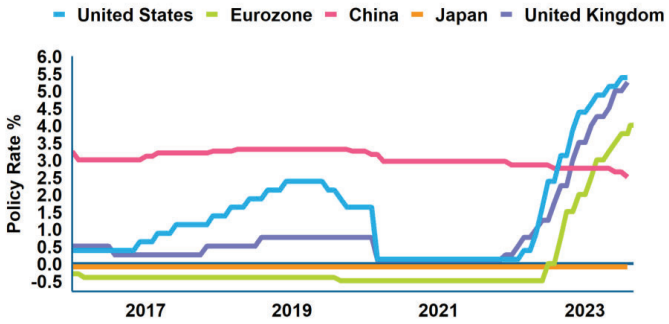
→ Global economies are expected to slow this year compared to 2022. The risk of recession remains elevated given policymakers' aggressive tightening, but optimism has started to grow over some central banks potentially navigating a soft landing.

→ The delicate balancing act of central banks trying to reduce inflation without dramatically disrupting labor markets and depressing economic growth, will remain key.

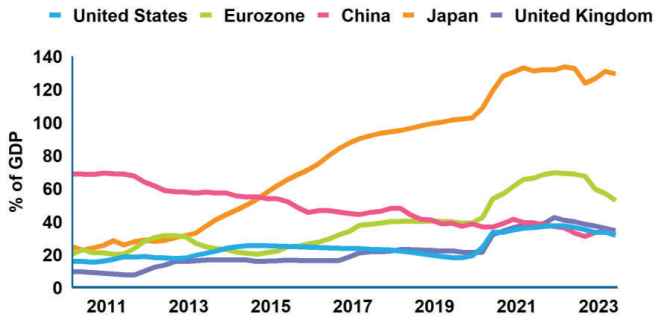
[1] Source: Oxford Economics (World GDP, US$ prices & PPP exchange rate, real, % change YoY). Updated September 2023.

Central Bank Response[1]

Policy Rates



Balance Sheet as % of GDP



→ Slowing inflation and growth have led to expectations for a reduction in the pace of aggressive policy tightening.

→ In July the Fed raised rates another 25 basis points to a range of 5.25% to 5.50% and then kept rates at this level at their September meeting. Markets are expecting at most one more hike later this year.

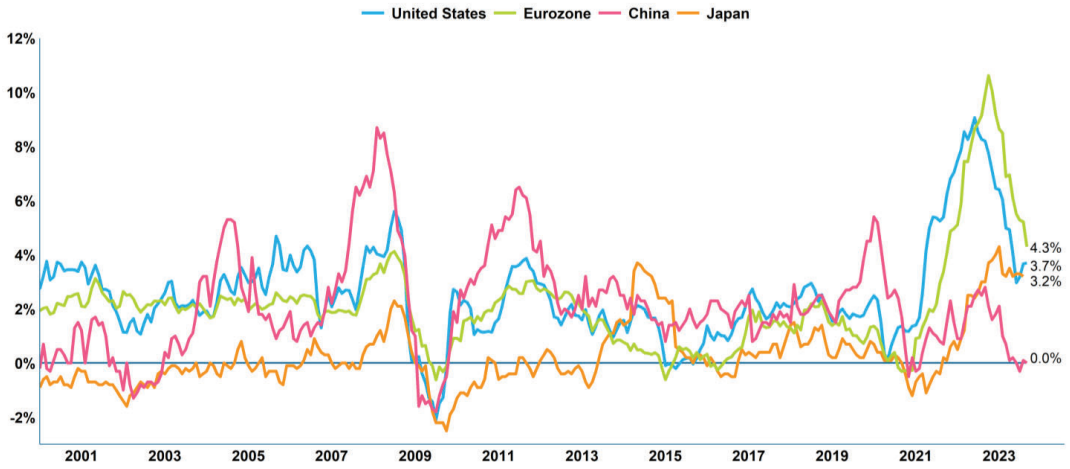
→ The European Central Bank also increased rates in July, with an additional hike in September, but rates remain lower than in the US. In Japan, expectations have increased that the BOJ will end its negative interest rate policy due to rising inflation.

→ The central bank in China has continued to cut interest rates and inject liquidity into the banking system, as weaker than expected economic data appears to indicate a widespread slowdown.

→ Risks remain for a policy error as central banks attempt to balance bringing down inflation, maintaining financial stability, and supporting growth.

[1] Source: Bloomberg. Policy rate data is as of September 30, 2023. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of June 30, 2023.

Inflation (CPI Trailing Twelve Months)[1]



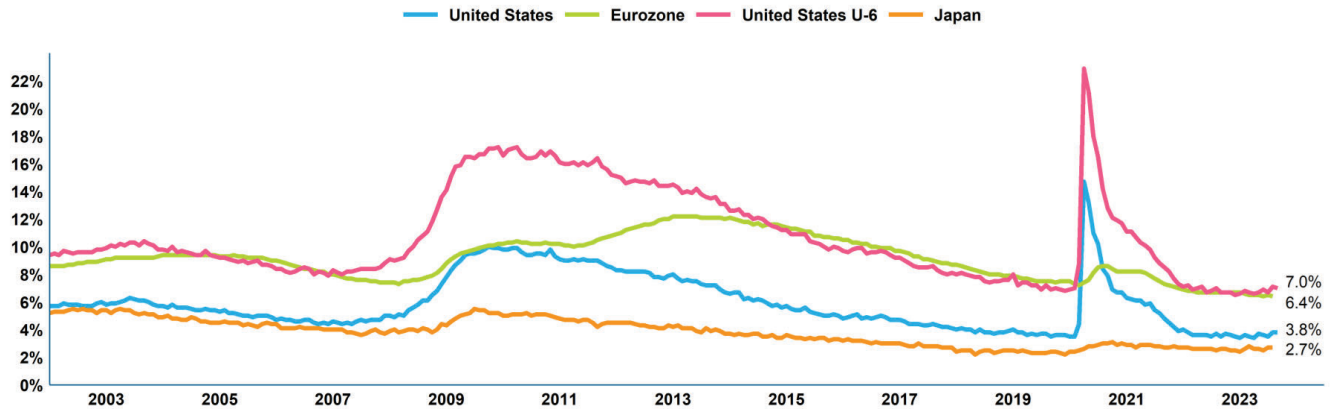
→ The inflation picture remains mixed across the major economies.

→ In the US, inflation was flat at 3.7%, influenced by rising shelter costs, while eurozone inflation remained higher than the US at 4.3%, a level well off its peak, however. Despite 2023's significant declines in the US and Europe, inflation levels remain elevated compared to central bank targets.

→ Inflation in Japan has increased to levels not seen in almost a decade largely driven by food and home related items. In China, deflationary pressures eased but prices were flat from a year prior.

[1] United States CPI and Eurozone CPI – Source: FRED. Japan CPI and China CPI - Source: Bloomberg. Data is as September 30, 2023. The most recent data for Japanese and Eurozone inflation is as of August 2023.

Unemployment[1]



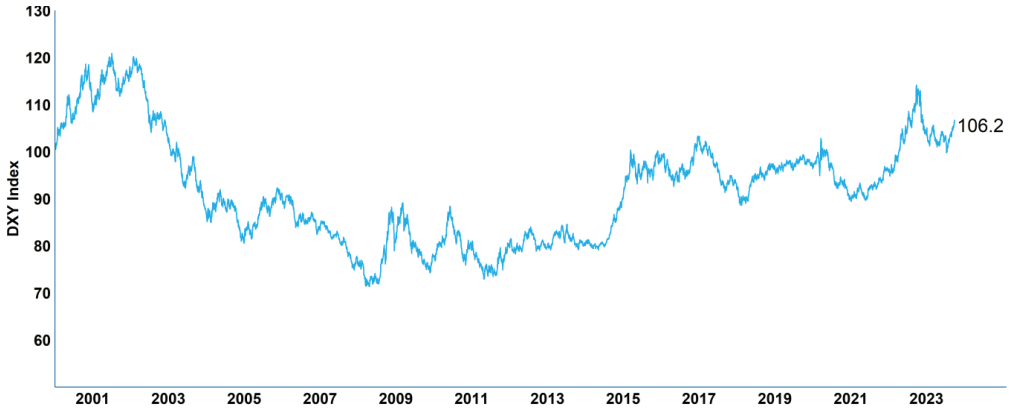
→ Overall, the US labor market remains healthy with the unemployment rate relatively low, wage growth now positive in real terms, and initial claims for unemployment staying subdued. The pace of wage growth has slowed though, and despite remaining elevated, the number of job openings has declined from recent highs.

→ In September, unemployment remained at 3.8%, a level only 0.2% higher than the start of the quarter. The labor force participation rate remained at 62.8% well off the lows of the pandemic (60.1%) but not back to pre-pandemic levels (63.3%). Broader measures of unemployment (U-6) finished the quarter at 7.0% up only slightly from the end of June (6.9%).

→ Unemployment in Europe has also declined but remains higher than the US, while levels in Japan have been flat through the pandemic given less layoffs.

[1] Eurozone Unemployment - Source: Bloomberg. Japan, United States, United States U-6 Unemployment – Source: FRED. Data is as September 30, 2023, for the US. The most recent data for Eurozone unemployment is as of August 2023 and Japanese unemployment is as of August 2023.

US Dollar versus Broad Currencies[1]



→ After a strong 2022, the US dollar declined late last year and into early this year as weaker economic data and lower inflation led to investors anticipating the end of FOMC tightening.

→ Recently though, the dollar reversed course and appreciated against major currencies as relative growth remains strong and investors anticipate the FOMC keeping interest rates higher for longer.

→ For the rest of this year, the track of inflation across economies and the corresponding monetary policies will be key drivers of currency moves.

[1] Source: Bloomberg. Data as of September 30, 2023.

Summary

Key Trends:

→ The impact of inflation still above policy targets will remain key, with bond market volatility likely to stay high.

→ Global monetary policies could diverge going forward. The risk of policy errors remains elevated as central banks try to reduce persistent inflation while not tipping their economies into recession.

→ Growth is expected to slow globally this year, with many economies forecasted to tip into recession. However, optimism has been building that some economies could experience a soft landing. Inflation, monetary policy, and the war will all be key.

→ In the US, consumers could feel pressure as certain components of inflation remain high (e.g., shelter), borrowing costs are elevated, and the job market may weaken.

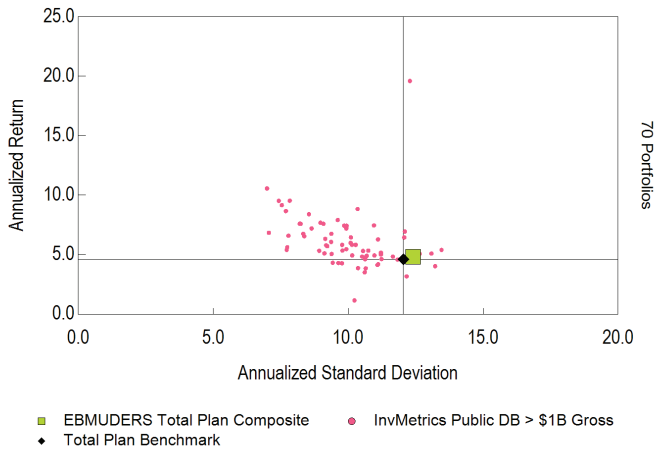
→ The key for US equities going forward will be whether earnings can remain resilient if growth continues to slow. Also, the future paths of the large technology companies that have driven market gains will be important.

→ Equity valuations remain lower in emerging and developed markets, but risks remain, including the potential for recent strength in the US dollar to persist, higher inflation weighing particularly on Europe, and China's sluggish economic reopening and on-going weakness in the real estate sector. Japan's recent hint at potentially tightening monetary policy along with changes in corporate governance in the country could influence relative results.

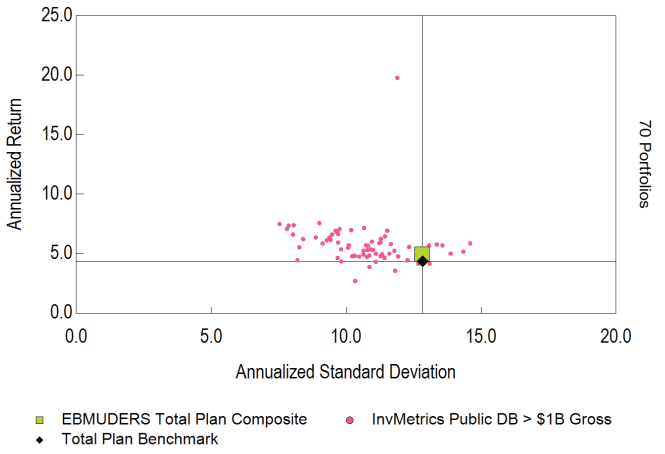
→ After month-end, heightened tensions in Israel could add to overall uncertainty and drive safe haven flows.

Third Quarter Performance Review

Annualized Return vs. Annualized Standard Deviation
3 Years Ending September 30, 2023



Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2023



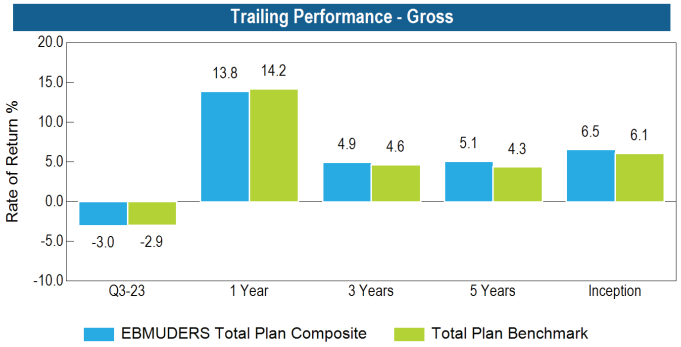
3 Years Ending September 30, 2023

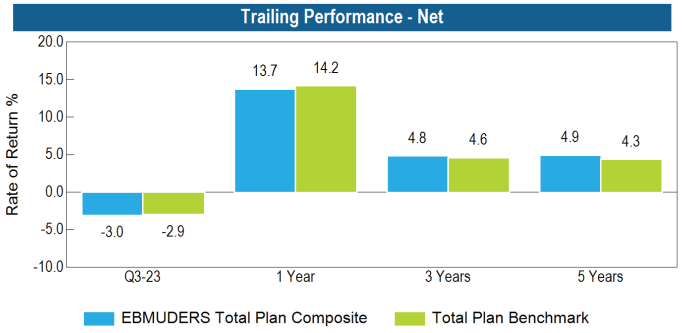
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	4.93%	12.40%	0.26
Total Plan Benchmark	4.59%	12.04%	0.24

5 Years Ending September 30, 2023

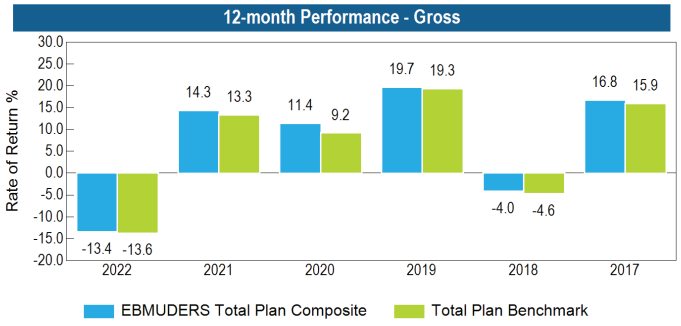
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	5.07%	12.80%	0.27
Total Plan Benchmark	4.34%	12.83%	0.21

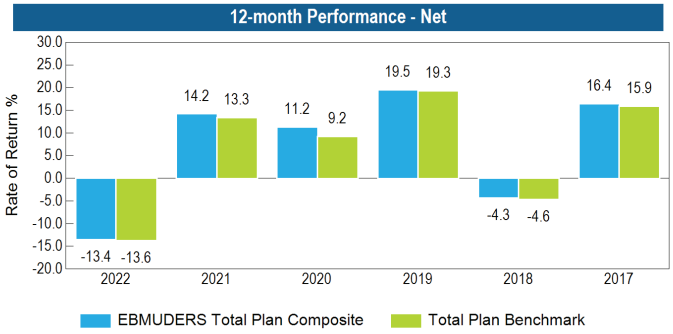
EBMUDERS Total Plan Composite | As of September 30, 2023





	QTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	2022	2021	2020	2019	2018	2017
EBMUDERS Total Plan Composite - Gross	**-3.0**	**13.8**	**4.9**	**5.1**	**7.1**	**-13.4**	**14.3**	**11.4**	**19.7**	**-4.0**	**16.8**
EBMUDERS Total Plan Composite - Net	**-3.0**	**13.7**	**4.8**	**4.9**	**6.9**	**-13.4**	**14.2**	**11.2**	**19.5**	**-4.3**	**16.4**
Total Plan Benchmark	*-2.9*	*14.2*	*4.6*	*4.3*	*6.5*	*-13.6*	*13.3*	*9.2*	*19.3*	*-4.6*	*15.9*
InvMetrics Public DB > $1B Gross Median	*-2.1*	*10.3*	*5.7*	*5.7*	*6.6*	*-11.1*	*14.9*	*11.5*	*16.7*	*-3.7*	*16.2*



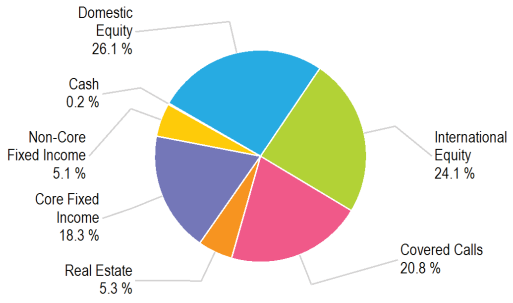


Asset Allocation vs. Target

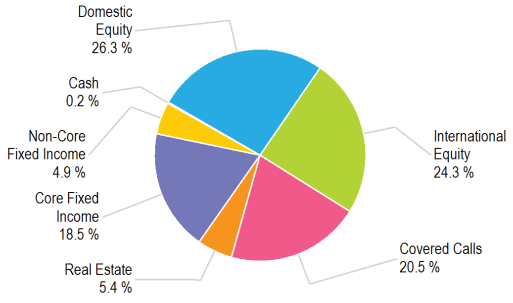
	Current ($)	Current (%)	Policy (%)	Difference* (%)	Within Range
Domestic Equity	568,630,500	26.1	25.0	1.1	Yes
International Equity	524,849,374	24.1	25.0	-0.9	Yes
Covered Calls	452,961,877	20.8	20.0	0.8	Yes
Real Estate	115,478,269	5.3	5.0	0.3	Yes
Core Fixed Income	399,206,328	18.3	20.0	-1.7	Yes
Non-Core Fixed Income	111,426,389	5.1	5.0	0.1	Yes
Cash	4,728,428	0.2	0.0	0.2	Yes
Total	**2,177,281,164**	**100.0**	**100.0**		

*Difference between Policy and Current Allocation

September 30, 2023 : $2,177,281,164



June 30, 2023 : $2,248,004,762



Policy rebalancing ranges shown are for non-turbulent market periods. The Plan also has established rebalancing ranges to be in effect during turbulent market periods.

Domestic and International Equity					
	Market Value	QTD	1 Yr	3 Yrs	5 Yrs
US Equity Composite	**568,630,500**	**-3.2**	**20.4**	**9.4**	**9.1**
Russell 3000 Hybrid		*-3.3*	*20.5*	*9.4*	*9.1*
Northern Trust Russell 3000	567,734,131	-3.2	20.5	9.4	9.1
Russell 3000		*-3.3*	*20.5*	*9.4*	*9.1*
Non-US Equity Composite	**524,849,374**	**-3.8**	**21.5**	**4.3**	**2.6**
MSCI ACWI xUS (blend)		*-3.7*	*21.0*	*4.2*	*3.1*
Northern Trust ACWI ex US	524,849,374	-3.8	21.5	4.0	2.7
MSCI ACWI ex USA Gross		*-3.7*	*21.0*	*4.2*	*3.1*

	Covered Calls				
	Market Value	QTD	1 Yr	3 Yrs	5 Yrs
Covered Calls Composite	**452,961,877**	**-1.5**	**18.7**	**8.3**	**6.5**
CBOE S&P 500 BuyWrite USD		*-2.8*	*14.6*	*7.2*	*3.0*
Parametric BXM	153,141,748	-1.1	17.7	8.8	6.1
CBOE S&P 500 BuyWrite USD		*-2.8*	*14.6*	*7.2*	*3.0*
Parametric Delta Shift	153,423,917	-2.5	23.1	10.6	9.3
CBOE S&P 500 BuyWrite USD		*-2.8*	*14.6*	*7.2*	*3.0*
Van Hulzen	146,396,212	-0.7	15.0	5.4	3.9
CBOE S&P 500 BuyWrite USD		*-2.8*	*14.6*	*7.2*	*3.0*

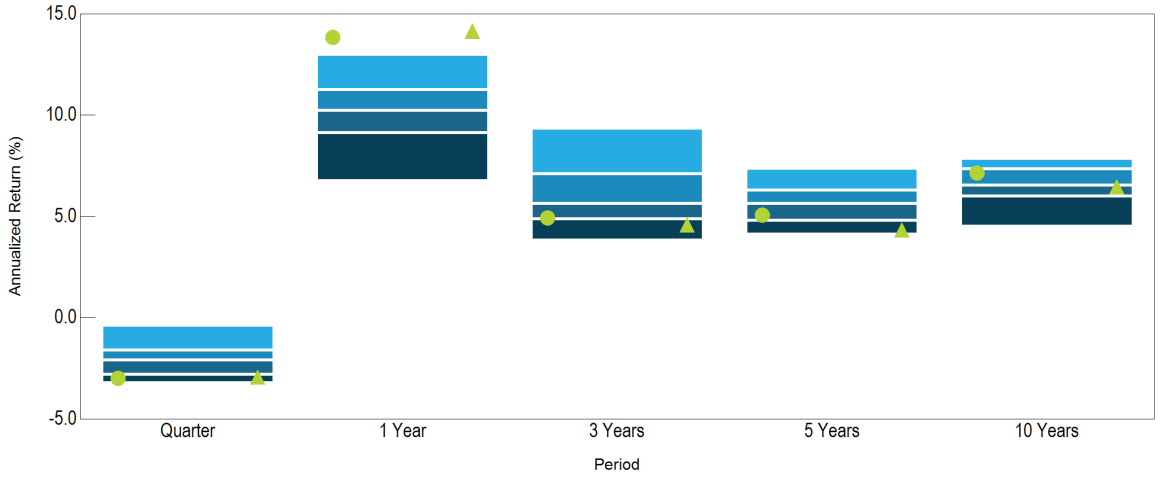
Fixed Income Composite	Market Value	QTD	1 Yr	3 Yrs	5 Yrs
Fixed Income Composite	**510,632,717**	**-2.9**	**1.9**	**-2.8**	**1.1**
Fixed Income Composite Benchmark		*-2.3*	*1.7*	*-2.9*	*0.8*
CS McKee	201,853,438	-3.2	1.1	-5.1	0.3
Bloomberg US Aggregate TR		*-3.2*	*0.6*	*-5.2*	*0.1*
Garcia Hamilton	197,352,890	-5.0	-1.1	-3.7	--
Garcia Hamilton Custom Index		*-3.2*	*-0.9*	*-3.9*	--
MacKay Shields (HY)	56,897,918	1.3	9.7	4.2	--
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr		*0.9*	*9.5*	*3.1*	--
Federated Investment Counseling (Bank Loans)	54,528,470	2.5	8.4	2.9	--
60% CredSuisLevLoan/40% BBStGovCorp		*2.5*	*9.2*	*4.1*	--

Benchmark composition and history provided at the end of this report.

Real Estate Composite	Market Value	QTD	1 Yr	3 Yrs	5 Yrs
Real Estate Composite	**115,478,269**	**-4.8**	**-5.7**	**7.3**	**5.8**
Real Estate Composite Benchmark		*-4.5*	*-1.5*	*6.9*	*5.0*
RREEF America II Lag	60,417,439	-2.6	-12.4	7.7	7.0
NCREIF NPI Mo 1 Qtr Lag		*-2.0*	*-6.5*	*7.0*	*6.0*
CenterSquare	55,060,830	-7.2	3.2	6.0	3.8
FTSE NAREIT Equity REIT		*-7.1*	*3.0*	*5.8*	*2.8*

RREEF American II Performance results are lagged one quarter.

InvMetrics Public DB > $1B Gross Return Comparison
Ending September 30, 2023

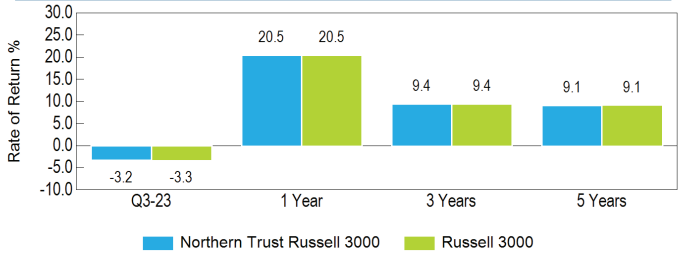


	Return (Rank)									
5th Percentile	-0.4		13.0		9.4		7.4		7.9	
25th Percentile	-1.6		11.3		7.1		6.3		7.4	
Median	-2.1		10.3		5.7		5.7		6.6	
75th Percentile	-2.8		9.2		4.9		4.8		6.0	
95th Percentile	-3.2		6.8		3.9		4.1		4.5	
# of Portfolios	73		71		70		70		66	
EBMUDERS Total Plan Composite	-3.0	(88)	13.8	(3)	4.9	(74)	5.1	(67)	7.1	(32)
Total Plan Benchmark	-2.9	(87)	14.2	(3)	4.6	(84)	4.3	(92)	6.5	(55)

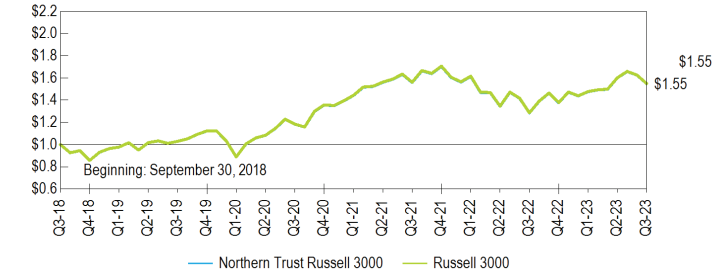
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust Russell 3000	0.00%	1.00	-0.43	0.38	0.07%	1.00	99.59%	99.91%
Russell 3000	0.00%	1.00	--	0.38	0.00%	1.00	100.00%	100.00%

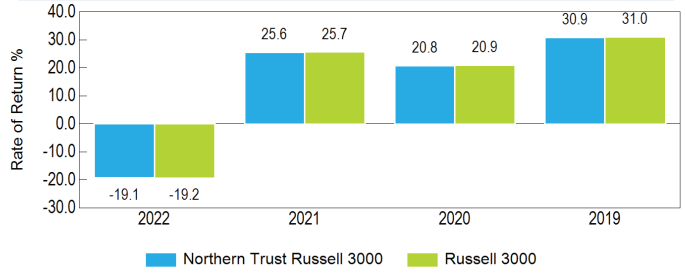
Trailing Period Performance



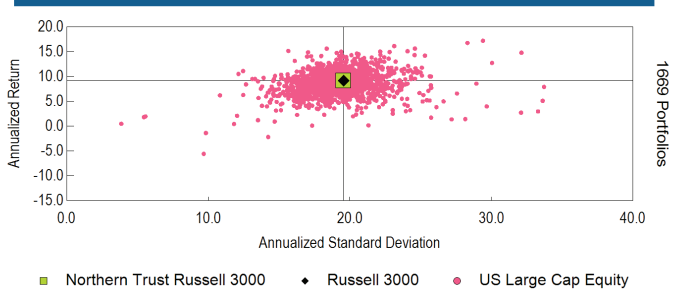
Growth of $1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

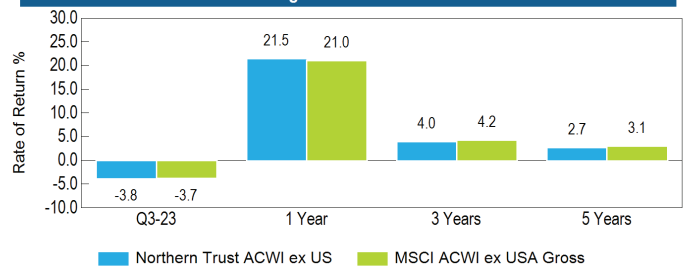


NorthernTrust Russell 3000 has an inception date of June 2018.

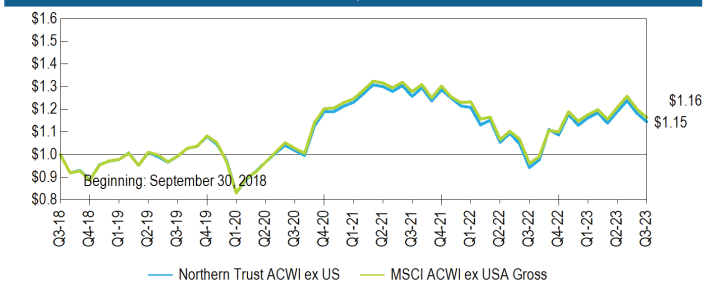
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust ACWI ex US	-0.03%	1.01	-0.21	0.06	1.81%	0.99	102.96%	101.81%
MSCI ACWI ex USA Gross	0.00%	1.00	--	0.08	0.00%	1.00	100.00%	100.00%

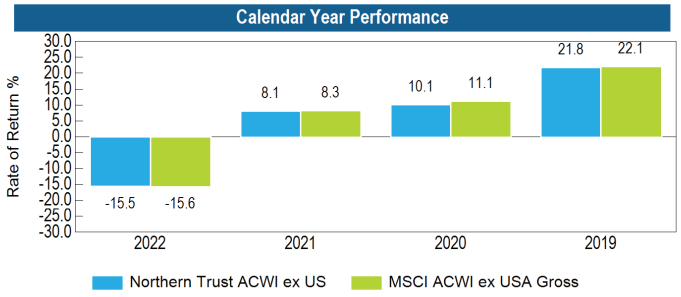
Trailing Period Performance



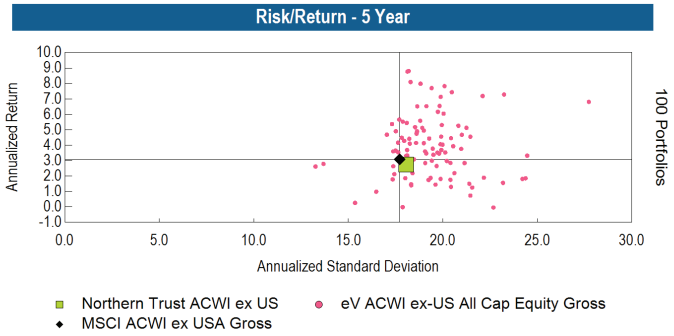
Growth of $1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

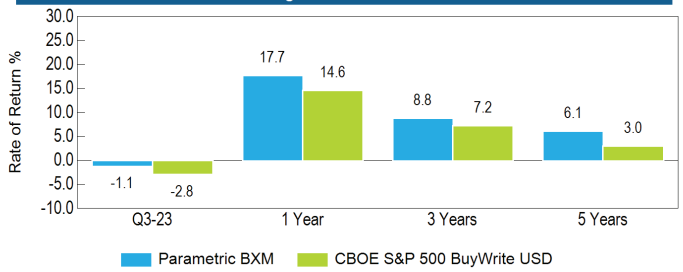


Northern Trust ACWI ex US has an inception date of June 2018.

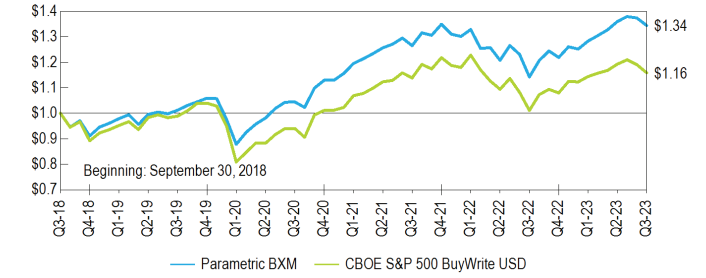
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Parametric BXM	0.27%	0.83	0.70	0.36	4.21%	0.91	97.44%	86.79%
CBOE S&P 500 BuyWrite USD	0.00%	1.00	--	0.10	0.00%	1.00	100.00%	100.00%

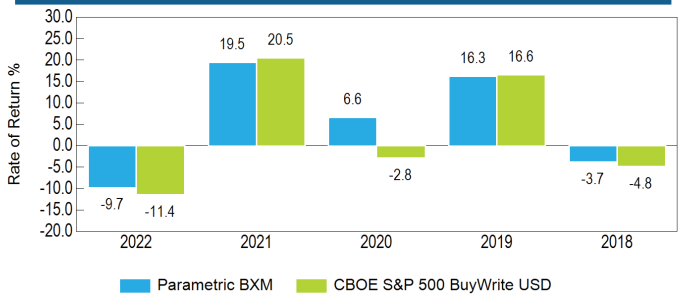
Trailing Period Performance



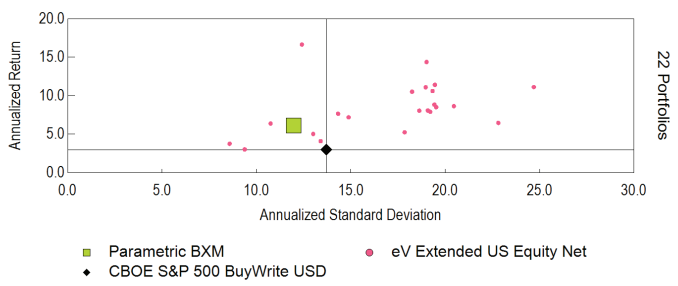
Growth of $1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

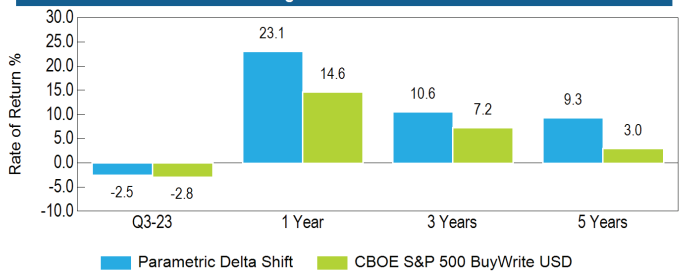


Parametric BXM has an inception date of March 2014.

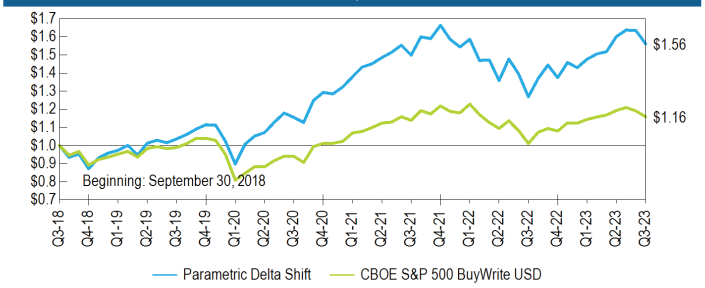
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Parametric Delta Shift	0.47%	1.18	0.82	0.42	7.37%	0.84	197.72%	113.57%
CBOE S&P 500 BuyWrite USD	0.00%	1.00	--	0.10	0.00%	1.00	100.00%	100.00%

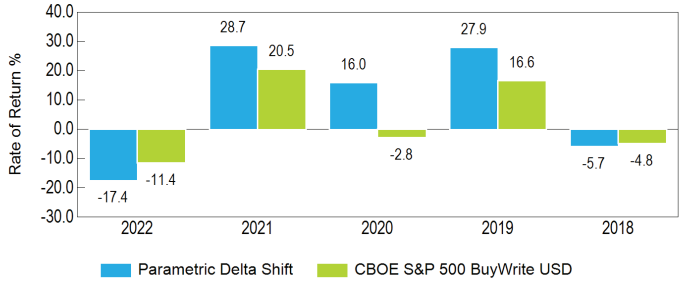
Trailing Period Performance



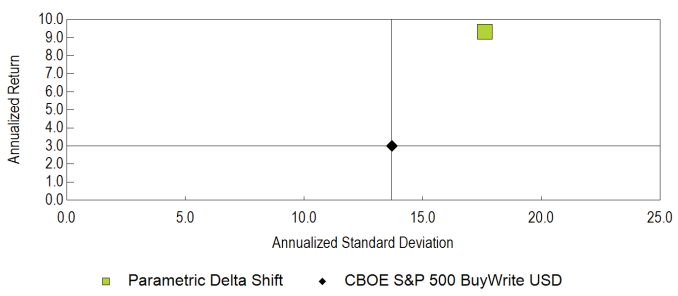
Growth of $1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

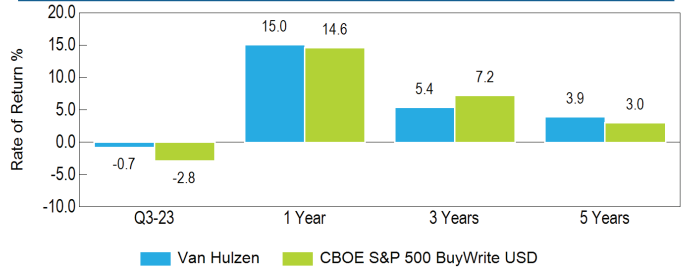


Parametric Delta Shift has an inception date of March 2014.

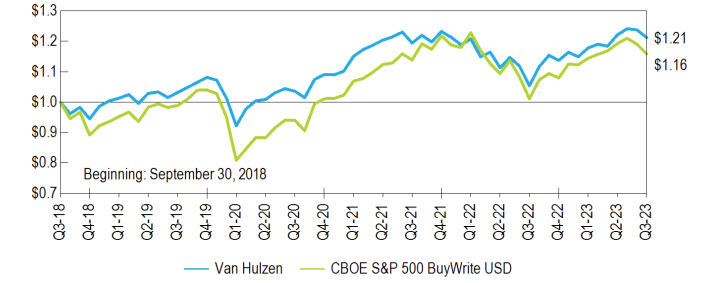
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Van Hulzen	0.12%	0.69	0.12	0.20	5.78%	0.85	73.75%	81.67%
CBOE S&P 500 BuyWrite USD	0.00%	1.00	--	0.10	0.00%	1.00	100.00%	100.00%

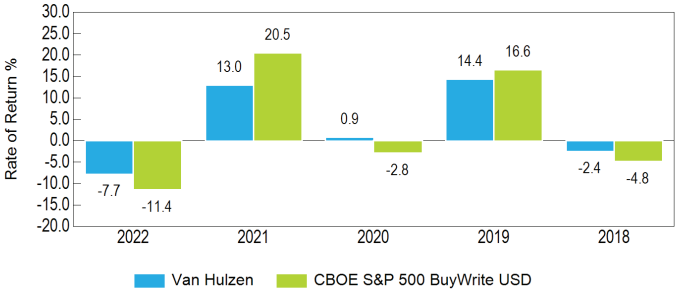
Trailing Period Performance



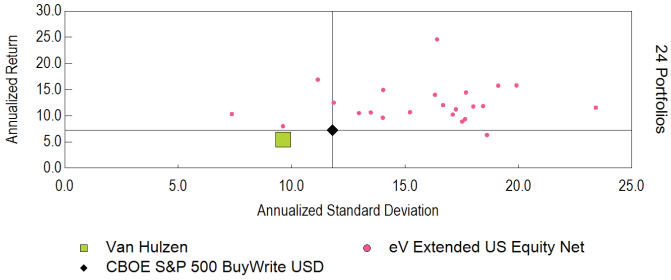
Growth of $1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

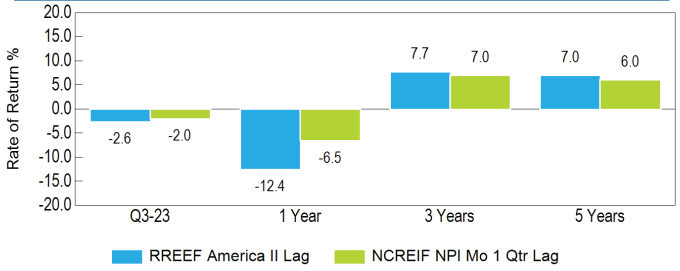


Van Hulzen has an inception date of March 2014.

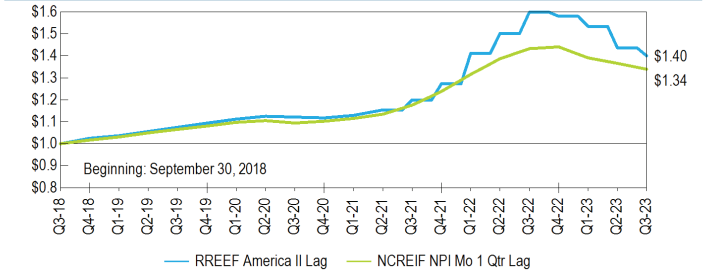
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
RREEF America II Lag	-0.20%	1.44	0.00	0.57	6.66%	0.27	115.57%	154.46%
NCREIF NPI Mo 1 Qtr Lag	0.00%	1.00	--	1.58	0.00%	1.00	100.00%	100.00%

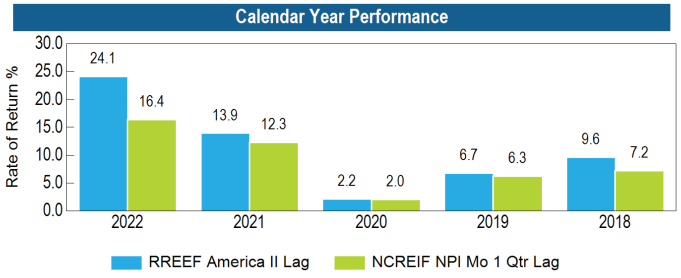
Trailing Period Performance



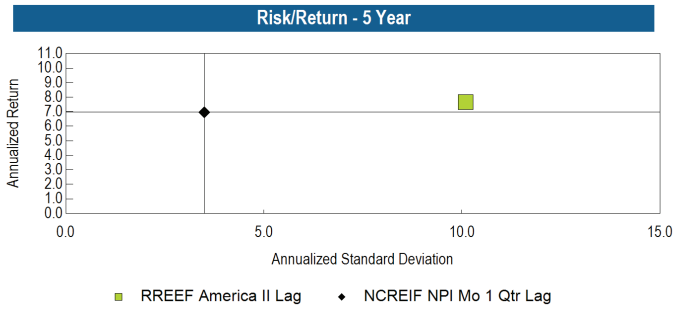
Growth of $1 - 5 Year



Calendar Year Performance



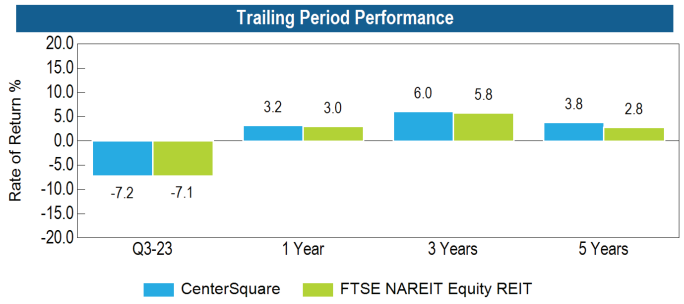
Risk/Return - 5 Year

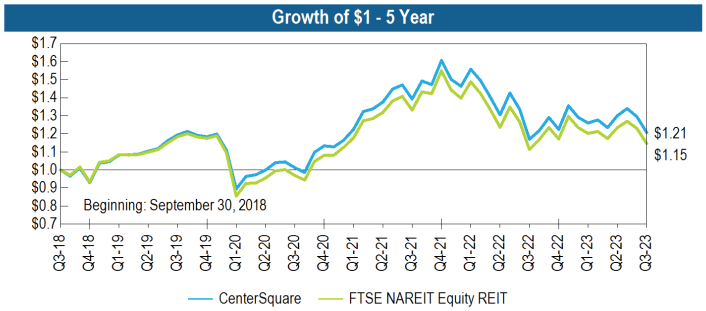


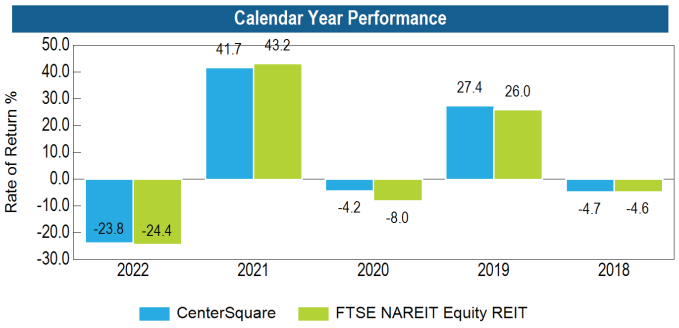
RREEF American II Performance results are lagged one quarter.
RREEF America II Lag has an inception date of January 2007.

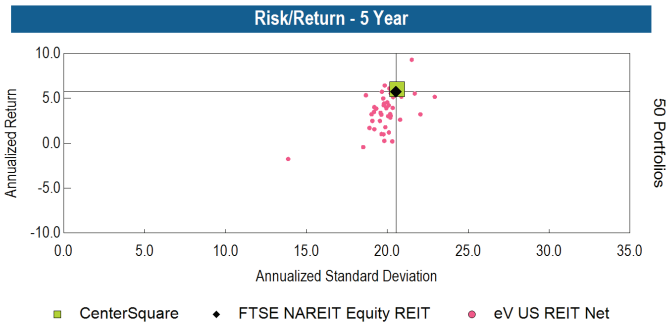
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
CenterSquare	0.06%	0.97	0.48	0.09	1.65%	0.99	100.13%	98.63%
FTSE NAREIT Equity REIT	0.00%	1.00	--	0.05	0.00%	1.00	100.00%	100.00%







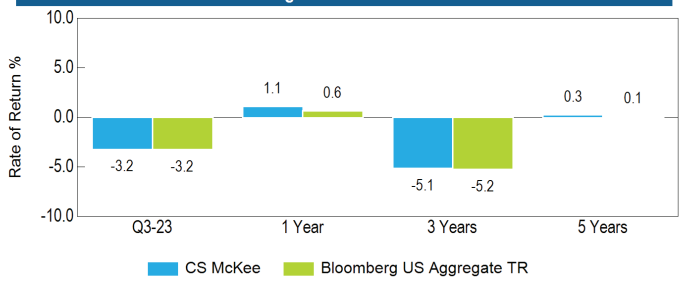


CenterSquare has an inception date of October 2011.

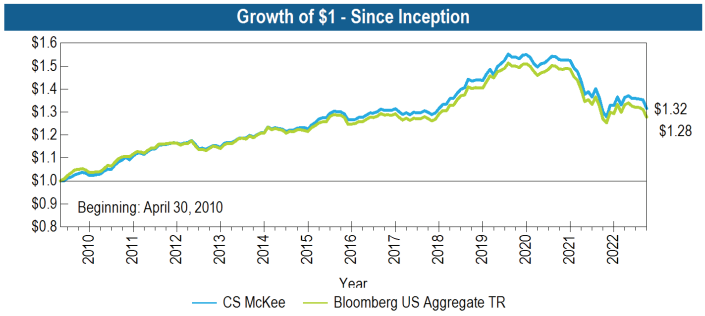
5 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
CS McKee	0.02%	0.99	0.26	0.30	0.85%	0.96	101.82%	97.47%
Bloomberg US Aggregate TR	0.00%	1.00	--	0.25	0.00%	1.00	100.00%	100.00%

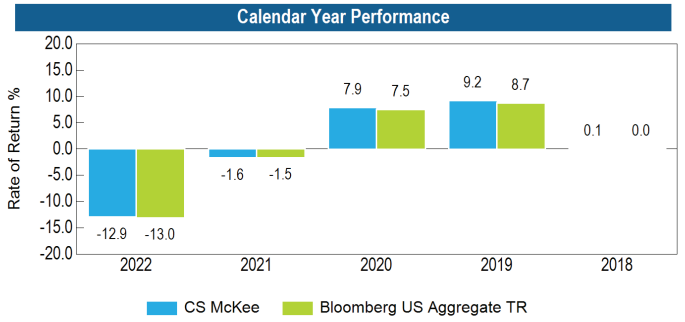
Trailing Period Performance



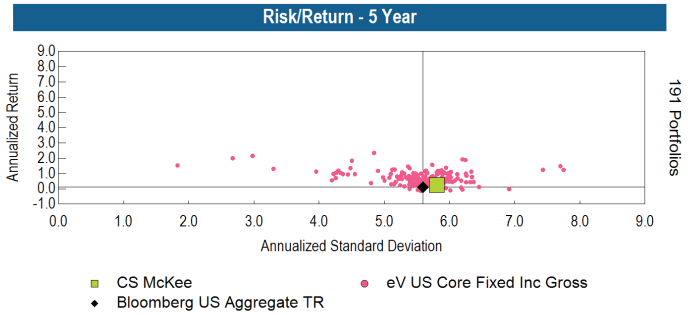
Growth of $1 - Since Inception



Calendar Year Performance



Risk/Return - 5 Year

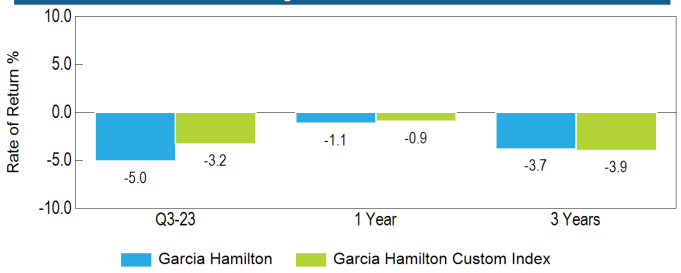


CS Mckee has an inception date of April 2010.

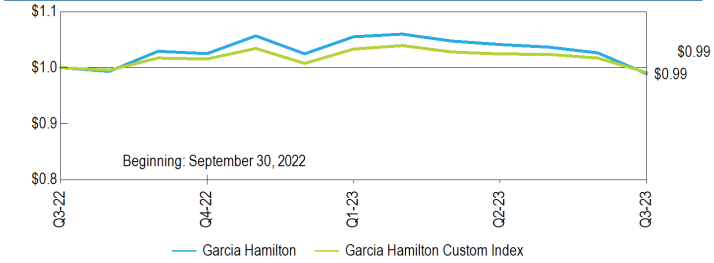
3 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Garcia Hamilton	0.08%	1.19	0.10	-0.99	1.64%	0.93	123.17%	107.59%
Garcia Hamilton Custom Index	0.00%	1.00	--	-1.26	0.00%	1.00	100.00%	100.00%

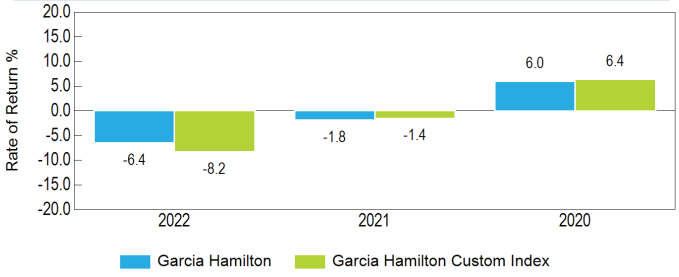
Trailing Period Performance



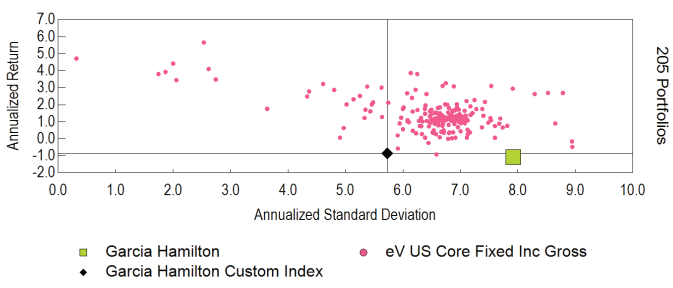
Growth of $1 - 3 Year



Calendar Year Performance



Risk/Return - 3 Year

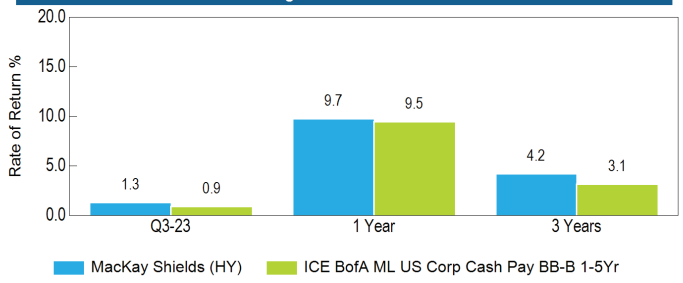


Garcia Hamilton has an inception date of November 2019.
5 Year risk statistics are not available at this time.

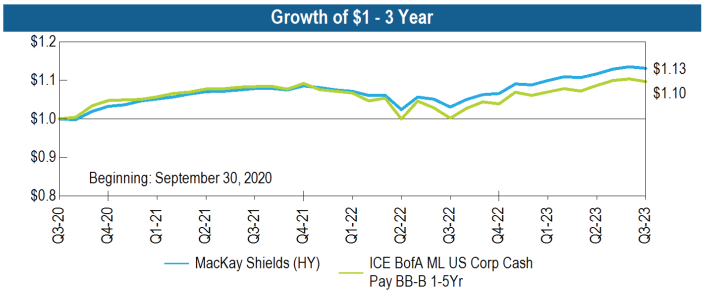
3 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
MacKay Shields (HY)	0.13%	0.68	0.30	0.51	2.13%	0.94	77.10%	59.27%
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	0.00%	1.00	--	0.24	0.00%	1.00	100.00%	100.00%

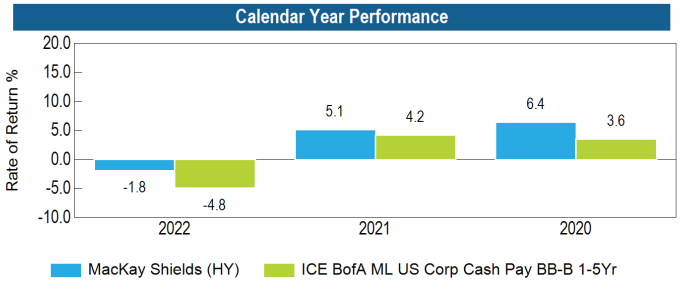
Trailing Period Performance



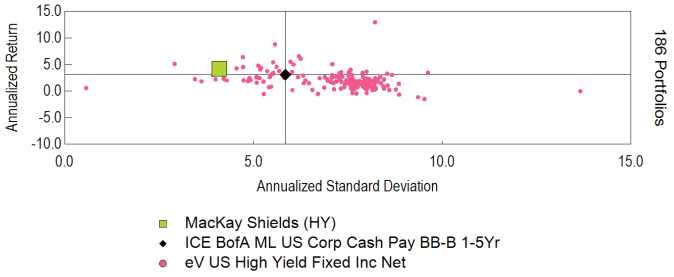
Growth of $1 - 3 Year



Calendar Year Performance



Risk/Return - 3 Year

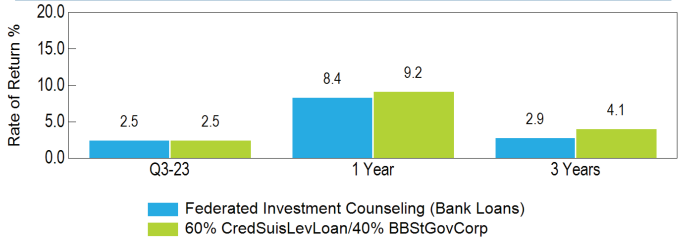


Mackay Shields has an inception date of February 2019.
5 Year Risk statistics are not available at this time.

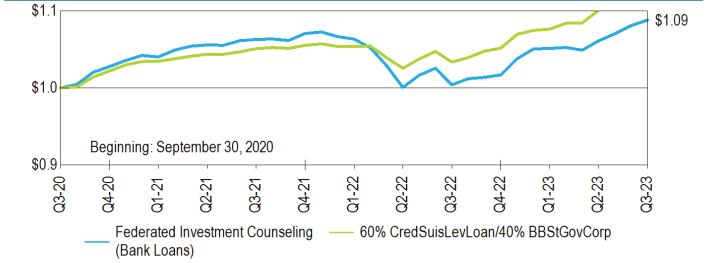
3 Year Statistics Summary

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Federated Investment Counseling (Bank Loans)	-0.26%	1.36	-1.13	0.19	1.57%	0.86	91.54%	180.90%
60% CredSuisLevLoan/40% BBStGovCorp	0.00%	1.00	--	1.01	0.00%	1.00	100.00%	100.00%

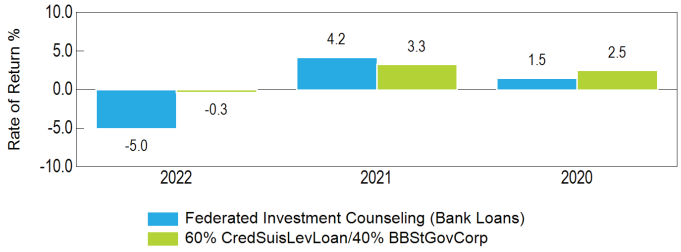
Trailing Period Performance



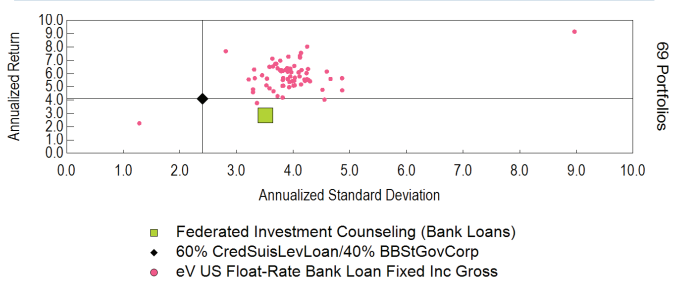
Growth of $1 - 3 Year



Calendar Year Performance



Risk/Return - 3 Year



Federated Investment Counseling has an inception date of February 2019.
5 Year Risk statistics are not available at this time.

Asset Class Returns - Net of Fees | As of September 30, 2023

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	**-3.0**	**13.7**	**4.8**	**4.9**
Total Plan Benchmark	*-2.9*	*14.2*	*4.6*	*4.3*
US Equity Composite	**-3.2**	**20.4**	**9.4**	**9.1**
Russell 3000 Hybrid	*-3.3*	*20.5*	*9.4*	*9.1*
Non-US Equity Composite	**-3.8**	**21.5**	**4.3**	**2.5**
MSCI ACWI xUS (blend)	*-3.7*	*21.0*	*4.2*	*3.1*
Covered Calls Composite	**-1.5**	**18.5**	**8.1**	**6.3**
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*
Real Estate Composite	**-5.0**	**-6.1**	**6.8**	**5.3**
Real Estate Composite Benchmark	*-4.5*	*-1.5*	*6.9*	*5.0*
Fixed Income Composite	**-2.9**	**1.7**	**-3.0**	**0.9**
Fixed Income Composite Benchmark	*-2.3*	*1.7*	*-2.9*	*0.8*
Cash Composite	**1.0**	**4.2**	**1.7**	**2.0**
FTSE T-Bill 3 Months TR	*1.4*	*4.7*	*1.8*	*1.7*

Benchmark composition and history provided at the end of this report.

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
US Equity Composite	**-3.2**	**20.4**	**9.4**	**9.1**
Russell 3000 Hybrid	*-3.3*	*20.5*	*9.4*	*9.1*
Northern Trust Russell 3000	-3.2	20.5	9.4	9.1
Russell 3000	*-3.3*	*20.5*	*9.4*	*9.1*
Non-US Equity Composite	**-3.8**	**21.5**	**4.3**	**2.5**
MSCI ACWI xUS (blend)	*-3.7*	*21.0*	*4.2*	*3.1*
Northern Trust ACWI ex US	-3.8	21.4	4.0	2.7
MSCI ACWI ex USA Gross	*-3.7*	*21.0*	*4.2*	*3.1*
Covered Calls Composite	**-1.5**	**18.5**	**8.1**	**6.3**
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*
Parametric BXM	-1.2	17.5	8.6	5.9
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*
Parametric Delta Shift	-2.5	22.7	10.3	9.0
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*
Van Hulzen	-0.8	14.8	5.1	3.7
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Real Estate Composite	**-5.0**	**-6.1**	**6.8**	**5.3**
Real Estate Composite Benchmark	*-4.5*	*-1.5*	*6.9*	*5.0*
RREEF America II Lag	-2.8	-13.1	6.7	6.0
NCREIF NPI Mo 1 Qtr Lag	*-2.0*	*-6.5*	*7.0*	*6.0*
CenterSquare	-7.2	2.9	5.8	3.6
FTSE NAREIT Equity REIT	*-7.1*	*3.0*	*5.8*	*2.8*
Fixed Income Composite	**-2.9**	**1.7**	**-3.0**	**0.9**
Fixed Income Composite Benchmark	*-2.3*	*1.7*	*-2.9*	*0.8*
Fixed Income Core Fixed Income Composite	**-4.1**	**-0.1**	**-4.5**	**0.3**
Fixed Income Core Composite Bench	*-3.2*	*-0.1*	*-4.6*	*--*
CS McKee	-3.2	0.9	-5.3	0.1
Bloomberg US Aggregate TR	*-3.2*	*0.6*	*-5.2*	*0.1*
Garcia Hamilton	-5.0	-1.2	-3.9	--
Garcia Hamilton Custom Index	*-3.2*	*-0.9*	*-3.9*	*--*
Fixed Income Non-Core Fixed Income Composite	**1.8**	**8.7**	**3.2**	**3.0**
Fixed Income Non-Core Composite Bench	*1.7*	*9.4*	*3.6*	*3.3*
MacKay Shields (HY)	1.2	9.3	3.8	--
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	*0.9*	*9.5*	*3.1*	*--*
Federated Investment Counseling (Bank Loans)	2.4	7.8	2.3	--
60% CredSuisLevLoan/40% BBStGovCorp	*2.5*	*9.2*	*4.1*	*--*

Benchmark History
As of September 30, 2023

EBMUDERS Total Plan Composite

2/1/2023	Present	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 20% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
12/1/2019	1/31/2023	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Intermediate Gov/Cred / 10% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
3/1/2019	11/30/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
7/1/2018	2/28/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
4/1/2014	6/30/2018	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
3/1/2014	3/31/2014	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
11/1/2011	2/28/2014	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT
1/1/2008	10/31/2011	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag
1/1/2007	12/31/2007	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index
10/1/2005	12/31/2006	50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE
4/1/2005	9/30/2005	30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag

Benchmark History
As of September 30, 2023

Fixed Income Composite		
2/1/2023	Present	80% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 10% 60% CredSuisLevLoan/40% BBStGovCorp
12/1/2019	1/31/2023	40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp
3/1/2019	11/30/2019	60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp
7/1/2018	2/28/2019	60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2%
4/1/2014	6/30/2018	50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2%
3/1/2014	3/31/2014	75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index
1/1/2008	2/28/2014	Bloomberg US Universal TR
1/1/1976	12/31/2007	Bloomberg US Aggregate TR
Fixed Income Core Fixed Income Composite		
2/1/2023	Present	Bloomberg US Aggregate TR
12/1/2019	1/31/2023	50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred
Fixed Income Non-Core Fixed Income Composite		
12/1/2019	Present	50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
3/1/2019	11/30/2019	25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR
3/1/2014	2/28/2019	25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR

Benchmark History
As of September 30, 2023

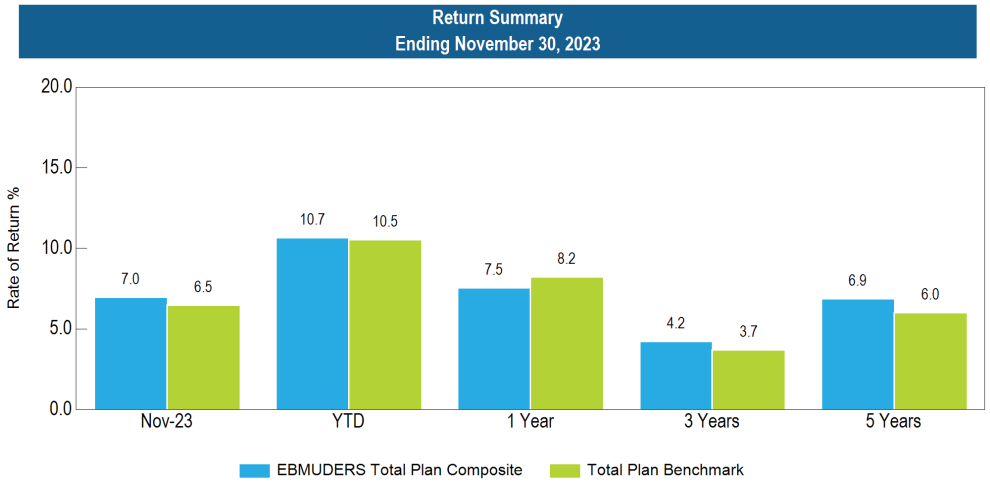
Real Estate Composite		
11/1/2011	Present	50% FTSE NAREIT Equity REIT / 50% NCREIF NPI Mo 1 Qtr Lag
10/1/1998	10/31/2011	NCREIF NPI Mo 1 Qtr Lag
4/1/1978	9/30/1998	NCREIF Property Index
Garcia Hamilton		
2/1/2023	Present	Bloomberg US Aggregate TR
11/1/2019	1/31/2023	Bloomberg US Govt/Credit Int TR

November 30, 2023 Flash Report

Performance Summary	Market Value ($)	% of Portfolio	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	**2,269,480,660**	**100.0**	**7.0**	**10.7**	**7.5**	**4.2**	**6.9**
Total Plan Benchmark			*6.5*	*10.5*	*8.2*	*3.7*	*6.0*
US Equity Composite	**605,194,732**	**26.7**	**9.3**	**19.6**	**12.6**	**8.3**	**11.7**
Russell 3000 Hybrid			*9.3*	*19.6*	*12.6*	*8.3*	*11.8*
Non-US Equity Composite	**548,635,432**	**24.2**	**9.0**	**10.1**	**7.8**	**2.3**	**5.3**
MSCI ACWI xUS (blend)			*9.0*	*10.6*	*9.8*	*2.2*	*5.6*
Covered Calls Composite	**466,093,030**	**20.5**	**5.3**	**15.0**	**11.7**	**7.9**	**8.1**
CBOE S&P 500 BuyWrite USD			*2.9*	*9.7*	*8.3*	*6.0*	*4.1*
Real Estate Composite	**118,729,807**	**5.2**	**5.1**	**-4.3**	**-7.2**	**6.8**	**6.1**
Real Estate Composite Benchmark			*5.3*	*-1.5*	*-3.9*	*6.5*	*5.3*
Fixed Income Composite	**525,616,059**	**23.2**	**4.5**	**2.4**	**2.3**	**-2.2**	**1.7**
Fixed Income Composite Benchmark			*4.1*	*2.5*	*2.3*	*-2.3*	*1.4*
Cash Composite	**5,211,598**	**0.2**	**0.0**	**4.8**	**4.8**	**2.0**	**2.1**
FTSE T-Bill 3 Months TR			*0.5*	*4.8*	*5.1*	*2.1*	*1.9*

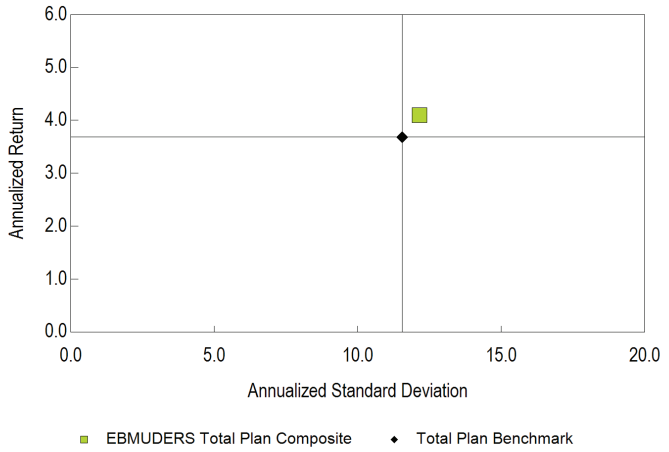
Benchmark composition and history provided at the end of this report.

Summary of Cash Flows	Quarter-To-Date	One Year
Beginning Market Value	$2,177,281,164	$2,135,979,160
Net Cash Flow	-$5,461,554	-$24,487,538
Capital Appreciation	$97,661,049	$157,989,038
Ending Market Value	$2,269,480,660	$2,269,480,660

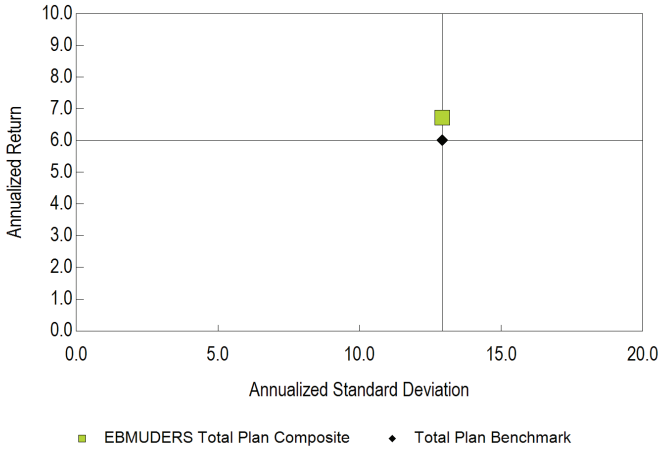


Benchmark composition and history provided at the end of this report.

Annualized Return vs. Annualized Standard Deviation
3 Years Ending November 30, 2023



Annualized Return vs. Annualized Standard Deviation
5 Years Ending November 30, 2023



3 Years Ending November 30, 2023

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	4.20%	12.16%	0.18
Total Plan Benchmark	3.68%	11.55%	0.15

5 Years Ending November 30, 2023

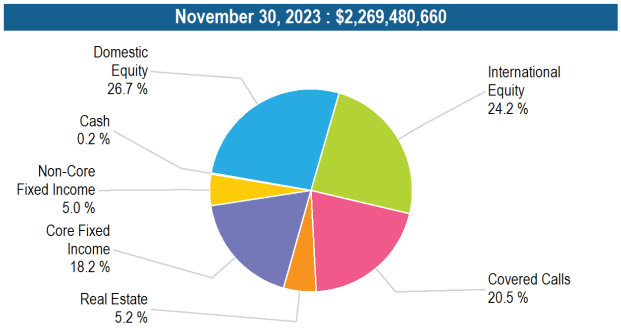
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	6.86%	12.91%	0.40
Total Plan Benchmark	6.01%	12.92%	0.33

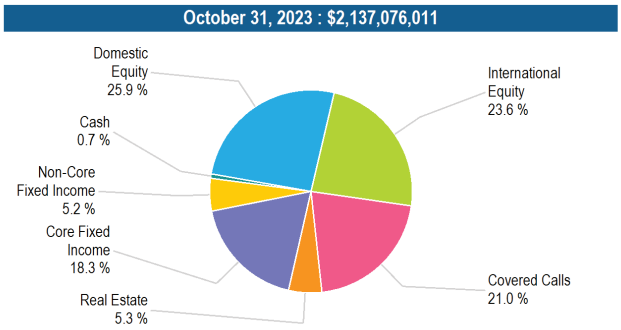
Asset Allocation vs. Target

	Current ($)	Current (%)	Policy (%)	Difference* (%)	Policy Range (%)	Within Range
Domestic Equity	605,194,732	26.7	25.0	1.7	20.0 - 30.0	Yes
International Equity	548,635,432	24.2	25.0	-0.8	20.0 - 30.0	Yes
Covered Calls	466,093,030	20.5	20.0	0.5	17.0 - 23.0	Yes
Real Estate	118,729,807	5.2	5.0	0.2	3.0 - 7.0	Yes
Core Fixed Income	412,249,931	18.2	20.0	-1.8	17.0 - 23.0	Yes
Non-Core Fixed Income	113,366,128	5.0	5.0	0.0	3.0 - 7.0	Yes
Cash	5,211,599	0.2	0.0	0.2	0.0 - 5.0	Yes
Total	**2,269,480,660**	**100.0**	**100.0**			

*Difference between Policy and Current Allocation

[1]Current policy target allocations elected by the Board in January 2019 took effect March 2019 upon the transition to the new long-term strategic allocation.
[2]Policy rebalancing ranges shown are for non-turbulent market periods. The Plan also has established rebalancing ranges to be in effect during turbulent market periods
[3]RREEF results are lagged 1 quarter





	Market Value	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs
Domestic Equity	**605,194,732**					
Northern Trust Russell 3000	604,319,104	9.3	19.7	12.7	8.3	11.8
Russell 3000		*9.3*	*19.6*	*12.6*	*8.3*	*11.8*
International Equity	**548,635,432**					
Northern Trust ACWI ex US	548,635,432	9.0	10.1	7.8	2.0	5.2
MSCI ACWI ex USA Gross		*9.0*	*10.6*	*9.8*	*2.2*	*5.6*
Covered Calls	**466,093,030**					
Parametric BXM	154,711,397	3.5	13.8	11.5	8.1	7.4
CBOE S&P 500 BuyWrite USD		*2.9*	*9.7*	*8.3*	*6.0*	*4.1*
Parametric Delta Shift	158,872,936	7.8	20.2	14.4	9.8	11.6
CBOE S&P 500 BuyWrite USD		*2.9*	*9.7*	*8.3*	*6.0*	*4.1*
Van Hulzen	152,508,697	4.4	11.0	9.4	5.5	5.1
CBOE S&P 500 BuyWrite USD		*2.9*	*9.7*	*8.3*	*6.0*	*4.1*
Real Estate	**118,729,807**					
RREEF America II Lag	60,417,439	0.0	-11.4	-12.4	7.8	6.6
NCREIF NPI Mo 1 Qtr Lag		*0.0*	*-7.1*	*-6.9*	*6.8*	*5.8*
CenterSquare	58,312,368	11.0	4.4	-0.9	5.2	4.8
FTSE NAREIT Equity REIT		*10.6*	*3.5*	*-1.9*	*5.0*	*3.6*

[1]RREEF results are lagged 1 quarter

	Market Value	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs
Core Fixed Income	**412,249,931**					
CS McKee	208,368,189	5.1	2.2	2.2	-4.3	0.9
Bloomberg US Aggregate TR		*4.5*	*1.6*	*1.2*	*-4.5*	*0.7*
Garcia Hamilton	203,881,743	5.6	-0.6	-1.0	-2.9	--
Garcia Hamilton Custom Benchmark		*4.5*	*0.4*	*0.3*	*-3.1*	*--*
Non-Core Fixed Income	**113,366,128**					
MacKay Shields (HY)	58,220,907	2.3	8.5	8.8	4.3	--
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr		*3.5*	*8.5*	*8.0*	*2.9*	*--*
Federated Investment Counseling (Bank Loans)	55,145,221	0.8	8.2	8.5	2.6	--
60% CredSuisLevLoan/40% BBStGovCorp		*0.9*	*8.6*	*9.0*	*4.0*	*--*
Cash	**5,211,599**					
Cash LAIF	5,211,598	0.0	4.8	4.8	2.0	2.1
FTSE T-Bill 3 Months TR		*0.5*	*4.8*	*5.1*	*2.1*	*1.9*

Benchmark History
As of November 30, 2023

EBMUDERS Total Plan Composite

2/1/2023	Present	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 20% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
12/1/2019	1/31/2023	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Intermediate Gov/Cred / 10% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
3/1/2019	11/30/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
7/1/2018	2/28/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
4/1/2014	6/30/2018	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
3/1/2014	3/31/2014	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index
11/1/2011	2/28/2014	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT
1/1/2008	10/31/2011	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag
1/1/2007	12/31/2007	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index
10/1/2005	12/31/2006	50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE
4/1/2005	9/30/2005	30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag
9/1/1998	3/31/2005	33% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 17% MSCI EAFE / 30% Bloomberg US Aggregate TR
3/31/1996	8/31/1998	30% S&P 500 / 15% Wilshire 5000 / 15% MSCI EAFE / 30% Bloomberg US Aggregate TR / 5% NCREIF Property Index / 5% FTSE T-Bill 3 Months TR

EBMUDERS Total Plan x Securities Lending Composite		
		No Benchmark Selected
Public Equity Composite		
1/1/2007	Present	71.43% Russell 3000 / 28.57% MSCI ACWI ex USA Gross
10/1/2005	12/31/2006	28.57% MSCI EAFE / 71.43% Russell 3000
4/1/2005	9/30/2005	42.86% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 28.57% MSCI EAFE
9/1/1998	3/31/2005	47.14% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 24.29% MSCI EAFE
1/1/1994	8/31/1998	50% S&P 500 / 25% Wilshire 5000 / 25% MSCI EAFE
US Equity Composite		
10/1/2005	Present	Russell 3000
4/1/2005	9/30/2005	60% S&P 500 / 20% S&P 400 MidCap / 20% Russell 2000
9/1/1998	3/31/2005	62.23% S&P 500 / 18.87% S&P 400 MidCap / 18.87% Russell 2000
4/1/1996	8/31/1998	33.3% Wilshire 5000 / 66.6% S&P 500
US Equity Large Cap Composite		
10/1/2005	Present	Russell 1000 Value
6/1/1994	9/30/2005	S&P 500
Non-US Equity Composite		
1/1/2007	Present	MSCI ACWI ex USA Gross
1/1/1970	12/31/2006	MSCI EAFE
NonUSE Developed Markets Composite		
1/1/2007	Present	MSCI ACWI ex USA Gross
1/1/1970	12/31/2006	MSCI EAFE
Covered Calls Composite		
	Present	CBOE S&P 500 BuyWrite USD

Real Estate Composite		
11/1/2011	Present	50% FTSE NAREIT Equity REIT / 50% NCREIF NPI Mo 1 Qtr Lag
10/1/1998	10/31/2011	NCREIF NPI Mo 1 Qtr Lag
4/1/1978	9/30/1998	NCREIF Property Index
Fixed Income Composite		
2/1/2023	Present	80% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 10% 60% CredSuisLevLoan/40% BBStGovCorp
12/1/2019	1/31/2023	40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp
3/1/2019	11/30/2019	60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp
7/1/2018	2/28/2019	60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2%
4/1/2014	6/30/2018	50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2%
3/1/2014	3/31/2014	75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index
1/1/2008	2/28/2014	Bloomberg US Universal TR
1/1/1976	12/31/2007	Bloomberg US Aggregate TR
Fixed Income Core Fixed Income Composite		
2/1/2023	Present	Bloomberg US Aggregate TR
12/1/2019	1/31/2023	50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred
Fixed Income Non-Core Fixed Income Composite		
12/1/2019	Present	50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
3/1/2019	11/30/2019	25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR
3/1/2014	2/28/2019	25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR
Cash Composite		
	Present	FTSE T-Bill 3 Months TR

Manager Watch Screens

Performance Monitoring Summary

Portfolio	Violation Type (Window)[1]	Date of Initial Violation	Correction Action(s)	Current Status	Current Status: Est. Beg. Date of Current Status	Current Status: Months Since Est. Beg. Date	Current Status: Performance Since Est. Beg. Date[2,3]
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→ As of September 30, 2023 there are no managers currently on watch.

[1] Defined as: Short-Term (12 months), Medium-Term (36 months), Long-Term (60 months).

[2] Annualized for periods greater than 12 months.

[3] Performance figures not yet available.

Quantitative Compliance Monitoring per Watch Criteria

Active Management Criteria

→ Active investment managers are expected to outperform their respective passive benchmarks related to both their asset class and investment style.

→ Relative excess performance that falls below the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.

Passive Management Criteria

→ Passive investment managers are expected to track the performance of their respective passive benchmarks related to both their asset class and their investment style.

→ Tracking error is a measure of how closely a portfolio follows the index to which it is benchmarked.

→ For short- and medium-term performance monitoring, a portfolio with tracking error that is above the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.

→ For long-term performance monitoring, relative excess performance that falls below the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.

Quantitative Monitoring Results - Overall Status Summary

	Prior Qtr Status	Current Qtr Status
Northern Trust – R3000	Acceptable	Acceptable
Northern Trust – ACWIxUS	N/A	Acceptable
Parametric – BXM	Acceptable	Acceptable
Parametric – Delta Shift	Acceptable	Acceptable
Van Hulzen	Acceptable	Acceptable
CS McKee	Acceptable	Acceptable
Garcia Hamilton	Acceptable	Acceptable
Mackay Shields – Short Term HY	Acceptable	Acceptable
Federated – Bank Loans	Acceptable	Acceptable
CenterSquare	Acceptable	Acceptable

Investment Performance Criteria by Asset Class

Asset Class	Short-term (rolling 12-month periods)	Medium-term (rolling 36-month periods)	Long-term (60+ months)
Domestic Equity - Passive	Tracking error > 0.30%	Tracking error > 0.25% for 6 consecutive months	Fund annualized return < benchmark annualized return -0.40% for 6 consecutive months
Non-US Equity - Passive	Tracking error > 1.75%	Tracking error > 1.5% for 6 consecutive months	Fund annualized return < benchmark annualized return - 0.50% for 6 consecutive months
Covered Calls - Active	Fund return < benchmark return - 3.5%	Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Covered Calls - Replication	Fund return < benchmark return - 3.5%	Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months	Fund annualized return < benchmark annualized return - 0.40% for 6 consecutive months
Fixed Income - Core – Active	Fund return < benchmark return - 1.5%	Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months	VRR < 0.98 for 6 consecutive months
Fixed Income - Core – Passive	Tracking error > 0.25%	Tracking error > 0.20% for 6 consecutive months	Fund annualized return < benchmark annualized return - 0.30% for 6 consecutive months
Fixed Income - Non-Core	Fund return < benchmark return - 4.5%	Fund annualized return < benchmark annualized return - 2.0% for 6 consecutive months	VRR < 0.97 for 6 consecutive months

All criteria are on an annualized basis.
VRR – Value Relative Ratio – is calculated as: manager cumulative return / benchmark cumulative return.

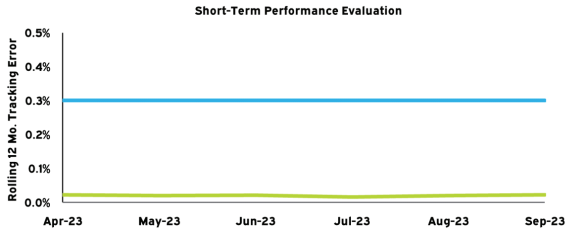
Manager Performance	QTD	1 Yr	3 Yrs
Northern Trust Russell 3000	-3.2	20.5	9.4
Russell 3000	*-3.3*	*20.5*	*9.4*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Tracking error > 0.30% for 6 consecutive months

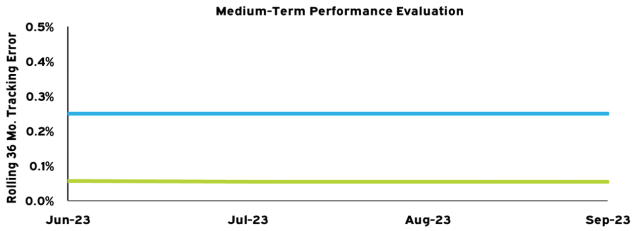
Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Tracking error > 0.25% for 6 consecutive months

Current Status: Acceptable



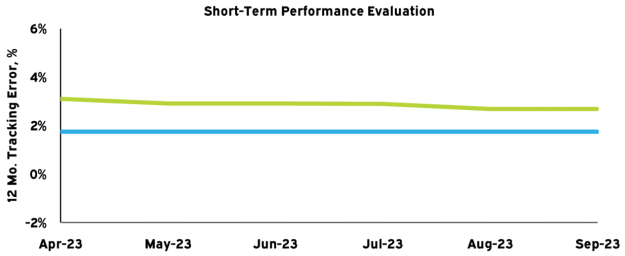
Long-Term Criteria (60+ months)

Fund annualized return < benhcmark annualized return -0.40% for 6 consecutive months

Current Status: Not Applicable

Manager Performance	QTD	1 Yr	3 Yrs
Northern Trust ACWI ex US	-3.8	21.4	4.0
MSCI ACWI ex USA Gross	*-3.7*	*21.0*	*4.2*

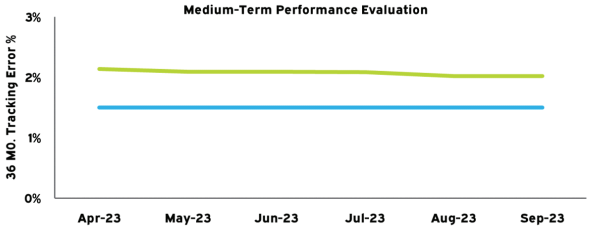
Overall Status:
Acceptable



Short-Term Criteria (rolling 12-month periods)

Tracking error > 1.75% for 6 consecutive months

Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Tracking error > 1.5% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

Fund annualized return < benhcmark annualized return -0.50% for 6 consecutive months

Current Status: Not Applicable

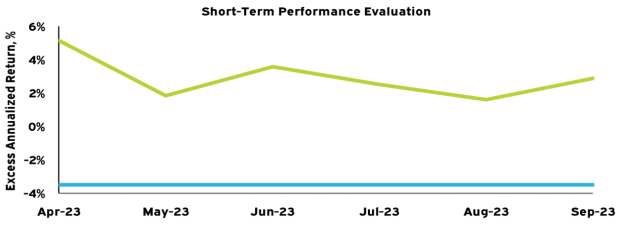
Manager Performance	QTD	1 Yr	3 Yrs	5 Yrs
Parametric BXM	-1.2	17.5	8.6	5.9
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

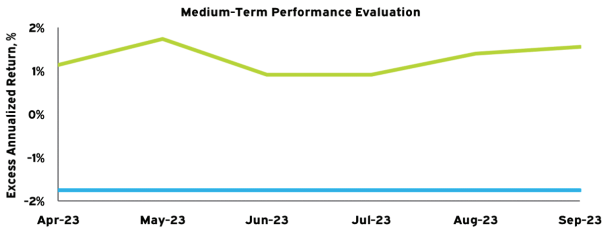
Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

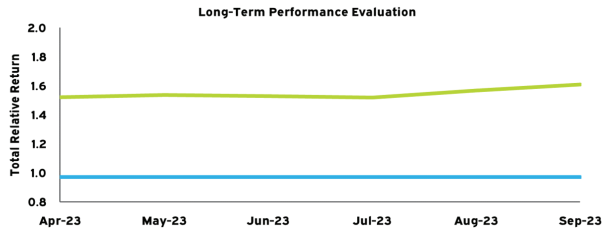
Current Status: Acceptable



Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Acceptable



Parametric is on watch for qualitative reasons.

Manager Performance	QTD	1 Yr	3 Yrs	5 Yrs
Parametric Delta Shift	-2.5	22.7	10.3	9.0
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

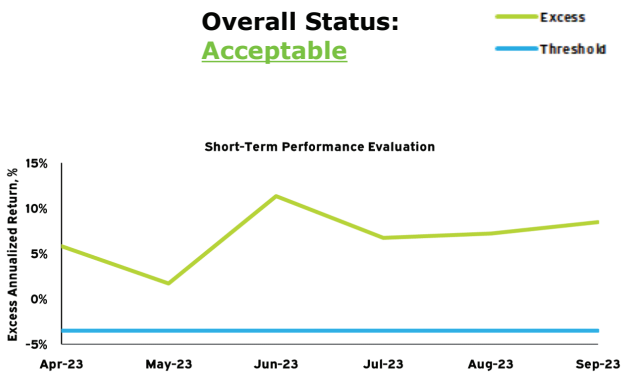
Current Status: Acceptable

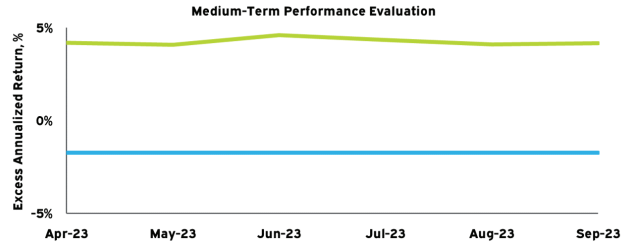
Long-Term Criteria (60+ months)

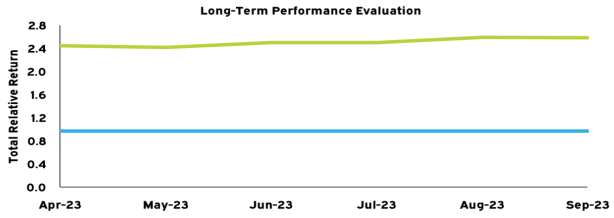
VRR < 0.97 for 6 consecutive months

Current Status: Acceptable

Overall Status:
Acceptable







Parametric is on watch for qualitative reasons.

Manager Performance	QTD	1 Yr	3 Yrs	5 Yrs
Van Hulzen	-0.7	15.0	5.4	3.9
CBOE S&P 500 BuyWrite USD	*-2.8*	*14.6*	*7.2*	*3.0*

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

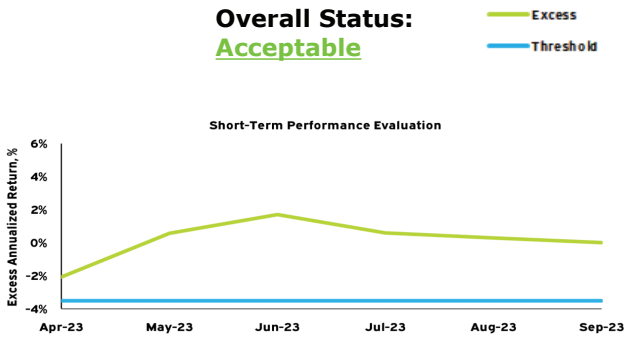
Current Status: Acceptable

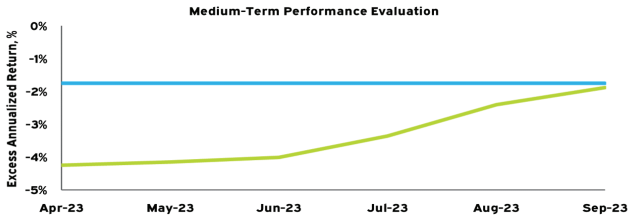
Long-Term Criteria (60+ months)

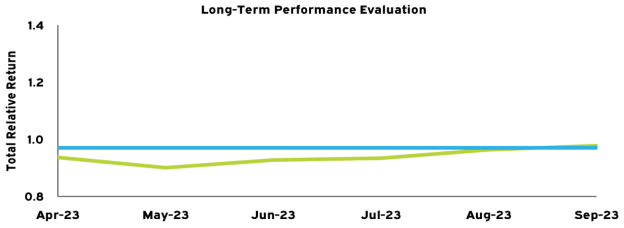
VRR < 0.98 for 6 consecutive months

Current Status: Acceptable

Overall Status:
Acceptable







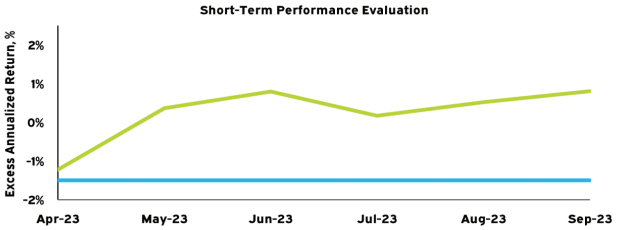
Manager Performance	QTD	1 Yr	3 Yrs	5 Yrs
CS McKee	-3.2	0.9	-5.3	0.1
Bloomberg US Aggregate TR	*-3.2*	*0.6*	*-5.2*	*0.1*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -1.5% for 6 consecutive months

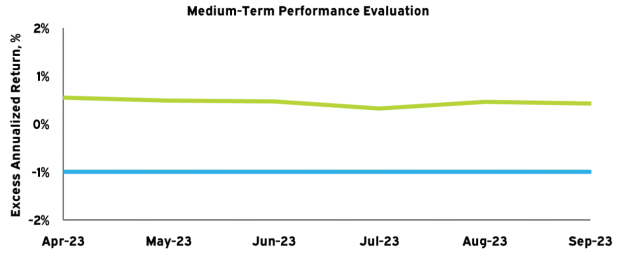
Current Status: **Acceptable**



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months

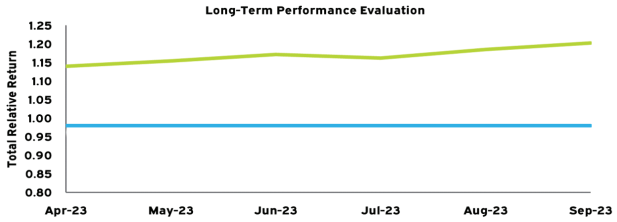
Current Status: **Acceptable**



Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: **Acceptable**



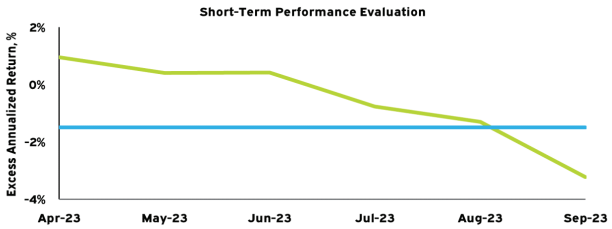
Manager Performance	QTD	1 Yr	3 Yrs
Garcia Hamilton	-4.8	-1.0	-3.8
Garcia Hamilton Custom Index	*-3.2*	*-0.9*	*-3.9*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -1.5% for 6 consecutive months

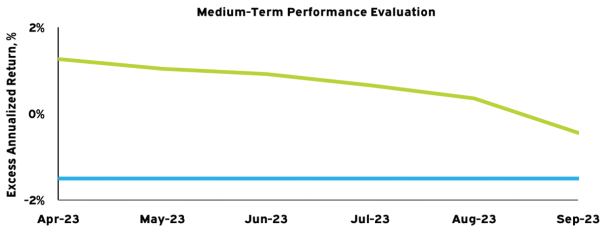
Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months

Current Status: Acceptable



Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: Not Applicable

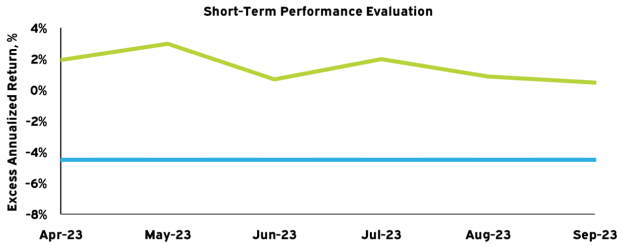
Manager Performance	QTD	1 Yr	3 Yrs
MacKay Shields (HY)	1.2	9.3	3.8
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	*0.9*	*9.5*	*3.1*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -4.5% for 6 consecutive months

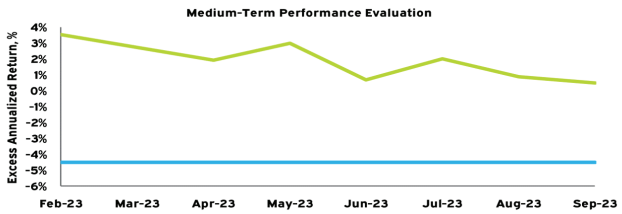
Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

Current Status: Acceptable



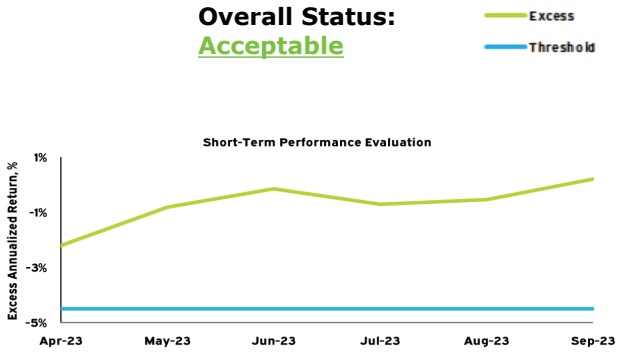
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable

Manager Performance	QTD	1 Yr	3 Yrs
Federated Investment Counseling (Bank Loans)	2.4	7.8	2.3
60% CredSuisLevLoan/40% BBStGovCorp	*2.5*	*9.2*	*4.1*

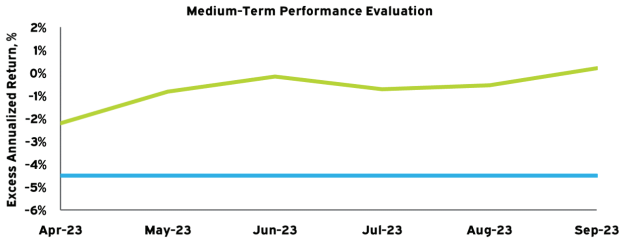
Overall Status:
Acceptable



Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -4.5% for 6 consecutive months

Current Status: Acceptable



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable

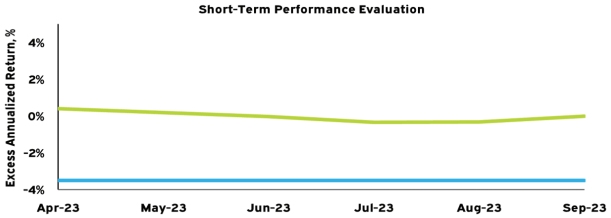
Manager Performance	QTD	1 Yr	3 Yrs	5 Yrs
CenterSquare	-7.2	2.9	5.8	3.6
FTSE NAREIT Equity REIT	*-7.1*	*3.0*	*5.8*	*2.8*

Overall Status:
Acceptable

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

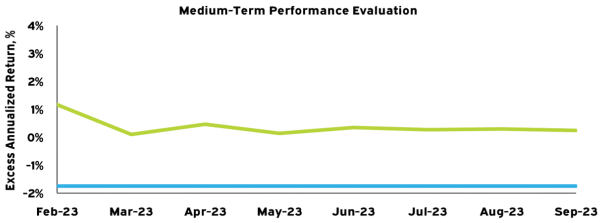
Current Status: **Acceptable**



Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

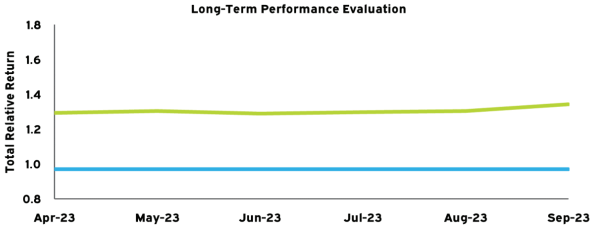
Current Status: **Acceptable**



Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: **Acceptable**



Manager Compliance Certification Responses

Manager Compliance Certification Responses

Qualitative Compliance Monitoring per EBMUDERS Investment Policy

Each of EBMUDERS managers is required to respond to a questionnaire on a quarterly basis to certify their compliance with EBMUDERS Investment Policy Statement and provide an update on specific qualitative indicators to be evaluated.

These indicators include:

→ Compliance with the guidelines of 'Eligible Investments' for the manager's specific mandate

→ Any litigation or governmental regulatory proceedings involving the firm/manager

→ Changes to the manager's investment outlook, investment strategy, and/or portfolio structure

→ Personnel changes to the investment team responsible for the EBMUDERS mandate

→ Significant personnel changes at the management level of the firm

→ Material client terminations

→ Compliance with EBMUDERS current Investment Policy Statement

The manager's responses are rated based on the potential effects these factors could pose to the performance and management of the EBMUDERS portfolio.

Reasons for heightened concern triggering Watch status include, but are not limited to:

→ Instability of key members of the portfolio management team and organization

→ Changes in investment strategy and style

→ Failure to comply with investment guidelines

A summary of manager responses as of the latest quarter-end is provided below.

Manager Compliance Certification Responses

		Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8
Manager	Asset Class	Compliance with 'Eligible Investments' for mandate	Good standing as Registered Investment Advisor	Litigation?	Changes in manager's investment outlook, strategy, structure	Investment team personnel changes	Management level personnel changes	Material business changes	Compliance with IPS
Northern Trust R3000	Domestic Equity – All Cap	Yes	Yes	Yes*	No	No	Yes*	No	Yes
Northern Trust ACWI ex US	International Equity	Yes	Yes	Yes*	No	No	Yes*	No	Yes
Parametric	Covered Calls	Yes	Yes	No*	No	No	No	No	Yes
Van Hulzen	Covered Calls	Yes	Yes	No	No	No	No	No	Yes
CS McKee	Fixed Income – Core	Yes	Yes	No	No	No	No	No	Yes
Garcia Hamilton	Fixed Income – Core	Yes	Yes	No	No	No	No	No	Yes
Mackay Shields	Fixed Income – Short-term HY	No*	Yes	No	No	No	No	No	No*
Federated	Fixed Income – Bank Loans	Yes	Yes	No	No	Yes*	No	No	Yes
RREEF	Real Estate	Yes	Yes	No	No	No	No	No	Yes
CenterSquare	Real Estate	Yes	Yes	No	No	No	Yes*	No	Yes

no concern low concern high concern (Watch status)

* see detailed manager response below.

Northern Trust – R3000 and ACWI ex US

Question 3: Is there any litigation or governmental regulatory proceedings involving your Firm, the Manager?

→ As one of the world's largest asset managers, Northern Trust Investments, Inc. ("NTI") is occasionally named as a defendant in litigation. In the past 5 years, NTI has not been party to any litigation that has had a material effect on its ability to perform services for its clients. Below is one pending litigation case that involves NTI:

- Michael J. Iannone, Jr. and Nicole A. James v. AutoZone, Inc. (W.D. Tenn.). In September 2021, plan participants of the AutoZone, Inc. 401(k) Plan sued AutoZone, Inc., its Investment Committee, and Northern Trust Corporation and Northern Trust, Inc. (later described as Northern Trust Investments, Inc.) (collectively, "Defendants") as investment fiduciaries for breach of fiduciary duty in connection with the use of the GoalMaker® asset allocation service furnished by Prudential Insurance Company ("GoalMaker"). The Complaint alleges that the funds that Defendants selected for GoalMaker paid excessive investment management fees to Prudential and its affiliates while consistently underperforming benchmark indices and lower-cost index fund alternatives. Northern Trust – R3000 and ACWI ex US (cont.)

Question 6: Have there been any significant personnel changes at the management level of the Firm during the quarter?

→ As a result of the constantly changing landscape of asset management, we believe the occasional organizational changes are a natural progression and necessary in order to adapt to new market and regulatory environments. The most recent changes to senior personnel are the following:

- October; Sunitha Thomas, CFA, rejoined NTAM after spending more than 15 years managing client portfolios for Northern Trust Wealth Management. In this newly created role, Sunitha will co-head our Wealth Client Group. She has a BA in Economics from University of Chicago and an MBA from The Wharton School of the University of Pennsylvania. Sunitha will report directly to Daniel Gamba and join NTAM Executive Group.
- September; Anwiti Bahuguna, Ph.D., joined Northern Trust Asset Management as Chief Investment Officer (CIO) of Global Asset Allocation bringing 25 years of industry experience to this newly created role.

Parametric

Question 3: Is there any litigation or governmental regulatory proceedings involving your Firm, the Manager?

→ Parametric is part of Morgan Stanley Investment Management, the asset management division of Morgan Stanley. The distinct investment brands of Eaton Vance Management, Parametric, Atlanta Capital and Calvert, have from time to time, been plaintiffs or defendants in various lawsuits and arbitrations that are incidental to their businesses and are or were handled in the ordinary course of business. From time to time, Parametric and its affiliates are subject to periodic audits, regulatory and governmental examinations, information-gathering requests, investigations, and proceedings both formal and informal which have the potential to result in findings, conclusions, recommendations, or various forms of sanction. Parametric believes that these actions have not and will not have a material adverse effect on its consolidated financial condition, liquidity, results of operations or the ability to manage client assets.

MacKay Shields

Question 1: Please confirm the EBMUD portfolio was in compliance with the guidelines of 'Eligible Investments' of the Manager's specific mandate, as listed in EBMUD's Investment Policy Statement (rev. March 2019).

→ As of August 8, 2023, Standard & Poor's upgraded two PDC Energy credits from BB to AA- (cusip: 69327RAJ0, represented 0.18% of the portfolio and cusip: 69327RAG65, represented 0.21% of the portfolio). At the time of the rating changes and Moody's rated both bonds Ba3. Further, on August 8, 2023, Standard & Poor's upgraded a Four Season Term Loan from BB+ to BBB- (cusip: BL4053601 – was exchanged into BL4378800 on 8/30/23 and had represented 0.50% of the portfolio). At the time of the rating change Moody's rated the loan Ba3. As a result of the upgrades, the portfolio passively held greater than 10% in investment grade securities (10.82%). As of the close of trading, August 25, 2023, and the portfolio was back in compliance with the 10% investment grade maximum (9.66%).

Question 8: Please confirm the EBMUD account was in compliance with EBMUD's Investment Policy Statement (rev. March 2019) during the quarter.

→ As of August 8, 2023, Standard & Poor's upgraded two PDC Energy credits from BB to AA- (cusip: 69327RAJ0, represented 0.18% of the portfolio and cusip: 69327RAG65, represented 0.21% of the portfolio). At the time of the rating changes and Moody's rated both bonds Ba3. Further, on August 8, 2023, Standard & Poor's upgraded a Four Season Term Loan from BB+ to BBB- (cusip: BL4053601 – was exchanged into BL4378800 on 8/30/23 and had represented 0.50% of the portfolio). At the time of the rating change Moody's rated the loan Ba3. As a result of the upgrades, the portfolio passively held greater than 10% in investment grade securities (10.82%). As of the close of trading, August 25, 2023, and the portfolio was back in compliance with the 10% investment grade maximum (9.66%).

Federated

Question 5: Have there been any personnel changes to the investment team responsible for the EBMUD portfolio during the quarter?

→ Steve Wagner has left Federated. The portfolio will continue being managed by Mark Durbiano and team.

CenterSquare

Question 6: Have there been any significant personnel changes at the management level of the Firm during the quarter?

→ Emily Mendell, Director of Marketing, left the firm on September 30, 2023, to pursue another career opportunity.

Required California AB 2833 Disclosure – RREEF AMERICA II

Effective January 1, 2017 RREEF America REIT II, Inc. ("alternative investment vehicle") is required to provide to the East Bay Municipal Utility District ("public investment fund" or "District") specific information at least annually pursuant to Section 7514.7 of the California Government Code ("Section 7514.7").

1. The fees and expenses that the public investment fund pays directly to the alternative investment vehicle, the fund manager, or related parties.

   EBMUD asset management fees – January 2022 – December 2022= $639,956.56

2. The public investment fund's pro rata share of fees and expenses not included in paragraph (1) that are paid from the alternative investment vehicle to the fund manager or related parties.

   $0.00

3. The public investment fund's pro rata share of carried interest distributed to the fund manager or related parties.

   N/A

4. The public investment fund's pro rata share of aggregate fees and expenses paid by all of the portfolio companies held within the alternative investment vehicle to the fund manager or related parties.

   EBMUDERS asset management fees – January 2022 – December 2022= $639,956.56

5. Any additional information described in subdivision (b) of Section 6254.26.

   N/A

6. The gross and net rate of return of each alternative investment vehicle since inception.

   Gross = 7.4% Net = 6.6% (as of December 31, 2022)[1]

7. Any other information required to be collected pursuant to Section 7514.7.

   N/A

[1] Please note that since inception returns provided represent the client's time frame in the Fund, and not the returns of the Fund as a whole.

Appendix

Glossary of Terms

Alpha: The premium an investment earns above a set standard. This is usually measured in terms of a common index (i.e., how the stock performs independent of the market). An Alpha is usually generated by regressing a security's excess return on the S&P 500 excess return.

Annualized Performance: The annual rate of return that when compounded t times generates the same t-period holding return as actually occurred from period 1 to period t.

Batting Average: Percentage of periods a portfolio outperforms a given index.

Beta: The measure of an asset's risk in relation to the Market (for example, the S&P 500) or to an alternative benchmark or factors. Roughly speaking, a security with a Beta of 1.5 will have moved, on average, 1.5 times the market return.

Bottom-up: A management style that de-emphasizes the significance of economic and market cycles, focusing instead on the analysis of individual stocks.

Dividend Discount Model: A method to value the common stock of a company that is based on the present value of the expected future dividends.

Growth Stocks: Common stock of a company that has an opportunity to invest money and earn more than the opportunity cost of capital.

Information Ratio: The ratio of annualized expected residual return to residual risk. A central measurement for active management, value added is proportional to the square of the information ratio.

R-Squared: Square of the correlation coefficient. The proportion of the variability in one series that can be explained by the variability of one or more other series a regression model. A measure of the quality of fit. 100% R-square means perfect predictability.

Standard Deviation: The square root of the variance. A measure of dispersion of a set of data from its mean.

Sharpe Ratio: A measure of a portfolio's excess return relative to the total variability of the portfolio.

Style Analysis: A returns-based analysis using a multi-factor attribution model. The model calculates a product's average exposure to particular investment styles over time (i.e., the product's normal style benchmark).

Top-down: Investment style that begins with an assessment of the overall economic environment and makes a general asset allocation decision regarding various sectors of the financial markets and various industries.

Tracking Error: The standard deviation of the difference between the performance of a portfolio and an appropriate benchmark.

Turnover: For mutual funds, a measure of trading activity during the previous year, expressed as a percentage of the average total assets of the fund. A turnover rate of 25% means that the value of trades represented one-fourth of the assets of the fund.

Value Stocks: Stocks with low price/book ratios or price/earnings ratios. Historically, value stocks have enjoyed higher average returns than growth stocks (stocks with high price/book or P/E ratios) in a variety of countries.

Definition of Benchmarks

BC Aggregate: an index comprised of approximately 6,000 publicly traded investment-grade bonds including U.S. Government, mortgage-backed, corporate, and yankee bonds with an approximate average maturity of 10 years.

BC High Yield: covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, 144-As and pay-in-kind bonds (PIKs, as of October 1, 2009) are also included. Must be rated high-yield (Ba1/BB+ or lower) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. All issues must have at least one year to final maturity regardless of call features and have at least $150 million par amount outstanding.

BC Multiverse Non-US Hedged: provides a broad-based measure of the international fixed-income bond market. The index represents the union of the BC Global Aggregate Index and the BC Global High Yield Index. In this sense, the term "Multiverse" refers to the concept of multiple universes in a single macro index.

BC US Credit: includes publicly issued U.S. corporate and foreign debentures and secured notes that which are rated investment grade or higher by Moody's Investor Services, Standard and Poor's Corporation, or Fitch Investor's Service, with all issues having at least one year to maturity and an outstanding par value of at least $250 million. Issues must be publicly issued, dollar-denominated and non-convertible.

BC US Government: includes treasuries (i.e., public obligations of the U.S. Treasury that have remaining maturities of more than one year) and agencies (i.e., publicly issued debt of U.S. Government agencies, quasi-federal corporations, and corporate or foreign debt guaranteed by the U.S. Government).

BC Universal: includes market coverage by the Aggregate Bond Index fixed rate debt issues, which are rated investment grade or higher by Moody's Investor Services, Standard and Poor's Corporation, or Fitch Investor's Service, with all issues having at least one year to maturity and an outstanding par value of at least $100 million) and includes exposures to high yield CMBS securities. All returns are market value weighted inclusive of accrued interest.

Citigroup 3-Month Treasury Bills (T-bills): tracks the performance of U.S. Treasury bills with 3-month maturity.

MSCI ACWI x US ND: comprises both developed and emerging markets less the United States. As of August 2008, the index consisted of 23 counties classified as developed markets and 25 classified as emerging markets. This series approximates the minimum possible dividend reinvestment. The dividend is reinvested after deduction of withholding tax, applying the rate to non-resident individuals who do not benefit from double taxation treaties. MSCI Barra uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rates.

MSCI EAFE Free (Europe, Australasia, Far East) ND: is a free float-adjusted market capitalization index that is designed to measure developed market equity performance, excluding the US & Canada. This series approximates the minimum possible dividend reinvestment. The dividend is reinvested after deduction of withholding tax, applying the rate to non-resident individuals who do not benefit from double taxation treaties. MSCI Barra uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rates.

MSCI EM (Emerging Markets) GD: is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. This series approximates the maximum possible dividend reinvestment. The amount reinvested is the entire dividend distributed to individuals resident in the country of the company, but does not include tax credits.

MSCI Europe is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in Europe. As of June 2007, this index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

MSCI Pacific is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in the Pacific region. As of June 2007, this index consisted of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

NAREIT Index: consists of all tax-qualified REITs listed on the New York Stock Exchange, American Stock Exchange, and the NASDAQ National Market System. The data is market weighted.

NCREIF Property Index: the NPI contains investment-grade, non-agricultural, income-producing properties which may be financed in excess of 5% gross market value; were acquired on behalf of tax exempt institutions; and are held in a fiduciary environment. Returns are gross of fees; including income, realized gains/losses, and appreciation/depreciation; and are market value weighted. Index is lagged one quarter.

Russell 1000: measures the performance of the 1,000 largest securities in the Russell 3000 Index. Russell 1000 is highly correlated with the S&P 500 Index and capitalization-weighted.

Russell 1000 Growth: measures the performance of those Russell 1000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-earnings ratios, lower dividend yields and higher forecasted growth values than the Value universe.

Russell 1000 Value: measures the performance of those Russell 1000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-earnings ratios, higher dividend yields and lower forecasted growth values than the Growth universe.

Russell 2000: measures the performance of the 2,000 smallest companies in the Russell 3000 Index, which represents approximately 8% of the total market capitalization of the Russell 3000 Index.

Russell 2000 Growth: measures the performance of those Russell 2000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-to-earnings ratios.

Russell 2000 Value: measures the performance of those Russell 2000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-to-earnings ratios.

Russell 3000: represents the largest 3,000 US companies based on total market capitalization, representing approximately 98% of the investable US equity market.

Value Relative Ratio (VRR): Performance metric used to evaluate long-term manager performance relative to a benchmark and to highlight compounded over/under performance data over a certain time frame. VRR is calculated by the growth of a dollar invested with the manager divided by the growth of a dollar invested in the benchmark for the same time period.

Risk Metric Description – Rationale for Selection and Calculation Methodology

US Equity Markets
Metric: P/E ratio = Price / "Normalized" earnings for the S&P 500 Index

To represent the price of US equity markets, we have chosen the S&P 500 index. This index has the longest published history of price, is well known, and also has reliable, long-term, published quarterly earnings. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the S&P 500 index). Equity markets are very volatile. Prices fluctuate significantly during normal times and extremely during periods of market stress or euphoria. Therefore, developing a measure of earnings power (E) which is stable is vitally important, if the measure is to provide insight. While equity prices can and do double, or get cut in half, real earnings power does not change nearly as much. Therefore, we have selected a well known measure of real, stable earnings power developed by Yale Professor Robert Shiller known as the Shiller E-10. The calculation of E-10 is simply the average real annual earnings over the past 10 years. Over 10 years, the earnings shenanigans and boom and bust levels of earnings tend to even out (and often times get restated). Therefore, this earnings statistic gives a reasonably stable, slow-to-change estimate of average real earnings power for the index. Professor Shiller's data and calculation of the E-10 are available on his website at http://www.econ.yale.edu/~shiller/data.htm. We have used his data as the base for our calculations. Details of the theoretical justification behind the measure can be found in his book *Irrational Exuberance* [Princeton University Press 2000, Broadway Books 2001, 2nd ed., 2005].

Developed Equity Markets Excluding the US
Metric: P/E ratio = Price / "Normalized" earnings for the MSCI EAFE Index

To represent the price of non-US developed equity markets, we have chosen the MSCI EAFE index. This index has the longest published history of price for non-US developed equities. The price=P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the MSCI EAFE index). The price level of this index is available starting in December 1969. Again, for the reasons described above, we elected to use the Shiller E-10 as our measure of earnings (E). Since 12/1972, a monthly price earnings ratio is available from MSCI. Using this quoted ratio, we have backed out the implied trailing-twelve month earnings of the EAFE index for each month from 12/1972 to the present. These annualized earnings are then inflation adjusted using CPI-U to represent real earnings in US dollar terms for each time period. The Shiller E-10 for the EAFE index (10 year average real earnings) is calculated in the same manner as detailed above.

However, we do not believe that the pricing and earnings history of the EAFE markets are long enough to be a reliable representation of pricing history for developed market equities outside of the US. Therefore, in constructing the Long-Term Average Historical P/E for developed ex-US equities for comparison purposes, we have elected to use the US equity market as a developed market proxy, from 1881 to 1982. This lowers the Long-Term Average Historical P/E considerably. We believe this methodology provides a more realistic historical comparison for a market with a relatively short history.

Emerging Market Equity Markets
Metric: Ratio of Emerging Market P/E Ratio to Developed Market P/E Ratio

To represent the Emerging Markets P/E Ratio, we have chosen the MSCI Emerging Market Free Index, which has P/E data back to January 1995 on Bloomberg. To represent the Developed Markets PE Ratio, we have chosen the MSCI World Index, which also has data back to January 1995 on Bloomberg. Although there are issues with published, single time period P/E ratios, in which the denominator effect can cause large movements, we feel that the information contained in such movements will alert investors to market activity that they will want to interpret.

US Private Equity Markets
Metrics: S&P LCD Average EBITDA Multiples Paid in LBOs and US Quarterly Deal Volume

The Average Purchase Price to EBITDA multiples paid in LBOs is published quarterly by S&P in their LCD study. This is the total price paid (both equity and debt) over the trailing-twelve month EBITDA (earnings before interest, taxes, depreciation and amortization) as calculated by S&P LCD. This is the relevant, high-level pricing metric that private equity managers use in assessing deals. Data is published monthly.

US quarterly deal volume for private equity is the total deal volume in $ billions (both equity and debt) reported in the quarter by Thomson Reuters Buyouts. This metric gives a measure of the level of activity in the market. Data is published quarterly.

US Private Real Estate Markets

Metrics: US Cap Rates, Cap Rate Spreads, and Transactions as a % of Market Value

Real estate cap rates are a measure of the price paid in the market to acquire properties versus their annualized income generation before financing costs (NOI=net operating income). The data, published by NCREIF, describes completed and leased properties (core) on an unleveraged basis. We chose to use current value cap rates. These are capitalization rates from properties that were revalued during the quarter. This data relies on estimates of value and therefore tends to be lagging (estimated prices are slower to rise and slower to fall than transaction prices). The data is published quarterly.

Spreads between the cap rate (described above) and the 10-year nominal Treasury yield, indicate a measure of the cost of properties versus a current measure of the cost of financing.

Transactions as a % of Market Value Trailing-Four Quarters is a measure of property turnover activity in the NCREIF Universe. This quarterly metric is a measure of activity in the market.

Credit Markets Fixed Income

Metric: Spreads

The absolute level of spreads over treasuries and spread trends (widening / narrowing) are good indicators of credit risk in the fixed income markets. Spreads incorporate estimates of future default, but can also be driven by technical dislocations in the fixed income markets. Abnormally narrow spreads (relative to historical levels) indicate higher levels of valuation risk, wide spreads indicate lower levels of valuation risk and / or elevated default fears. Investment grade bond spreads are represented by the Barclays Capital US Corporate Investment Grade Index Intermediate Component. The high yield corporate bond spreads are represented by the Barclays Capital US Corporate High Yield Index.

Measure of Equity Market Fear / Uncertainty

Metric: VIX – Measure of implied option volatility for US equity markets

The VIX is a key measure of near-term volatility conveyed by implied volatility of S&P 500 index option prices. VIX increases with uncertainty and fear. Stocks and the VIX are negatively correlated. Volatility tends to spike when equity markets fall.

Measure of Monetary Policy
Metric: Yield Curve Slope

We calculate the yield curve slope as the 10 year treasury yield minus the 1 year treasury yield. When the yield curve slope is zero or negative, this is a signal to pay attention. A negative yield curve slope signals lower rates in the future, caused by a contraction in economic activity. Recessions are typically preceded by an inverted (negatively sloped) yield curve. A very steep yield curve (2 or greater) indicates a large difference between shorter-term interest rates (the 1 year rate) and longer-term rates (the 10 year rate). This can signal expansion in economic activity in the future, or merely higher future interest rates.

Measures of US Inflation Expectations
Metrics: Breakeven Inflation and Inflation Adjusted Commodity Prices

Inflation is a very important indicator impacting all assets and financial instruments. Breakeven inflation is calculated as the 10 year nominal treasury yield minus the 10 year real yield on US TIPS (treasury inflation protected securities). Abnormally low long-term inflation expectations are indicative of deflationary fears. A rapid rise in breakeven inflation indicates an acceleration in inflationary expectations as market participants sell nominal treasuries and buy TIPs. If breakeven inflation continues to rise quarter over quarter, this is a signal of inflationary worries rising, which may cause Fed action and / or dollar decline.

Commodity price movement (above the rate of inflation) is an indication of anticipated inflation caused by real global economic activity putting pressure on resource prices. We calculate this metric by adjusted in the Dow Jones UBS Commodity Index (formerly Dow Jones AIG Commodity Index) by US CPI-U. While rising commodity prices will not necessarily translate to higher US inflation, higher US inflation will likely show up in higher commodity prices, particularly if world economic activity is robust.

These two measures of anticipated inflation can, and often are, conflicting.

Measures of US Treasury Bond Interest Rate Risk

Metrics: 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration

The expected annualized real yield of the 10 year US Treasury Bond is a measure of valuation risk for US Treasuries. A low real yield means investors will accept a low rate of expected return for the certainly of receiving their nominal cash flows. Meketa estimates the expected annualized real yield by subtracting an estimate of expected 10 year inflation (produced by the Survey of Professional Forecasters as collected by the Federal Reserve Bank of Philadelphia), from the 10 year Treasury constant maturity interest rate.

Duration for the 10-Year Treasury Bond is calculated based on the current yield and a price of 100. This is a measure of expected percentage movements in the price of the bond based on small movements in percentage yield. We make no attempt to account for convexity.

Definition of "Extreme" Metric Readings

A metric reading is defined as "extreme" if the metric reading is in the top or bottom decile of its historical readings. These "extreme" reading should cause the reader to pay attention. These metrics have reverted toward their mean values in the past.

RISK METRICS DESCRIPTION – Meketa Market Sentiment Indicator

What is the Meketa Market Sentiment Indicator (MMSI)?

The MMSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MMSI takes into account the momentum1 (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

[1] Momentum is defined as the persistence of relative performance. There is a significant amount of academic evidence indicating that positive momentum (e.g., strong performing stocks over the recent past continue to post strong performance into the near future) exists over near-to-intermediate holding periods. See, for example, "Understanding Momentum," *Financial Analysts Journal*, Scowcroft, Sefton, March, 2005.

How do I read the Meketa Market Sentiment Indicator (MMSI) graph?

Simply put, the MMSI is a color coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MMSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MMSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

How is the Meketa Market Sentiment Indicator (MMSI) Constructed?

The MMSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

1. Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
2. Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure. The color reading on the graph is determined as follows:

1. If both stock return momentum and bond spread momentum are positive = GREEN (positive)
2. If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
3. If both stock return momentum and bond spread momentum are negative = RED (negative)

What does the Meketa Market Sentiment Indicator (MMSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent.1 In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12 month period. The MMSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

[1] "Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010 http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: Training: Introduction to Capital Market Assumptions

SUMMARY

The Retirement System's investment consultant, Meketa, will provide a training on the process of developing the capital market assumptions used for completing the planned Asset-Allocation Study and the portfolio modeling process.

DISCUSSION

The Retirement System is working with Meketa to develop an updated Asset Allocation Study. Under the Retirement System's Statement of Investment Policy and Procedures, the Asset Allocation Study considers investments in a set of asset classes deemed prudent and appropriate by the Retirement Board. This training seeks to educate Retirement Board members on Meketa's capital market assumptions, how they were created and how they impact the planned Asset Allocation Study.

SDS:SGL

Attachment: Presentation: Introduction to Capital Market Assumptions

MEKETA | 45
CELEBRATING A MILESTONE | YEARS

East Bay Municipal Utility District Employees' Retirement System

January 2024

Introduction to Capital Market Assumptions

Table of Contents

Introduction

Setting Capital Market Assumptions ("CMAs")

→ CMAs are the inputs needed to calculate a portfolio's expected return, volatility, and relationships (i.e., correlations) to the broader markets.

- CMAs are also used in mean-variance optimization, simulation-based optimization, asset-liability modeling, and every other technique for finding "optimal" portfolios.

→ Consultants (including Meketa) generally set them once per year.

- Our results are published in January based on December 31 data.
- We are currently in the process of updating our forward-looking CMAs for 2024. This is expected to be completed by the end of January.

→ This involves setting long-term expectations for a variety of asset class/strategy attributes:

- Returns
- Standard Deviations
- Correlations

→ Our process relies on both quantitative and qualitative methodologies.

2024 vs. 2023 Summary

→ Many investors achieved returns in calendar year 2023 that were above their target return.

- Much of the strong performance was driven by a rebound in public equity markets.

→ Short-term interest rates increased or remained relatively stable in 2023.

→ Longer-term interest rates experienced material volatility in 2023 but ended the year at similar yields as they began the period.

- However, credit spreads for many fixed income assets generally tightened during the year.

→ With increasing public equity prices and relatively stable fixed income yields (in aggregate due to offsetting effects), our 2024 CMAs are anticipated to project lower total portfolio returns over the next decade compared to early-2023.

- Additionally, due to lower private markets activity in 2023 (e.g., real estate transactions, private equity exits, etc.), there is additional uncertainty regarding private markets projections.

Overview of Process

Developing Expected Returns

→ Market practitioners generally make use of three methods for developing long-term expected returns:

- Historical average returns
- Financial/economic theory (e.g., higher risk = higher returns, capital structures, etc.)
- Current measures (e.g., starting valuations relative to history)

→ In addition to the above, practitioners also incorporate general projections for macroeconomic metrics such as GDP and inflation, among others.

→ Meketa's methods are in-line with industry standards and represent a mixture of the three mechanisms.

- Historical average returns play the smallest role in our assumptions.

2023 Peer Survey

→ Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.[1]

→ The Horizon survey is a useful tool to determine whether a consultant's expectations for returns (and risk) are reasonable.

Asset Class	Horizon 10-Year Average Return (%)	Meketa 10-Year (%)	Horizon 20-Year Average Return (%)	Meketa 20-Year (%)
Cash Equivalents	3.4	3.1	3.2	2.9
TIPS	4.1	4.3	4.1	4.5
US Core Bonds	4.7	4.8	4.8	4.7
US High Yield Bonds	6.4	8.0	6.5	7.3
Emerging Market Debt	6.3	6.5	6.4	6.2
Private Debt	8.2	9.4	8.2	9.0
US Equity (large cap)	6.9	7.8	7.4	8.7
Developed Non-US Equity	7.5	10.1	7.8	9.8
Emerging Non-US Equity	8.2	10.3	8.6	10.0
Private Equity	9.5	9.7	10.1	11.0
Real Estate	6.0	5.9	6.3	7.8
Infrastructure	7.0	6.9	7.1	8.3
Commodities	5.0	6.3	4.9	5.7
Hedge Funds	6.0	5.4	6.2	6.1
Inflation	2.6	2.5	2.5	2.6

[1] The 10-year horizon included all 42 respondents, and the 20-year horizon included 27 respondents. Figures are based on Meketa's 2023 CMAs.

Building 10-year Forecasts

→ Our first step is to develop 10-year forecasts based on fundamental models.

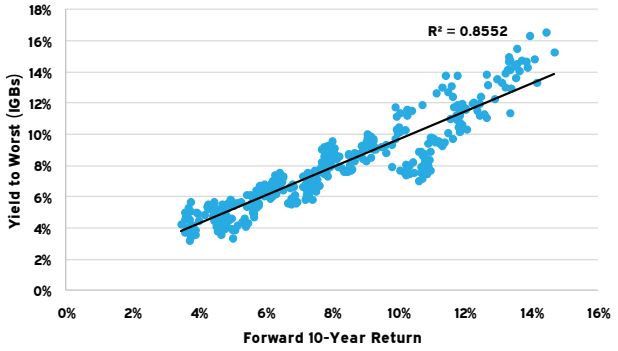
- Each model is based on the most important factors that drive returns for that asset class:

Asset Class Category	Major Factors
Equities	Dividend Yield, GDP Growth, Valuation
Bonds	Yield to Worst, Default Rate, Recovery Rate
Commodities	Collateral Yield, Roll Yield, Inflation
Infrastructure	Public IS Valuation, Income, Growth
Natural Resources	Price per Acre, Income, Public Market Valuation
Real Estate	Cap Rate, Yield, Growth
Private Equity	EBITDA Multiple, Debt Multiple, Public VC Valuation
Hedge Funds and Other	Leverage, Alternative Betas

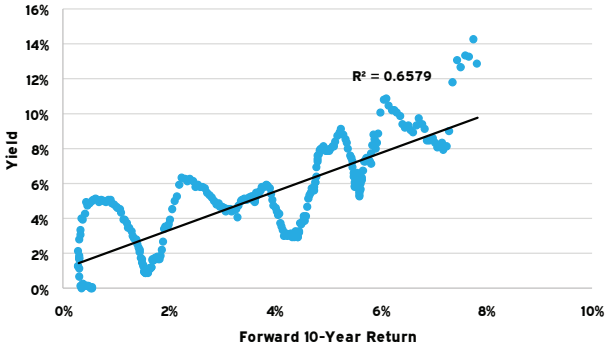
- The common components are income, growth, and valuation.

Some factors are naturally more predictive than others

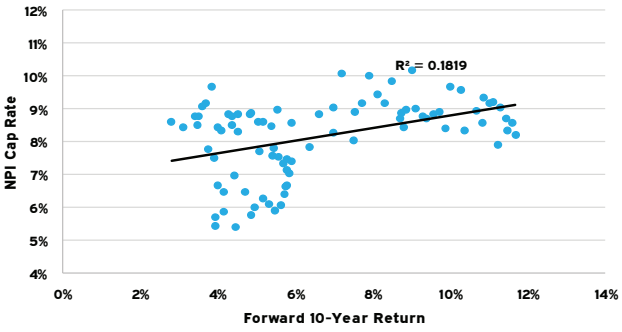
Investment Grade Bonds
Yield to Worst vs. Forward 10-Year Returns



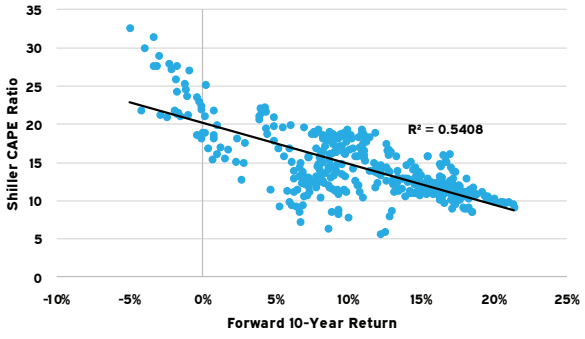
Cash (90-day T-Bill)
Yield vs. Forward 10-Year Returns



Core Real Estate
Cap Rates vs. Forward 10-Year Returns



US Equities
Shiller CAPE vs. Forward 10-Year Returns



CMA Development Example: Public Equities

→ We use a fundamental model for equities that combines income and capital appreciation:

$$E(R) = Dividend\ Yield + Price\ Return + Currency\ Effect$$

$$Price\ Return = Earnings\ Growth + Multiple\ Effect$$

→ We use the current dividend yield on the respective index.[1]

→ Earnings growth is a function of real GDP growth, inflation, and exposure to foreign revenue sources.

→ We use three approaches to calculate the multiple effect.

- The models assume reversion to the mean or fair value.

→ We arrive at our preliminary 10-year assumption (in local currency)

$$\text{US Equity } E(R) = 1.8\% + [(1 + 5.4\%) \times (1 + 0.6\%) - 1] = 7.8\%$$

→ For non-US equities, we add the expected currency effect vs. the US Dollar to the local expected return.

[1] The source for dividend yields is S&P 500 for the US and MSCI for non-US equities.

CMA Development Example: Bonds

→ The short version for most investment grade bond models is: E(R) = current YTW.

→ The longer version accounts for the expected term structure in the future.

- If the average duration is roughly five years, we calculate the expected yield in five years.
- The net effect tends to be minimal, since higher income in years 5 to 10 is offset by price declines in years 1 to 5.

→ For corporate bonds, we assume the spread vs. Treasuries will revert most of the way back to their mean since 1990.

→ For cash, we use an average of the current rate and the rate suggested by the Taylor Rule (inputs are current & potential GDP, current & desired inflation).

→ For TIPS, we add the real yield for the TIPS index to the expected inflation rate used in the equities models.

→ As with equities, we also make currency adjustments when necessary.

- This currently provides a tailwind to foreign and EM local currency debt.

CMA Development Example: Bonds (con't)

→ For anything with credit risk, we also take into account the expected default & recovery rates.

	Inv. Grade Corporate (%)	LT Corporate (%)	Foreign Debt (%)	EM Debt (major) (%)	EM Debt (local) (%)	High Yield (%)	Bank Loans (%)
Default Rate	0.08	0.08	0.09	1.27	0.21	3.00	3.00
Loss Rate	50	50	50	50	50	50	40

→ As a guide, we use Moody's historical global default & recovery data for each bucket as it is currently rated.

- Example: EM Debt (local currency)

Rating	Weighting (%)	Default Rate (%)	Weighted Default (%)
Aaa	13.4%	0.06%	0.01%
Aa	61.4%	0.09%	0.06%
Baa	17.5%	0.27%	0.05%
Ba	6.9%	1.06%	0.07%
B	0.7%	3.40%	0.02%
Total Weighted Average Default Rate:			**0.21%**

CMA Development Example: Covered Calls

→ We use two models for covered calls:

→ Model #1

- This examines the two return drivers of the strategy: equity risk premium and volatility risk premium.
- The equity component is adjusted for the equity beta (~0.5) of covered calls.
- Due to its historical stability, the volatility risk premium is based on its history.

→ Model #2

- Historical statistical comparison of covered calls vs. US equity.
- We compare the historical returns, volatilities, and correlations of the assets.
- The output of this model is adjusted based on our forward-looking US equity assumption.

→ The final CMAs for covered calls is a combination of the models, which tend to match closely.

CMA Development Example: Private Credit

→ For direct lending and asset-based lending (formerly specialty finance), we use a building blocks approach that is based on income and loss thereof.

- For income, we make an estimate based on our private credit team's assessment of what the current average coupon rate is.

→ We add an upfront fee (paid by the borrower) or original issue discount if applicable.

- This usually ranges between 1% and 3%.

→ We incorporate default and recovery rates.

- We use a default rate and recovery rate roughly the same as for bank loans.
- These are subjective, as no long-term data exists on private credit defaults.

→ We add leverage (more applicable in direct lending) and subtract the cost of borrowing.

→ We subtract management fees and carried interest.

CMA Development Example: Private Credit (cont.)

→ For Special Situations Lending, we use a combination of models for capital solutions and more traditional distressed debt.

- The capital solutions model resembles that for direct lending, but with higher equity kickers, coupons, and default rates.
- The distressed debt model resembles that for public high yield bonds and is based on data for the Bloomberg US CCC and Ca-D indices.
  - It uses a much higher default rate than high yield bonds (the historical rate is approximately 30%).
- We subtract management fees and carried interest.

→ For aggregate private credit, we take a weighted average based on a mix of the broad opportunity set and a typical client allocation to private debt.

Component	Weight (%)	2023 E(R) (%)
Direct Lending	50	8.5
Asset Based Lending	20	9.4
Special Situations	30	10.8
Private Debt Composite		9.4

CMA Development Example: Real Estate

→ For Core Real Estate, we used two models.

- The first model adds a premium to the Cap Rate[1].
  - Core RE has historically returned approximately 1.0% more than its cap rate at the start of the period over the subsequent ten years.
- The second model combines income with capital appreciation potential.
  - The income for core RE has historically been the cap rate minus 2-3% (for Cap Ex).
  - We assume income (NOI) grows at the rate of inflation.
  - We assume there is some measure of fair value for cap rates relative to bond yields.
    - → We make a price adjustment based on the forward yield curve.
- We adjust for leverage, borrowing costs, and fees.

[1] Source: NCREIF.

CMA Development Example: Real Estate (cont.)

→ For Non-Core Real Estate, we start with a historical premiums versus core RE.

- This includes the effect of greater control, development, buying at distress, etc.

→ We add a non-US component (e.g., premium for lower cap rates) and a currency effect.

- We assume 20% to 40% of non-core commitments will be ex-US (majority in Europe).

→ We lever the portfolio and then subtract the cost of borrowing.

- Value-added leverage ranges 40-70% while opportunistic ranges 50-80%.
- Value-added cost of debt ranges at LIBOR plus 200-350 and opportunistic at LIBOR plus 300-500.

→ Finally, we subtracted management fees and carried interest.

CMA Development Example: Real Estate (cont.)

→ For REITs, we focus on historical pricing and yields.

- We first look at current REIT Yields.[1]
  - REITs have historically returned 2.7% more than their yield at the start of the period over the subsequent ten years.
- We next look at spreads versus Treasuries and Baa corporates.
  - REITs have yielded 1.8% more than 5-year Treasuries since 1990.
  - REITs have historically yielded 1.1% less than Baa corporate bonds since 1990.
- We also looked at the price change required for REITS to return to the average REIT yield spread implied in 5 years.

REIT Yield (%)	Price Change implied by spread vs 5-year Treasury Yield (%)	Price Change implied by spread vs Baa Yield (%)
4.2	-5.0	7.4

- We average the impact of these pricing factors and then and this to income and income growth.

[1] Source: FTSE NAREIT.

The Other Inputs: Standard Deviation and Correlation

→ Standard deviation:

- We review the trailing fifteen-year standard deviation, as well as skewness.
- Historical standard deviation serves as the base for our assumptions.
- If there is a negative skew, we increased the volatility assumption based on the size of the historical skewness.

Asset Class	Historical Standard Deviation (%)	Skewness	Assumption (%)
Bank Loans	7.7	-2.7	10.0
FI/L-S Credit	6.8	-2.5	9.0

- We also adjust for private market asset classes with "smoothed" return streams.

→ Correlation:

- We use trailing fifteen-year correlations as our guide.
- Again, we make adjustments for "smoothed" return streams.

→ Most of our adjustments are conservative in nature (i.e., they increase the standard deviation and correlation).

Moving from 10-Year to 20-Year Forecasts

→ Our next step is to combine our 10-year forecasts with projections for years 11-20 for each asset class.

→ We use a risk premia approach to forecast 10-year returns in ten years (i.e., years 11-20).

- We start with an assumption (market informed, such as the 10-year forward rate) for what the risk free rate will be in ten years.
- We then add a risk premia for each asset class.
- We use historical risk premia as a guide, but many asset classes will differ from this, especially if they have a shorter history.
- We seek consistency with finance theory (i.e., riskier assets will have a higher risk premia assumption).

→ Essentially, we assume mean-reversion over the first ten years (where appropriate), and consistency with CAPM thereafter.

→ The final step is to make any qualitative adjustments.

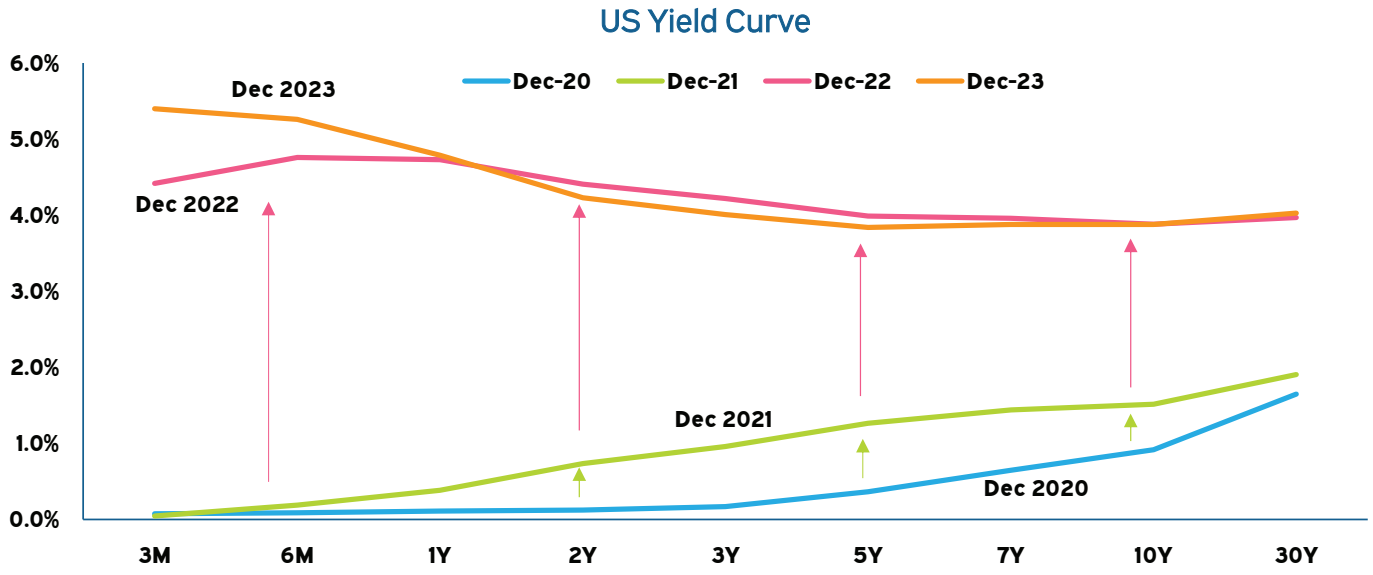
- The Investment Policy Committee reviews the output and may make adjustments.

Market Update/Review

Interest Rate Volatility

→ Interest rate changes were a dominant storyline of 2023. While short-term rates increased throughout 2023, intermediate and long-term rates experienced significant volatility but ultimately finished the year at similar yields to where they started.

→ Rates remained materially higher as of 12/31/2023 compared to 2020 and 2021.



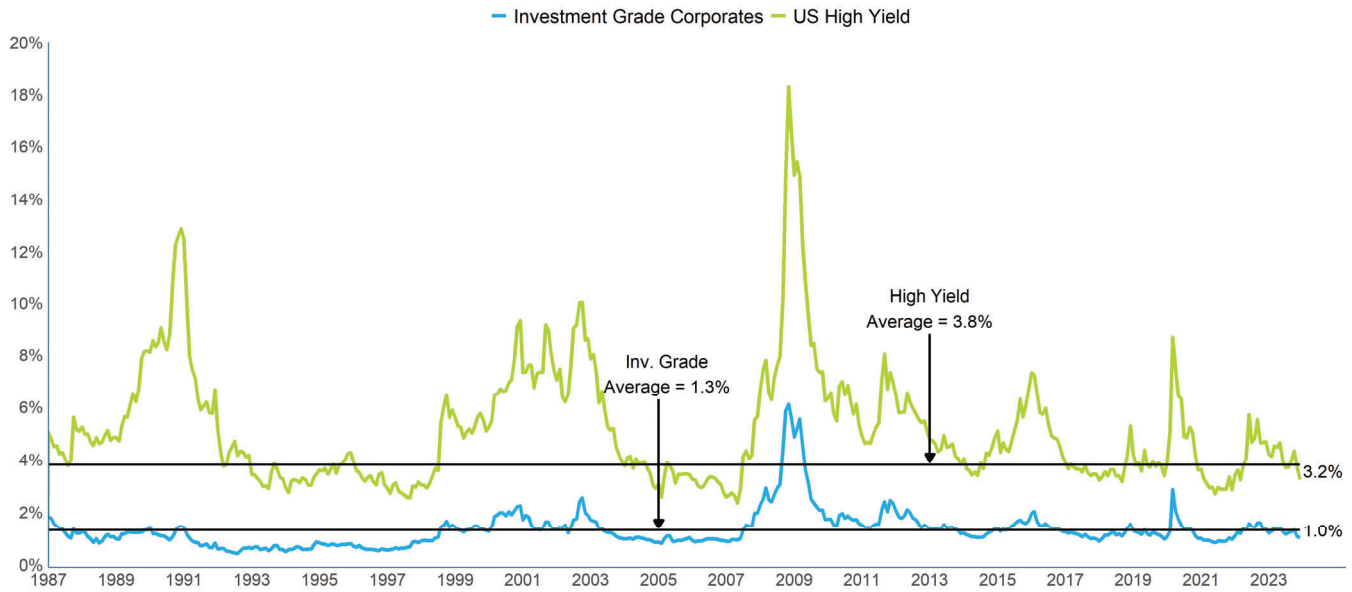
Source: Bloomberg. Data is as of December 31, 2023.

Narrower Credit Spreads

→ Credit spreads tightened slightly in 2023, though they remain close to their long-term averages.

- Lower quality credit spreads experienced a more substantial tightening. The spread for high yield bonds declined from 469 bp to 323 bp.

Credit Spreads



Source: Bloomberg. High Yield is proxied by the Bloomberg High Yield Index and Investment Grade Corporates are proxied by the Bloomberg US Corporate Investment Grade Index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year US Treasury yield. Data is as of December 31, 2023.

Similar or Lower Yields (12/23 vs. 12/22)

→ Short-term interest rates are higher than one year ago, while the 10-year Treasury yield ended the year where it started it.

→ Similar levels of interest rates combined with tighter credit spreads to result in slightly lower yields for most sectors of the global bond market.

Index	Yield to Worst 12/31/23 (%)	Yield to Worst 12/31/22 (%)	Yield to Worst 12/31/21 (%)	Yield to Worst 12/31/20 (%)
Fed Funds Rate	5.25-5.50	4.25-4.50	0-0.25	0-0.25
10-year Treasury	3.88	3.88	1.52	0.93
Bloomberg Aggregate	4.53	4.68	1.75	1.12
Bloomberg Corporate	5.06	5.42	2.33	1.74
Bloomberg Securitized	4.72	4.75	1.98	1.25
Bloomberg Global Aggregate	3.51	3.73	1.31	0.83
Bloomberg EM Local Currency Government	4.08	4.42	3.83	3.20
Bloomberg EM Hard Currency Aggregate	6.77	7.26	3.96	3.20
Bloomberg US Corporate High Yield	7.59	8.96	4.21	4.18

Source: Bloomberg.

Slightly Lower Inflation Expectations

→ After substantial changes in inflation expectations in recent years, the market's expectations for inflation were little changed at the end of 2023.

- The 10-year BEI rate dropped from 2.3% to 2.2%. The 5-year BEI was slightly lower, at 2.1%.

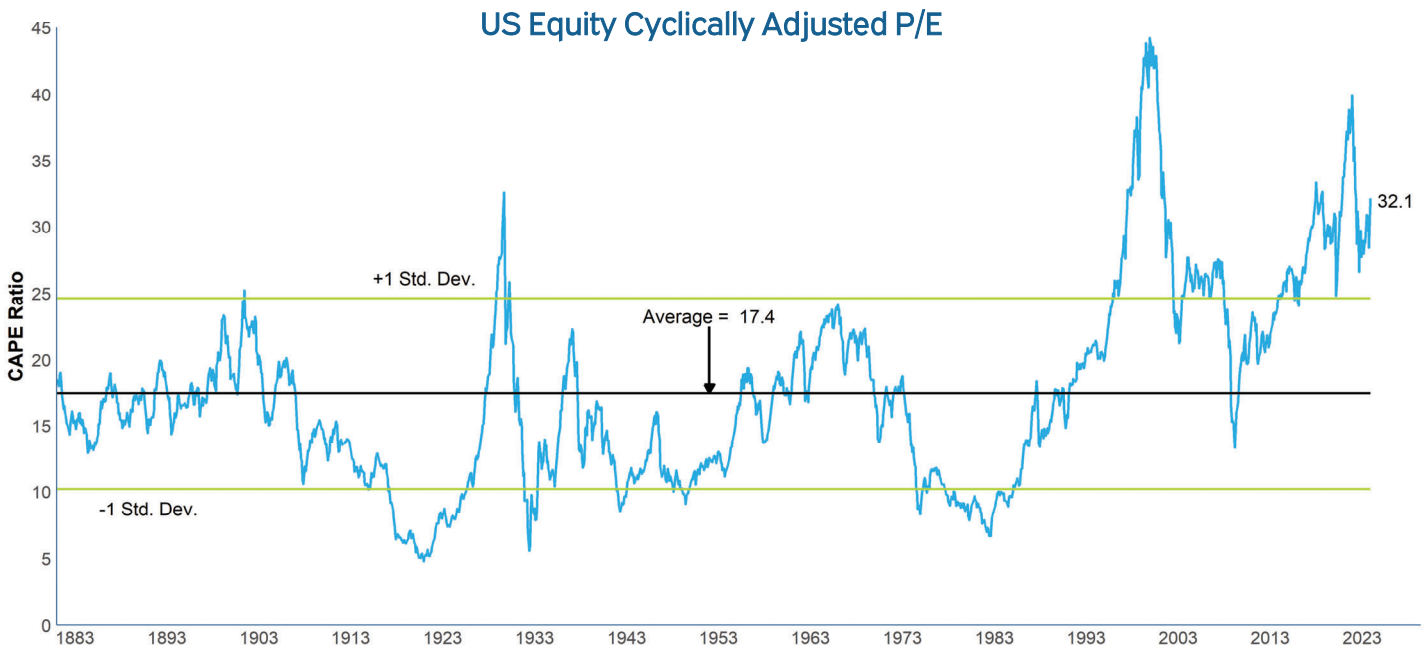
Ten-Year Breakeven Inflation

Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA). Data is as of December 31, 2023.

Higher Valuations for US Equities

→ US stocks had a very good year, with the S&P 500 index gaining 26.3% in 2023.

→ Valuations increased and remain elevated relative to their long-term history, though they are much nearer their average for the past 30 years.



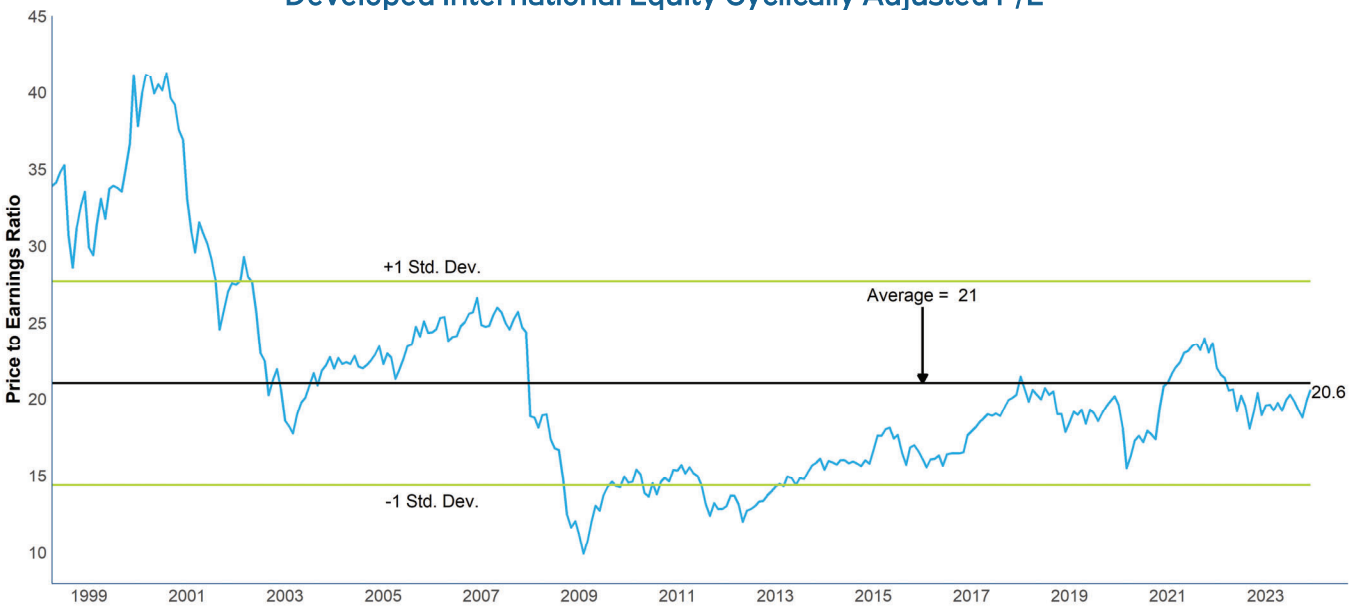
Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is as of December 31, 2023.

Slightly Higher Prices in Non-US Equities, too

→ EAFE equities gained 18.2% in USD terms in 2023, benefiting slightly from a currency tailwind.

→ Despite increasing from one year ago, EAFE valuations remain close to their 25-year historical average.

Developed International Equity Cyclically Adjusted P/E



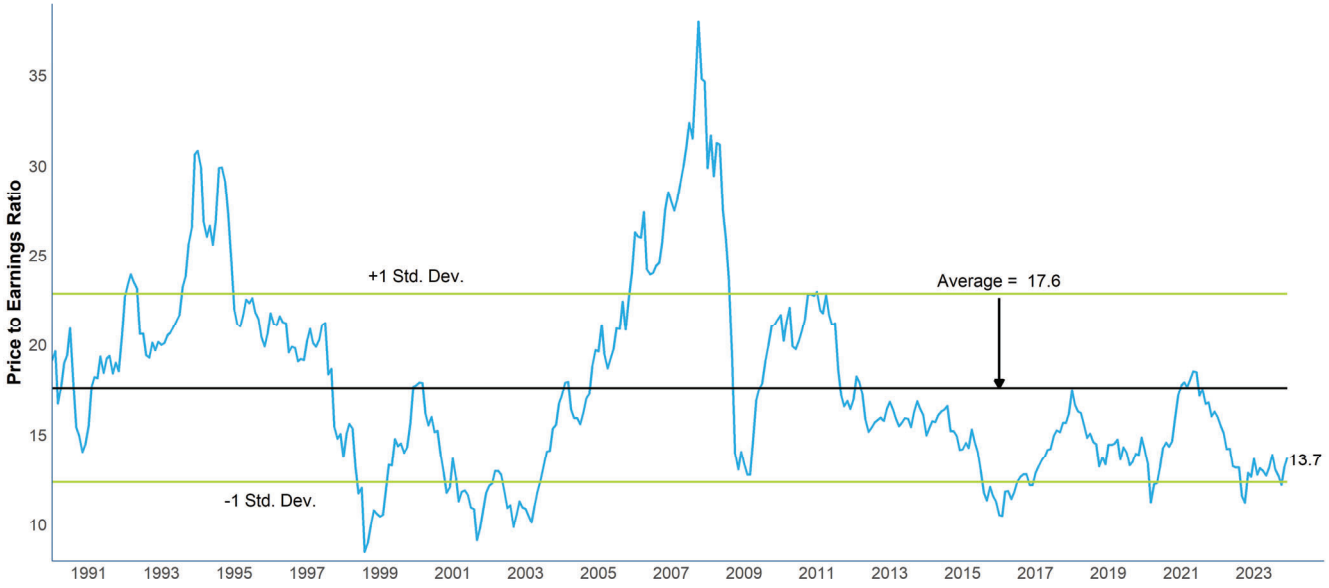
Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of December 31, 2023.

And Slightly Higher Prices in Emerging Market Equities

→ Emerging market equities gained 9.8% in 2023, despite Chinese equities declining -11.2%.

→ EM equity valuations remain well below their long-term average, though there is a significant difference between EM ex-China and China valuations.

Emerging Market Equity Cyclically Adjusted P/E



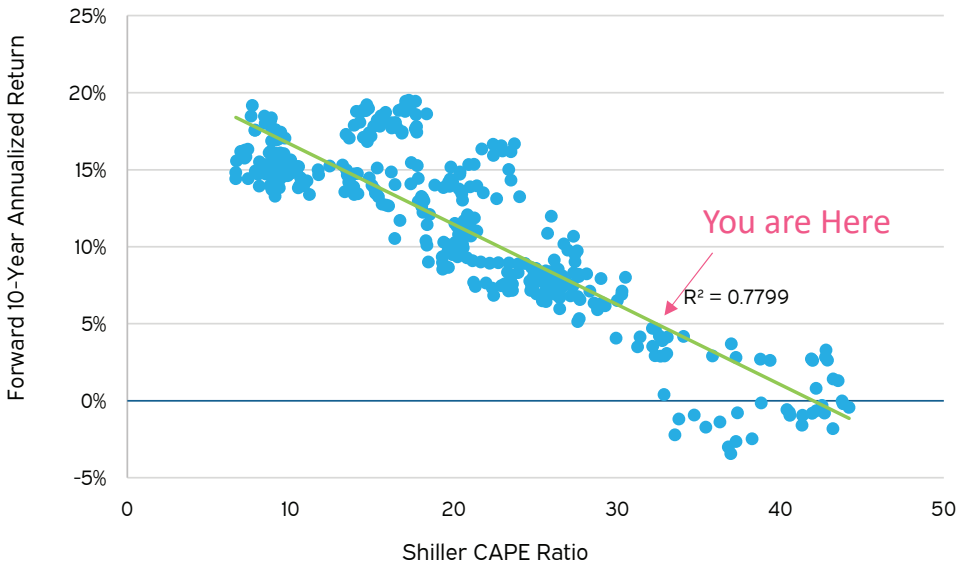
Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of December 31, 2023.

Higher Prices Imply Lower Returns for Equities

→ Relative prices have been indicative of future equity returns.

→ Higher prices have led to lower future returns, and vice versa.

US Equities: Shiller CAPE vs. Forward 10-Year Returns



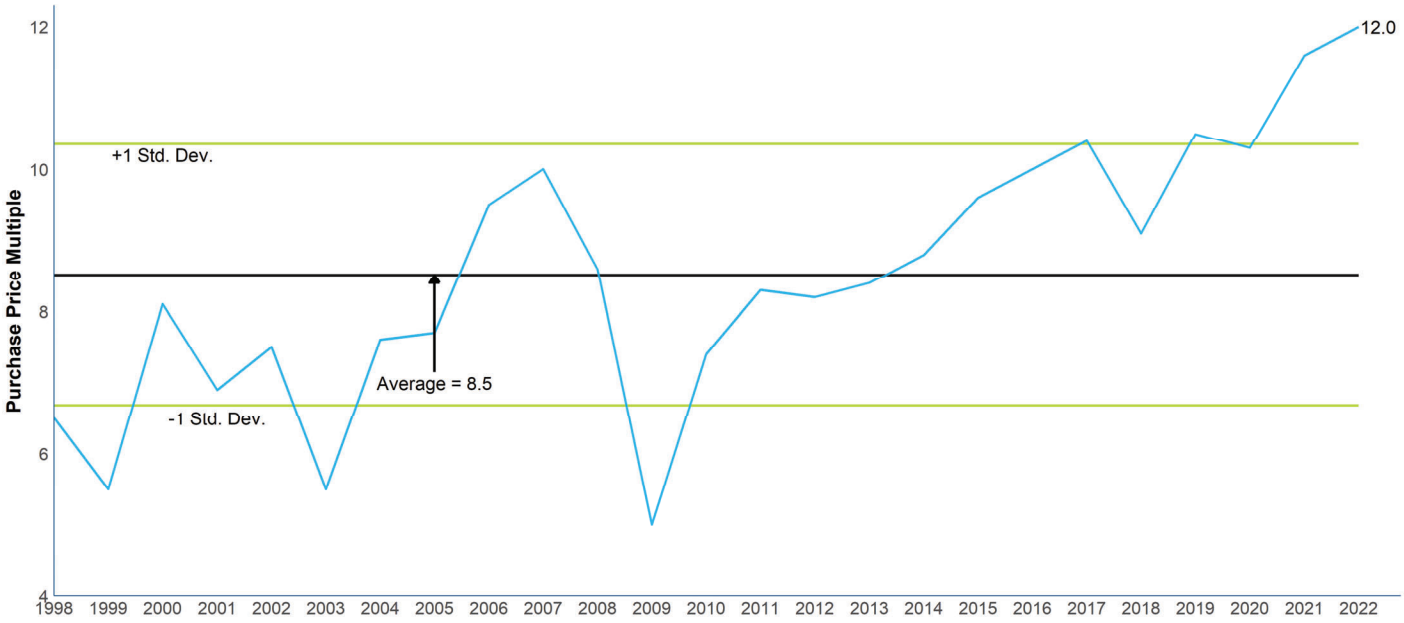
Source: Robert Shiller, Yale University, and Meketa Investment Group. Data is based on monthly returns and Cyclically Adjusted P/E ratio on S&P 500 Index for the period from January 1980 through December 2023.

Higher Prices in Private Equity, too

→ EBITDA multiples are the closest proxy to a P/E ratio for private equity.

- Like public markets, private markets valuations remain elevated.

Private Equity Multiples



Source: S&P LCD Average EBITDA Multiples Paid in All LBOs. Annual figures, except for 2021 (YTD), as of September 30, 2023.

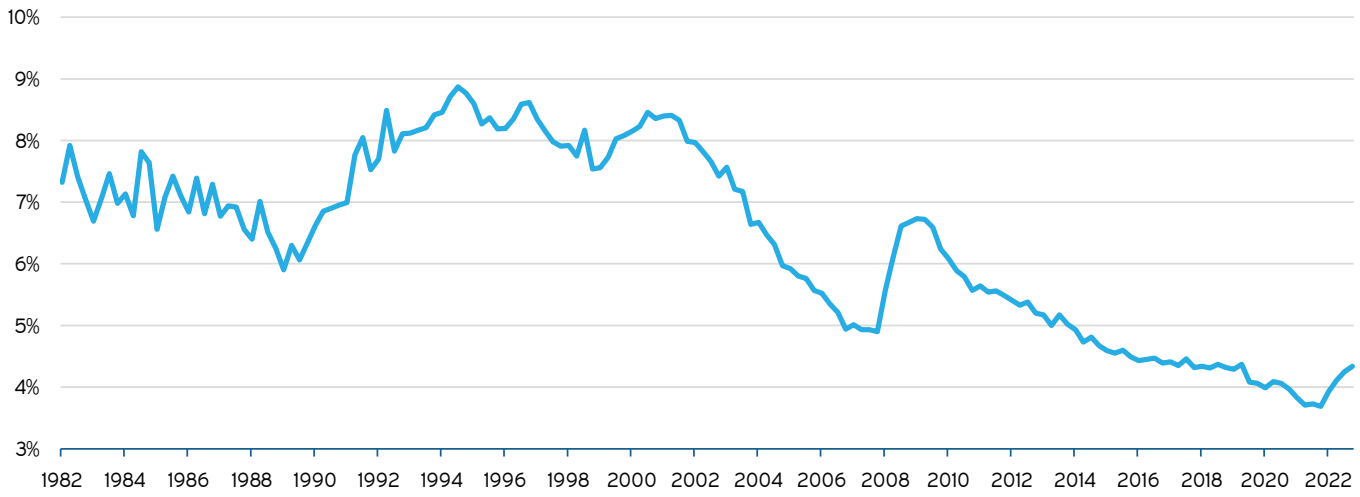
Increasing Real Estate Yields

→ Real estate cap rates are similar to an earnings yield (the inverse of the P/E ratio) for equities.

- Cap rates are indicative of future returns.

→ While cap rates have been gradually declining for decades, they have recently increased largely due to lower core real estate prices.

Core Real Estate Cap Rates



Source: NCREIF NPI value-weighted cap rates. As of September 30, 2023.

Conclusion

Conclusion

→ Asset allocation is the most important decision EBMUDERS will make.

- It is the area we believe the most time should be spent on.

→ CMAs serves as critical inputs for the asset-side of the asset-liability study.

→ Like all investment models, CMAs are imperfect but forecasting accuracy is improved when examining longer horizons.

→ The current capital market environment is presenting investors with considerable variability in setting long-term expected returns for certain asset classes.

→ Meketa will provide updated CMAs to EBMUDERS at the next stage of the asset-liability study.

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Cindy Charan, Director of Human Resources

FROM: Lisa Sorani, Manager of Employee Services

SUBJECT: HIB Study Schedule and Retiree Demographics and HIB Utilization

This memo outlines the topics for each of the upcoming HIB Study meeting dates and an introduction to the attached presentation.

HIB STUDY SCHEDULE

Meeting Date	HIB Study Topic
February 6, 2024 (special) 9:00 a.m. -12:00 p.m.	*Historical Review of the Retiree Healthcare Marketplace 2004 – 2024*
April 16, 2024 (special) 9:00 a.m. – 12:00 p.m.	*Review and discuss detailed Benchmark data related to District HIB vs. Competitor retiree health benefits, historically and today.*
June 4, 2024 (special) 9:00 a.m. – 12:00 p.m.	*Working session to consider and build HIB Proposals for final costing.*
July 18, 2024 8:30 a.m. – 1:00 p.m.	*Authorize proposal to send to Board of Directors*

The attached presentation for the HIB Study is a set of data detailing the status quo for our current retirees as of November 30, 2023, including their use of the HIB benefit and District health plans. Consultants Tom Sher and Billie Brown from Alliant Insurance Services Inc. will present the data.

This information is a start to our HIB Study. Staff will bring this data back to the Tuesday, February 6, 2024, Special Retirement Board meeting for reference as we continue the HIB Study.

East Bay Municipal Utility District

Retirement Board Meeting

January 18, 2024

Presented by:
Tom Sher
Billie Brown

Alliant Insurance Services

Today's Agenda

Agenda

- Executive Summary
- Retiree Demographic Overview
- Medicare Retirees
- Non-Medicare Retirees

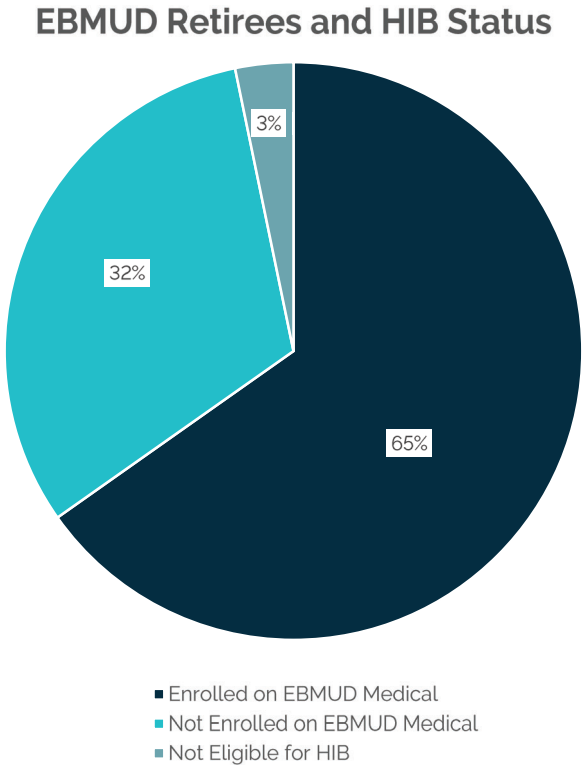
Executive Summary

Executive Summary

- The data provided today are intended to lay the foundation for the HIB Study sessions by describing the current state of EBMUD retirees as of November 30, 2023 to include retirees' eligibility for and use of the HIB benefit and District Health Plans
- For retirees enrolled in District-sponsored Health Plans we have tabulated:
  - Enrollment for each District-sponsored health plan
  - The total cost of each health plan
  - The out-of-pocket cost to retirees of each plan in excess of the HIB benefit

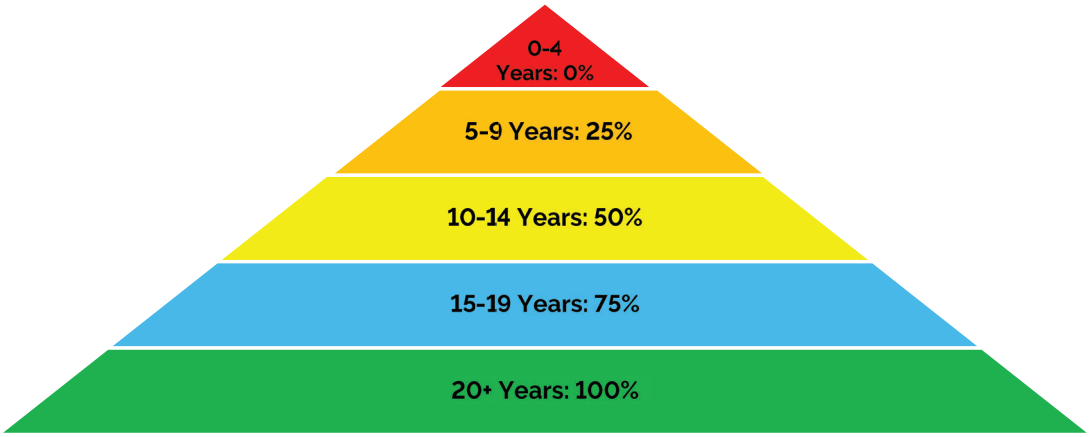
Executive Summary

- There are 2,034 District retirees
  - 1,967 retirees (97%) are eligible for the HIB benefit (including deferred retirees)
    - 1,326 (65%) are enrolled in District-sponsored health plans
    - 641 (32%) are NOT enrolled in District-sponsored health plans but are eligible to use the HIB benefit for other eligible expenses including non-District health plans, dental, vision and long-term care insurance premiums
      - Out of the 641 retirees not enrolled on a District-sponsored health plan, 391 (61%) are not utilizing the HIB benefit
  - 67 (3%) are not eligible for the HIB benefit



Executive Summary

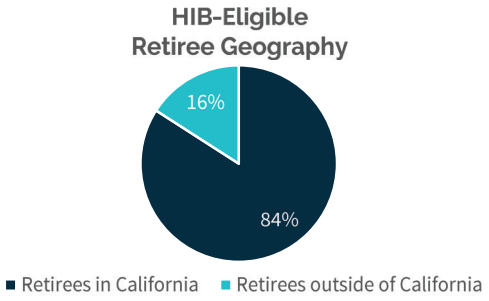
- **HIB Reimbursement**
  - The maximum amount of reimbursement is $450 for a single employee and $550 for an employee with one dependent (spouse or state registered domestic partner)
  - Years of service determines the amount of the benefit
  - The current structure provides a greater benefit to employees who work longer for the District

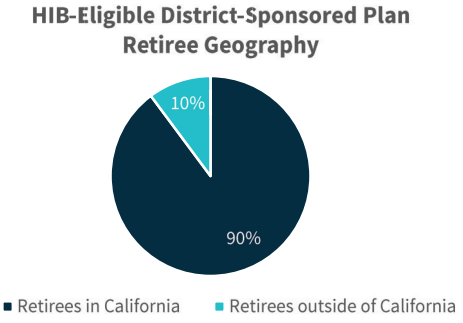


Retiree Demographic Overview

Demographic Overview
Geography Statistics

- There are 1,967 District retirees who are eligible for the HIB reimbursement
  - 1,654 (84%) of the HIB eligible retirees live in California vs. 313 (16%) outside of California
- There are 1,326 retirees enrolled in a District-sponsored Health Plan
  - 1,191 (90%) of these retirees are in California*
    - 955 (80%) are age 65+
    - 236 are (20%) under age 65
  - 135 (10%) of these retirees are outside of California
    - 104 (77%) are age 65+
    - 31 (23%) are under age 65

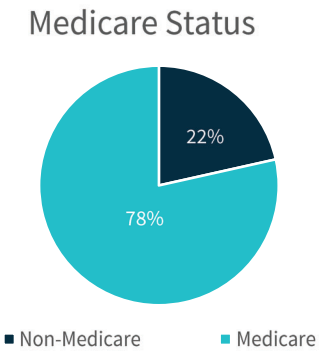




Note: Not all retirees in California live in a Kaiser service area

Demographic Overview
All HIB-eligible Retirees

- There are a total of 1,967 HIB-Eligible Retirees
  - 1,544 are of Medicare age (78%)
  - 423 (22%) are below Medicare age
- The current average age of these retirees is 71.5
  - The current average age of Non-Medicare retirees is 60.6
  - The current average age of Medicare retirees is 74.6
- The average age at retirement for these retirees is 60.3
- The demographics for HIB-eligible retirees enrolled in District-sponsored health plans are similar to those not enrolled in a District-sponsored health plan



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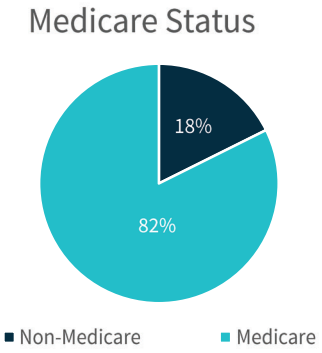
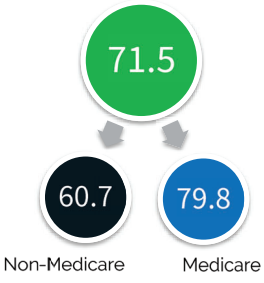
Demographic Overview
HIB-eligible Retirees Enrolled in District-Sponsored Plans

- 1,326 HIB-eligible retirees are enrolled in a District-sponsored health plan:
  - 1,092 are enrolled in a Medicare plan (82%)
  - 234 (18%) are not enrolled in a Medicare plan
- The current average age of these retirees is 71.5
  - The current average age of Non-Medicare retirees is 60.7
  - The current average age of Medicare retirees is 79.8
- The average age at retirement for these retirees is 60.4



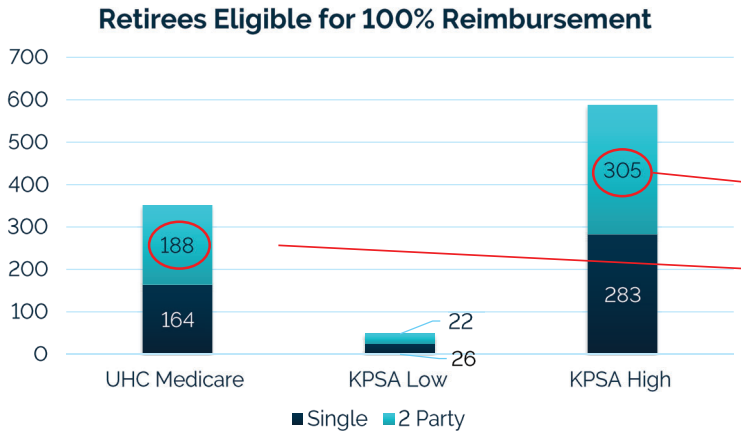


Medicare Retirees

Alliant Insurance Services

Medicare Retirees

- 988 Medicare retirees with 20 or more years of service are eligible for 100% of the HIB reimbursement benefit
- Of these, 495 (50%) are enrolled in an EBMUD-sponsored health plan for which there is $0 out-of-pocket cost for coverage
- All Medicare retirees (single and 2-party) who are eligible for 100% HIB reimbursement currently have access to enroll in a plan with $0 out-of-pocket costs, however there are only 50% currently enrolled in these plans



Medicare Plan Out of Pocket Cost	Single	2 Party
KPSA Low	$0	$0
KPSA High	$0	$59
UHC Medicare	$0	$275

Alliant Insurance Services

EBMUD Medicare Plans
HIB Reimbursements and Retiree Out of Pocket Amounts

- Indicates retirees eligible for 100% HIB reimbursement and enrolled in an EBMUD-sponsored Health plan
- KPSA rates assume both individuals are Medicare
- Rates are reflective of the 2024 renewal and are rounded to the nearest dollar

HIB Reimbursements	Medicare Plans					
	UHC Medicare PPO		KPSA Low		KPSA High	
	Single	2-Party	Single	2-Party	Single	2-Party
Monthly Premium	**$412**	**$825**	**$246**	**$491**	**$305**	**$609**
0% Reimbursement (>5 years)	$0	$0	$0	$0	$0	$0
Member Out of Pocket Premium	$412	$825	$246	$491	$305	$609
25% Reimbursement (5 but <10)	$112.50	$137.50	$112.50	$137.50	$112.50	$137.50
Member Out of Pocket Premium	$300	$687	$133	$354	$192	$472
50% Reimbursement (10 but < 15)	$125.00	$275.00	$125.00	$275.00	$125.00	$275.00
Member Out of Pocket Premium	$187	$550	$21	$216	$80	$334
75% Reimbursement (15 but < 20)	$337.50	$412.50	$337.50	$412.50	$337.50	$412.50
Member Out of Pocket Premium	$75	$412	**$0**	$79	**$0**	$197
100% Reimbursement (20+ years)	$450.00	$550.00	$450.00	$550.00	$450.00	$550.00
Member Out of Pocket Premium	**$0**	$275	**$0**	**$0**	**$0**	$59

Alliant Insurance Services

EBMUD Medicare Plans
Enrollment Based on HIB Tier

Enrollment	Medicare Plans						TOTALS	% Enrolled by Plan	% Enrolled of HIB-Eligible by Tier
	UHC Medicare PPO		KPSA Low		KPSA High				
	Single	2-Party	Single	2-Party	Single	2-Party			
0% Reimbursement (>5 years) - Enrollment	0	0	0	0	0	0	**0**	**0.0%**	**0.0%**
25% Reimbursement (5 but <10) - Enrollment	1	0	0	2	3	9	**15**	**1.4%**	**14.9%**
50% Reimbursement (10 but < 15) - Enrollment	10	8	1	2	10	13	**44**	**4.0%**	**41.5%**
75% Reimbursement (15 but < 20) - Enrollment	6	6	1	3	9	20	**45**	**4.1%**	**63.4%**
100% Reimbursement (20+ years) - Enrollment	164	188	26	22	283	305	**988**	**90.5%**	**82.4%**
							1,092		

Enrollment Counts

No Enrollment
Under 10 Enrolled
10 to 20 Enrolled
21+ Enrolled

Alliant Insurance Services

EBMUD Medicare Plans
Enrollment and Cost by Plan and HIB Tier

Indicates retirees who have a $0 out of pocket cost

HIB Reimbursements	Medicare Plans					
	UHC Medicare PPO		KPSA Low		KPSA High	
	Single	2-Party	Single	2-Party	Single	2-Party
Monthly Premium	**$412**	**$825**	**$246**	**$491**	**$305**	**$609**
0% Reimbursement (>5 years) - Enrollment Counts	0	0	0	0	0	0
Member Out of Pocket Premium	$412	$825	$246	$491	$305	$609
25% Reimbursement (5 but <10) - Enrollment Counts	1	0	0	2	3	9
Member Out of Pocket Premium	$300	$687	$133	$354	$192	$472
50% Reimbursement (10 but < 15) - Enrollment Counts	10	8	1	2	10	13
Member Out of Pocket Premium	$187	$550	$21	$216	$80	$334
75% Reimbursement (15 but < 20) - Enrollment Counts	6	6	1	3	9	20
Member Out of Pocket Premium	$75	$412	$0	$79	$0	$197
100% Reimbursement (20+ years) - Enrollment Counts	164	188	26	22	283	305
Member Out of Pocket Premium	$0	$275	$0	$0	$0	$59

Enrollment Counts

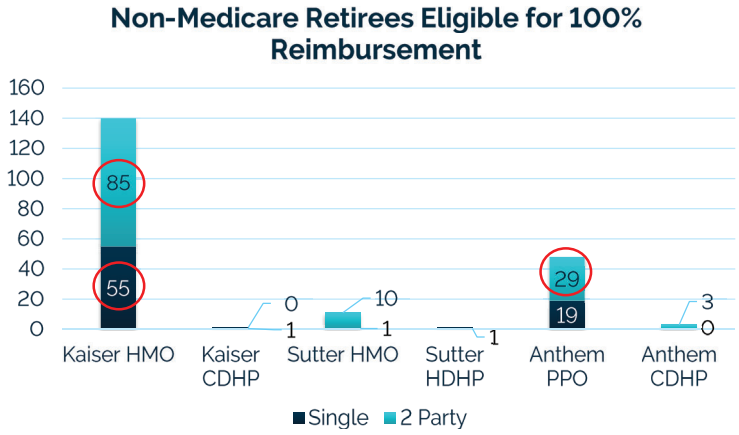
No Enrollment
Under 10 Enrolled
10 to 20 Enrolled
21+ Enrolled

Non-Medicare Retirees

Alliant Insurance Services

Non-Medicare Retirees

- There are 234 Non-Medicare retirees eligible for the HIB reimbursement benefit
- 204 Non-Medicare retirees with 20 or more years of service are eligible for 100% of the HIB reimbursement benefit
  - All of these retirees currently have an out-of-pocket cost, with 124 (61%) retirees paying over $1,300 out-of-pocket for monthly coverage (after the reimbursement)



Non-Medicare Plan Out of Pocket Cost	Single	2 Party
Kaiser HMO	$481	$1,312
Kaiser HDHP	$374	$1,099
Sutter HMO	$527	$1,404
Sutter HDHP	$321	$992
Anthem PPO	$532	$1,414
Anthem HDHP	$335	$1,021

Alliant Insurance Services

EBMUD Non-Medicare Plans
HIB Reimbursements and Out of Pocket Amounts

HIB Reimbursements	Non-Medicare Plans											
	Kaiser HMO		Kaiser CDHP		Sutter HMO		Sutter HDHP		Anthem PPO		Anthem CDHP	
	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party
Monthly Premium	**$931**	**$1,862**	**$824**	**$1,649**	**$977**	**$1,954**	**$771**	**$1,542**	**$982**	**$1,964**	**$785**	**$1,571**
0% Reimbursement (>5 years)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Member Out of Pocket Premium	$931	$1,862	$824	$1,649	$977	$1,954	$771	$1,542	$982	$1,964	$785	$1,571
25% Reimbursement (5 but <10)	$112.50	$137.50	$112.50	$137.50	$112.50	$137.50	$112.50	$137.50	$112.50	$137.50	$112.50	$137.50
Member Out of Pocket Premium	$819	$1,725	$712	$1,511	$865	$1,817	$658	$1,404	$869	$1,826	$673	$1,433
50% Reimbursement (10 but < 15)	$125.00	$275.00	$125.00	$275.00	$125.00	$275.00	$125.00	$275.00	$125.00	$275.00	$125.00	$275.00
Member Out of Pocket Premium	$706	$1,587	$599	$1,374	$752	$1,679	$546	$1,267	$757	$1,689	$560	$1,296
75% Reimbursement (15 but < 20)	$337.50	$412.50	$337.50	$412.50	$337.50	$412.50	$337.50	$412.50	$337.50	$412.50	$337.50	$412.50
Member Out of Pocket Premium	$594	$1,450	$487	$1,236	$640	$1,542	$433	$1,129	$644	$1,551	$448	$1,158
100% Reimbursement (20+ years)	$450.00	$550.00	$450.00	$550.00	$450.00	$550.00	$450.00	$550.00	$450.00	$550.00	$450.00	$550.00
Member Out of Pocket Premium	$481	$1,312	$374	$1,099	$527	$1,404	$321	$992	$532	$1,414	$335	$1,021

Rates are reflective of the 2024 renewal and are rounded to the nearest dollar

Alliant Insurance Services

EBMUD Non-Medicare Plans
Enrollment Based on HIB Tier

Enrollment	Non-Medicare Plans												TOTALS	% Enrolled by Plan	% Enrolled of HIB-Eligible by Tier
	Kaiser HMO		Kaiser CDHP		Sutter HMO		Sutter HDHP		Anthem PPO		Anthem CDHP				
	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party			
0% Reimbursement (>5 years) - Enrollment	0	0	0	0	0	0	0	0	0	0	0	0	**0**	**0.0%**	**0.0%**
25% Reimbursement (5 but <10) - Enrollment	0	2	0	0	0	0	0	0	1	1	0	0	**4**	**1.7%**	**8.7%**
50% Reimbursement (10 but < 15) - Enrollment	6	3	1	0	0	1	0	0	2	0	0	0	**13**	**5.6%**	**26.0%**
75% Reimbursement (15 but < 20) - Enrollment	2	5	0	0	1	2	0	0	2	1	0	0	**13**	**5.6%**	**33.3%**
100% Reimbursement (20+ years) - Enrollment	55	85	1	0	1	10	1	0	19	29	0	3	**204**	**87.2%**	**57.5%**
													234		

Enrollment Counts

No Enrollment
Under 10 Enrolled
10 to 20 Enrolled
21+ Enrolled

Alliant Insurance Services

EBMUD Non-Medicare Plans
Enrollment and Cost by Plan and HIB Tier

HIB Reimbursements	Non-Medicare Plans											
	Kaiser HMO		Kaiser CDHP		Sutter HMO		Sutter HDHP		Anthem PPO		Anthem CDHP	
	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party
Monthly Premium	**$931**	**$1,862**	**$824**	**$1,649**	**$977**	**$1,954**	**$771**	**$1,542**	**$982**	**$1,964**	**$785**	**$1,571**
0% Reimbursement (>5 years) - Enrollment Counts	0	0	0	0	0	0	0	0	0	0	0	0
Member Out of Pocket Premium	$931	$1,862	$824	$1,649	$977	$1,954	$771	$1,542	$982	$1,964	$785	$1,571
25% Reimbursement (5 but <10) - Enrollment Counts	0	2	0	0	0	0	0	0	1	1	0	0
Member Out of Pocket Premium	$819	$1,725	$712	$1,511	$865	$1,817	$658	$1,404	$869	$1,826	$673	$1,433
50% Reimbursement (10 but < 15) - Enrollment Counts	6	3	1	0	0	1	0	0	2	0	0	0
Member Out of Pocket Premium	$706	$1,587	$599	$1,374	$752	$1,679	$546	$1,267	$757	$1,689	$560	$1,296
75% Reimbursement (15 but < 20) - Enrollment Counts	2	5	0	0	1	2	0	0	2	1	0	0
Member Out of Pocket Premium	$594	$1,450	$487	$1,236	$640	$1,542	$433	$1,129	$644	$1,551	$448	$1,158
100% Reimbursement (20+ years) - Enrollment Counts	55	85	1	0	1	10	1	0	19	29	0	3
Member Out of Pocket Premium	$481	$1,312	$374	$1,099	$527	$1,404	$321	$992	$532	$1,414	$335	$1,021

Enrollment Counts

No Enrollment
Under 10 Enrolled
10 to 20 Enrolled
21+ Enrolled

Appendix

Alliant Insurance Services

EBMUD Medicare and Non-Medicare Plans
Overall Enrollment and Cost by Plan and HIB Tier

Non-Medicare Plans													Medicare Plans														
Kaiser HMO		Kaiser CDHP		Sutter HMO		Sutter HDHP		Anthem PPO		Anthem CDHP		TOTALS	UHC Medicare PPO		KPSA Low		KPSA High		TOTALS	GRAND TOTAL	% Enrolled by Plan	% Enrolled of HIB-Eligible by Tier
Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party	Single	2-Party		Single	2-Party	Single	2-Party	Single	2-Party				
0	0	0	0	0	0	0	0	0	0	0	0	**0**	0	0	0	0	0	0	**0**	**0**	**0.0%**	**0.0%**
0	2	0	0	0	0	0	0	1	1	0	0	**4**	1	0	0	2	3	9	**15**	**19**	**1.4%**	**12.9%**
6	3	1	0	0	1	0	0	2	0	0	0	**13**	10	8	1	2	10	13	**44**	**57**	**4.3%**	**36.5%**
2	5	0	0	1	2	0	0	2	1	0	0	**13**	6	6	1	3	9	20	**45**	**58**	**4.4%**	**52.7%**
55	85	1	0	1	10	1	0	19	29	0	3	**204**	164	188	26	22	283	305	**988**	**1192**	**89.9%**	**76.7%**
												234							**1,092**	**1,326**		
												17.6%							**82.4%**			

Enrollment Counts

No Enrollment
Under 10 Enrolled
10 to 20 Enrolled
21+ Enrolled

Alliant Insurance Services

Kaiser KPSA

Medical Plan Benefits	Kaiser - KPSA (Low) Current / Renewal			Kaiser - KPSA (High) Current / Renewal
Calendar Year Deductible Individual / Family	None			None
Annual Out-of-Pocket Maximum Individual / Individual Family Member/ Family	$1,000 per member			$1,000 per member
Physician & Specialist Office Visit	$25 / Visit			$15 / Visit
Preventative Care	No Charge			No Charge
Diagnostic X-Ray and Lab	No Charge			No Charge
Hospitalization - All Inpatient Services	$250 / Admit			No Charge
Hospitalization - Outpatient Surgery	$100 / Procedure			$15 / Procedure
Emergency Room (waived if admitted)	$50 / Visit			$50 / Visit
Ambulance Service	$75 / Trip			No Charge
Durable Medical Equipment	No Charge			No Charge
Skilled Nursing Facility Care	No Charge			No Charge
Speech/Physical/Occupational Therapy	$25 / Visit			$15 / Visit
Hearing Exam	$25 / Visit			$15 / Visit
Hearing Aid	$1,000 Allowance/Device,1 Device/Ear, 2 Devices (36 months)			$1,000 Allowance/Device,1 Device/Ear, 2 Devices (36 months)
Eye Exam	$25 / Visit			$15 / Visit
Eyewear (Every 24 Months)	$150 Allowance			$150 Allowance
Mental Health & Substance Abuse				
MH/SA - Inpatient (Substance Abuse- Detox Only)	$250			No Charge
MHSA - Outpatient	MH/SA: $25 Group: $12 (Group Sub. Abuse: $5)			MH/SA: $15 / Group: $7 (Group Sub. Abuse: $5)
Prescription Drug	**Generic / Brand**			**Generic / Brand**
Rx Out-of-Pocket Maximum: Individual / Family	Integrated with Medical			Integrated with Medical
Rx Brand Deductible	None			None
Rx- Day Supply	30 Day	31-60 Day	60 - 100 Day	Up to 100 day supply
Retail	$10 / $25	$20 / $50	$30 / $75	$10 / $15
Mail Order Program	$10 / $25	$20 / $50	$20 / $50	$10 / $15

Monthly Rates - Retirees	EEs	Current	Renewal	EEs	Current	Renewal
Retiree Only	27	$213.84	$245.71	394	$271.01	$304.56
Double (M + <65)	9	$975.43	$1,176.93	98	$1,032.59	$1,235.78
Double (M + M)	20	$427.68	$491.42	166	$542.02	$609.12
Family (M + <65 + Dep <65)	0	$1,607.54	$1,949.84	10	$1,664.71	$2,008.69
Family (M + M + Dep <65)	0	$1,059.79	$1,264.33	4	$1,174.14	$1,382.03
Monthly Premium	56	**$23,106**	**$27,055**	672	**$319,291**	**$367,832**
Annual Premium		**$277,274**	**$324,659**		**$3,831,489**	**$4,413,984**
Total Annual Dollar Change			**$47,385**			**$582,495**
Total Annual Percent Change			**17.1%**			**15.2%**

Enrollment from EBMUD Census March 2023

This summary is for informational purpose only. It does not amend, extend, or alter the current policy in any way. In the event information in this summary differs from the Plan Document, the Plan Document will prevail.

Alliant Insurance Services

UHC Medicare PPO Renewal

Medical Plan Benefits	United HealthCare Medicare Advantage PPO Current / Renewal
	In-Network
Calendar Year Deductible Individual / Family	None
Physician Office Visit	No Charge
Preventative Care	No Charge
Lab and X-Ray	No Charge
Hospitalization - All Inpatient Services	No Charge
Hospitalization - Outpatient Surgery	No Charge
Emergency Room	$50 Copay (Copay waived if admitted, deductible waived)
Ambulance Services	No Charge
Durable Medical Equipment	No Charge
Chiropractic Therapy	No Charge 30 Visits for Accupuncture and Chiro Combined)
Acupuncture (12 Visits PCY)	No Charge
Hearing Aid Benefit	$2,500
Prescription Drug	**Generic / Preferred Brand / Non-Preferred**
Retail (30-Day Supply) Mail Order Program (90-Day Supply)	$5 / $20 / $50 $10 / $40 / $100

Monthly Rates - Retirees	EEs	Current	Renewal
Single Party	230	$404.70	$412.45
Two-Party	134	$809.40	$824.90
Family	0	$1,214.10	$1,237.35
Monthly Premium	364	**$201,541**	**$205,400**
Annual Premium		**$2,418,487**	**$2,464,801**

Total Annual Dollar Change	**$46,314**
Total Annual Percent Change	**1.9%**

Enrollment from EBMUD Census March 2023

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EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

FROM: Cindy Charan, Director of Human Resources

SUBJECT: 2024 Election Schedules for Employee and Retiree Members to the EBMUD Retirement Board

This memo outlines the 2024 Election Schedules for the Employee and Retiree members for the EBMUD Retirement Board.

The Retirement Board term for Employee Retirement Board member, Tim McGowan will expire on June 23, 2024. The Retirement Board term for Retiree Retirement Board member, Elizabeth Grassetti will expire on September 23, 2024.

CC:LS

Attachments: 2024 Election Schedule for Retiree Member of Retirement Board
2024 Election Schedule for Employee Member of Retirement Board

2024 Election Schedule for Employee Member to the EBMUD Retirement Board

The Retirement Board term for employee member Timothy "Tim" McGowan will expire on June 23, 2024. In anticipation of this vacancy, the following dates have been set for the upcoming election schedule.

Tuesday	February 13	Notice of election is announced. Request for Candidacy period opens – all interested candidates must submit a candidacy information form and biography via email to RetirementBoardElections@ebmud.com by March 18, 2024.
Monday	March 4	Request for Candidacy period closes.
Wednesday	March 6	Candidate Biographies received will be sent out to all employees via email from RetirementBoardElections@ebmud.com with a reminder that a candidate must get 50 nominations (signatures/emails) of support for their name to be included on the final ballot. Nominations can be made by sending an email to RetirementBoardElections@ebmud.com and also copying the candidate on the email by cc'ing the candidate's personal email address. Employees may nominate more than one candidate.
Friday	March 29	Nomination period ends.
Tuesday	April 2	Announcement of final candidates, if only one candidate has 50 nominations, that candidate will take the Retirement Board seat on June 24th. If more than one candidate collects the 50 required nominations, the announcement will include their names. The voting will begin via Survey Monkey and a link will be sent via email. The voting link is also be added to Splashpad.
Friday	May 3	Voting Ends. Deadline for Survey Monkey voting.
Wednesday	May 8	Election results are certified then announced via email to all District Employees and posted on Splashpad.
Thursday	May 23	Election results on May Retirement Board agenda.
Tuesday	May 28	Election results memo to Board of Directors.
Monday	June 24	Elected employee member takes office for a two-year term.

2024 Election Schedule for Retiree Member to the EBMUD Retirement Board

The Retirement Board term for Retiree member Elizabeth Grassetti will expire on September 23, 2024. In anticipation of this vacancy the following has been established.

Monday	April 15	Election is announced via email to retired members who have an email address on file and via USPS for those retired members without email. Request for Candidacy period opens – all interested candidates must submit a candidacy information form and biography via email to RetirementBoardElections@ebmud.com by May 10, 2024.
Friday	May 10	Request for Candidacy period closes.
Monday	May 13	Candidate Biographies received will be sent out to all retirees via email from RetirementBoardElections@ebmud.com with a reminder that candidate must get 5 nominations (signatures/emails) in order for their name to be included on the final ballot. This communication will be mailed via USPS to retirees with no email address. Nominations can be made by sending an email to RetirementBoardElections@ebmud.com and also copying the candidate on the email by cc'ing the candidate's personal email address, or by calling the Employee Services Hotline x0764. Retirees may nominate more than one candidate.
Tuesday	May 28	Nomination period ends.
Tuesday	June 4	Announcement of final candidates, if only one candidate has 5 nominations, that candidate will take the Retirement Board Retiree seat on September 24, 2024. If more than one candidate collects the 5 required nominations, the announcement will include their names. The voting will begin via online survey tool and link-will be sent via email or via USPS to retirees with no email on file.
Tuesday	July 2	Voting Ends. Deadline for online voting and receipt of mail-in ballots.
Tuesday	July 9	Election results certified and announced via email to all District Employees and posted on Splashpad.

Friday	July 12	Email and mail election results to Retirees .
Tuesday	July 23	Election results announced at Board of Directors Meeting.
Thursday	July 25	Election results announced at Retirement Board Meeting.
Tuesday	September 24	Elected retiree member takes office for a two-year term.

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: January 18, 2024

MEMO TO: Members of the Retirement Board

THROUGH: Cindy Charan, Director of Human Resources

FROM: Valerie Weekly, Principal Management Analyst

SUBJECT: Update on the PensionGold (LRS) Implementation Project

SUMMARY

This memo provides an update on the project milestones and deliverables for the PensionGold (LRS) Implementation Project. At the September 21, 2023 meeting, the Board requested that additional metrics be included in quarterly reports. The report below has been updated to accommodate that request.

Retirement Administration System Milestones and Updates

This project has six remaining milestones. Five milestones are associated with the delivery of the following five software deliverables. A software deliverable adds specific functionality to the system.

1. Member account, service purchase, and employer reporting
2. Pension benefit calculations and estimates
3. Pension benefit payroll
4. Pension benefit administration
5. Year-end processing, general ledger, security, and web portal

The sixth milestone is the successful delivery of the product.

- The project team and Retirement Services are finishing the last two of twenty requirements confirmation tests for PensionGold Software Deliverable One. The team will then move on to executing internally-developed test cases to ensure that the system meets our needs.
- We are working to introduce the following efficiencies based on our experience with Software Deliverable One (Are deliverables ones and twos phases or milestones?) How many deliverables are there in total, we may want to elaborate this on the front end before we introduce the different level of deliverables so that the Retirement Board understands):
    - The team has begun meeting with the vendor to discuss Software Deliverable Two ahead of schedule.
    - We have asked the vendor to send us Software Deliverable Two design documents to review as they become available, rather than giving them to us all at once.

- We are working with the vendor to combine software deliverables three and four. Software Deliverable Three focuses on pension payroll and Software Deliverable Four focuses on pension administration.

- We are researching and participating in the data conversion process and assisting the vendor in their analysis of pension data.
- Working on the integration transmittal file which will regularly update PensionGold with PeopleSoft data.
- Prioritizing and identifying problematic pension data areas and proposing solutions to functional SMEs for their evaluation and correction.
- The recruitment for the new permanent Product Owner position is still in the initial stages.
- A Senior Software Engineer (PeopleSoft HRIS Developer) (Temporary Construction) position is in the final stages of the recruitment. This will be a dedicated technical resource for the project.

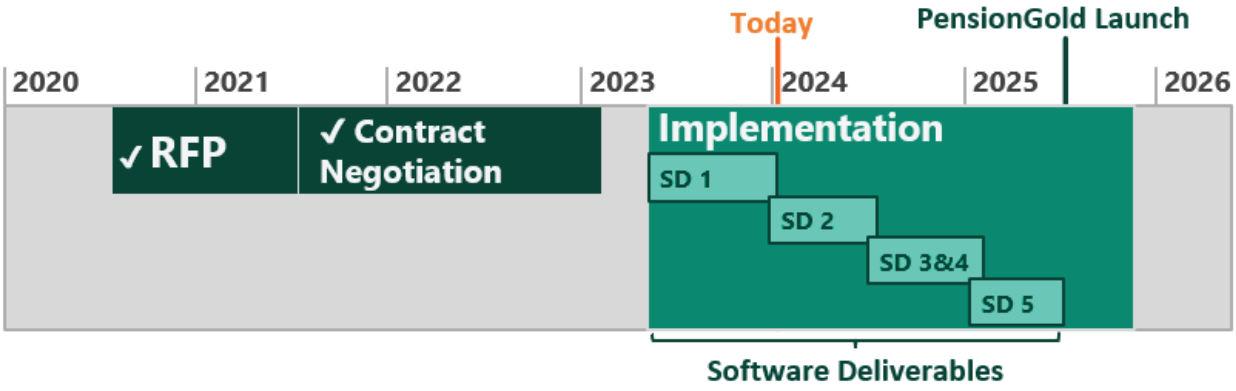
Budget Update:

Costs since January 1, 2023

Project Costs	Actual	Estimate	Variance
Total funding	$10,500,000		
Staffing costs	$1,141,000	$1,236,000	$95,000
Contracting costs	$311,000	$372,000	$61,000
Vendor costs	$1,407,000	$1,407,000	$0
Balance	$7,641,000	$7,485,000	$156,000

We are currently $156,000 under budget due to lower-than-expected staffing costs. This is not impacting the project schedule.

Schedule Update:



CC:vw