Contra Costa County Employees' Retirement Association

AGENDA

RETIREMENT BOARD MEETING

REGULAR MEETING
June 26, 2024
9:00 a.m.

Board Conference Room
1200 Concord Avenue, Suite 350
Concord, California

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.

2. Public Comment (3 minutes/speaker).

CONSENT ITEMS

3.A All Consent Items are to be approved by one action unless a Board Member requests separate action on a specific item. (Action Item)

I. Approve minutes from the May 22, 2024 meeting.

II. Authorize Vice-Chair MacDonald to attend the 21st Annual Global ARC, October 21-23, 2024, Boston, MA. (Note: Conflict with Board Meeting)

III. Receive the Contra Costa County District Attorney employer audit report as presented to the Audit Committee at the June 12, 2024 meeting.

IV. Receive the Rodeo Sanitary District employer audit report as presented to the Audit Committee at the June 12, 2024 meeting.

3.B Consider and take possible action on Consent Items previously removed, if any. (Action Item)

4. Presentation from Brown Armstrong on the audit of the December 31, 2023 Annual Comprehensive Financial Report. (Presentation Item)

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

5. Asset Liability Study Discussion and Recommendations. (Action Item)

6. Report from Audit Committee Chair on the June 12, 2024 Audit Committee meeting. (Presentation Item)

7. Consider authorizing the attendance of Board: (Action Item)
   a. 2024 iDAC Summit, September 24-26, 2024, Broomfield, CO. (Note: Conflict with Board meeting)
   b. StepStone 360 Conference, September 25-26, 2024, New York, NY. (Note: Conflict with Board meeting)
   c. Pension Bridge Alternatives 2024, October 16-17, 2024, New York, NY.

8. Miscellaneous
   a. Staff Report
   b. Outside Professionals' Report
   c. Trustees' comments

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The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.

Meeting Date
06/26/2024
Agenda Item
#3.A-I

CCCERA
Contra Costa County Employees' Retirement Association

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING May 22, 2024 9:00 a.m.	Board Conference Room 1200 Concord Avenue, Suite 350 Concord, California

Present: Candace Andersen, Donald Finley, Scott Gordon, Jerry Holcombe, Louis Kroll, Jay Kwon, David MacDonald, Dan Mierzwa, John Phillips, Mike Sloan, and Samson Wong

Absent: Dennis Chebotarev

Staff: Christina Dunn, Chief Executive Officer; Karen Levy, General Counsel; and Tim Price, Chief Investment Officer

Outside Professional Support:	Representing:
Scott Whalen	Verus

1. **Pledge of Allegiance**

   The Board, staff and audience joined in the *Pledge of Allegiance.*

2. **Accept comments from the public**

   No member of the public offered comment.

3. **Approve minutes from the April 24, 2024 meeting**

   It was **M/S/C** to approve the minutes from the April 24, 2024, meeting. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Mierzwa, Phillips, and Wong).

CLOSED SESSION

The Board moved into Closed Session pursuant to Govt. Code section 54956.9(d)(4) to confer with legal counsel regarding potential litigation (one case), and pursuant to Govt. Code section 54956.9(d)(1) to confer with legal counsel regarding pending litigation.

The Board moved into open session.

4. It was **M/S/C** to authorize the filing of an amicus curiae brief in VCERA v. CJAA, Second District Court of Appeals Case No. B325277. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, Mierzwa, and Phillips. Abstain: MacDonald and Wong).

5. There was no reportable action related to Govt. Code Section 54956.9(d)(4).

6. **Consider and take possible action to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc**

   It was **M/S/C** to authorize the CEO to renew a maintenance and support agreement with CPAS Systems, Inc. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Mierzwa, Phillips, and Wong).

7. **Review of total portfolio performance for period ending March 31, 2024**

   a. Whalen presented the total portfolio performance for period ending March 31, 2024.

   b. Price presented the total portfolio performance for period ending March 31, 2024.

8. **Review of Portfolio Rebalancing Report**

   Price gave a review of the Portfolio Rebalancing Report.

9. **Consider authorizing the attendance of the Board:**

   a. It was **M/S/C** to authorize the attendance of 2 Board members at the NCPERS Public Pension Funding Forum, August 18-20, 2024, Boston, MA. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Mierzwa, Phillips, and Wong).

   b. There was no action taken on this item. CALAPRS Principles of Pension Governance for Trustees, August 26-29, 2024, Tiburon, CA.

   c. It was **M/S/C** to authorize the attendance of 4 Board members at the Value Edge Advisors Public Funds Forum, September 3-5, 2024, Laguna Beach, CA. (Yes: Andersen, Finley, Gordon, Holcombe, Kroll, MacDonald, Mierzwa, Phillips, and Wong).

10. **Miscellaneous:**

   a. Staff Report – Dunn provided an update on the March retirements noting for members that retired in March with complete applications their payments were received within 42 days of their final active paycheck. Dunn thanked staff tremendously for all of their hard work.

   b. Outside Professionals' Report – None

c. Trustees' Comments –
Holcombe reported on the CALAPRS Roundtable.

Gordon provided a report on the Siguler Guff Conference, which he and MacDonald attended. They both found the topics fascinating.

MacDonald spoke on the NCPERS Annual Conference. Overall, MacDonald felt it was a good conference.

MacDonald and Kwon both enjoyed the Annual SACRS conference.

It was **M/S/C** to adjourn the meeting. (Yes: Andersen, Finley, Gordon, Holcombe Kroll, MacDonald, Mierzwa, Phillips, and Wong)

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Scott W. Gordon, Chairperson — Jerry R. Holcombe, Secretary

21st Annual Global ARC Boston

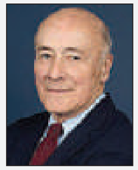
GlobalARC

Where the Global Investor and Alpha-Driven Manager Communities Meet

Updated May 20th: full program running order and times now added

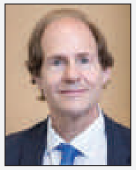
Professor Mark Blyth
The William R. Rhodes '57 Professor of International Economics
Director of the William R. Rhodes Center for International Economics and Finance
Brown University

Dr. Zongyuan Zoe Liu
Author: 'Sovereign Funds: How the Communist Party of China Finances Its Global Ambitions'
Council on Foreign Relations



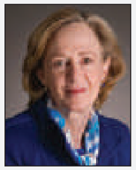
Professor Joseph Nye
Former Assistant Secretary of Defense
Former Chair of the National Intelligence Council
U.S. Federal Government
University Distinguished Service Professor, Emeritus
Harvard Kennedy School of Government

Professor Rana Mitter
Author: 'China's Good War: How World War II is Shaping a New Nationalism'
The S.T. Lee Chair in U.S.-China Relations
Harvard Kennedy School of Government



Professor Cass R. Sunstein
The Robert Walmsley University Professor
Founder and Director of the Harvard Program on Behavioral Economics and Public Policy
Harvard Law School

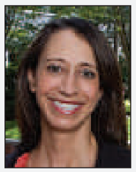
Professor Hal Brands
Author: 'Danger Zone: The Coming Conflict with China'
The Henry A. Kissinger Distinguished Professor of Global Affairs
Johns Hopkins University SAIS



President Emerita Professor Susan Hockfield
Author of 'The Age of Living Machines: How Biology Will Build the Next Technology Revolution'
President (2004-12) and President Emerita
Massachusetts Institute of Technology

Professor James Poterba
President, **National Bureau of Economic Research (NBER)**
The Mitsui Professor of Economics
Massachusetts Institute of Technology

Nobel Laureate Professor Frank Wilczek
2004 Nobel Prize Winner for Physics
2022 Templeton Prize Winner
The Herman Feshbach Professor of Physics
Massachusetts Institute of Technology



Professor Nicole Boyson
Chair of the Department of Economics and Finance
Professor of Finance
Northeastern University, D'Amore-McKim School of Business

His Excellency Vijay Keshav Gokhale
Foreign Secretary, (2018-20) and Ambassador to China, (2016-17)
Government of India
Senior Non-Resident Fellow
The Carnegie Institute, India

Professor Brett Christophers
Author: 'Our Lives in Their Portfolios: Why Asset Managers Own the World'
Professor of Human Geography
Uppsala University, Sweden

Meeting Date
06/26/2024
Agenda Item
#3.A-II

October 21st to 23rd 2024 • The InterContinental Boston, Massachusetts

The 21st Annual Global ARC Boston
October 21st – 23rd 2024 • The InterContinental Boston

Dear Executive,

Building upon the success of Global ARC 2023, which drew over 170 institutional investor attendees from 26 countries, Global ARC 2024 is shaping up to be another barnstormer of an event.

This year's 21st Annual Global ARC will gather the world's foremost academic thought leaders and the world's largest institutional investors to:

- Assess the impact of the politically turbulent 2024 U.S. election and its aftermath on financial markets.
- Analyse the long-term geopolitical consequences of a re-elected Democrat administration versus a new Republican administration.
- Examine whether the recent decline in inflation signifies a decisive turning point or a temporary respite.
- Delve into the prospects of China's ongoing economic slowdown and its implications for regional and global economic stability.
- Determine the ramifications of recent developments in the Russo-Ukraine war.
- Dissect whether market volatility and cross-asset class correlations will return or remain subdued in 2025, and how institutional investors anticipate adjusting their strategic and tactical asset allocations in the coming months.
- Compare the challenges and opportunities currently impacting public equity, public credit and private credit markets.
- Identify which high-alpha strategies are poised to outperform in the next twelve months.
- Investigate how the rapid advancements in AI will reshape the economy and present investment opportunities in the coming decade.

We look forward to welcoming you to Boston in October.

Yours Faithfully

David Stewart
david@global-arc.net

Samantha Allwork
samantha@global-arc.net

Robert Bennett-Lovsey
robert@global-arc.net

Four Key Differentiators

We believe that Global ARC possesses four key characteristics that differentiate it from its conference competitors:

1) QUALITY of Investor Attendees

Global ARC attracts the key decision makers - predominantly the Chief Investment Officer or Head of Asset Allocation - from multi-billion-dollar investors.

2) RATIO of Investor Attendees

At the vast majority of conferences, investors are heavily outnumbered by managers, leaving investors feeling harassed and reluctant to interact with the managers present.

In contrast, at Global ARC investors outnumber managers and a strict code of conduct is enforced on all manager delegates.

The resultant change in institutional investor behavior is profound: once investors know, that at Global ARC, they will be able to participate in civilized discussions with individual managers and that these managers will focus on educating investors, rather than hardcore pitching, the quality and the number of investor manager interactions increase exponentially.

3) INTERNATIONAL BREADTH of Investor Attendees

Approximately 40% of Global ARC's investor attendees are from outside the United States. Providing our manager attendees with access to a range of major investors rarely available at conferences.

4) RETENTION RATE of Investor Attendees

The programs of the vast majority of Global ARC's competitors' are completely devoid of top-tier thought-leaders.

This lack of intellectually stimulating content is one of the primary reasons why the majority of investors only attend their session at competitor conferences and then disappear off to a golf course for the remainder of the event.

In contrast, Global ARC's three-day event features over a dozen world-class academic speakers, drawn predominantly from amongst the World's top ten universities.

By purposefully back-loading the majority of these world-class academics into the second and third day we ensure that we retain our investors for the full three-days.

Day One: Monday October 21st 2024

Closed-Door Investor Education Forum

Sponsors, investors, and pension consultants only

7.30am Start of the Global ARC 2024 Investor Education Forum

Global ARC's Investor Education Forum is a closed-door session open only to Global ARC's sponsors and to major institutional investors and pre-approved pension consultants.

The Investor Education Forum will provide investors with the opportunity to choose meetings from amongst a range of leading alternative investment firms.

The Investor Education Forum will be structured around four customized twenty-minute small group roundtable meetings, covering many of the following high-alpha strategies: activist, biotech, commodities, emerging markets, energy, equities, ESG, fixed income, hedge funds, infrastructure, private credit, private equity, quantitative, real estate and venture capital.

9.00am End of the Global ARC 2024 Investor Education Forum

Global ARC wishes to thank the following sponsor-presenters at the Global ARC 2024 Investor Education Forum for their commitment to investor education:

- 400 Capital Management
- Acadian
- AGL
- Antares Capital
- Benefit Street Partners / Alcentra
- Brightwood
- Campbell Lutyens
- Churchill from nuveen
- Crestline
- Golub Capital
- Heard Capital — Nimble | Thoughtful | Deliberate
- Hildene Capital Management
- Manulife Investment Management
- OWS Capital Management
- P/E Investments
- PGIM Fixed Income
- PineBridge Investments
- Principal Asset Management
- Sculptor
- Third Point
- World Gold Council

General Sessions

9.10am General sessions opening remarks
David Stewart, Founder
Global ARC, Australia

The 2024 Election: the Case for [Guarded] Optimism

9.15am Placing the 2024 elections in historical perspective: the case for (guarded) optimism

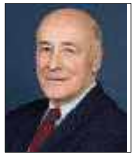
Professor Joseph Nye has spent a lifetime illuminating our understanding of the changing contours of America power and world affairs. His many books on the nature of power and political leadership have rightly earned him his reputation as one of the most influential international relations scholars in the world today.

In this session he shares his own journey living through the American century. his time in the State Department, Pentagon, and Intelligence Communities, where he witnessed American power up close, shaping policy on key issues such as nuclear proliferation and East Asian security.

Today American primacy may be changing and the domestic political, but Professor Nye offers a convincing case for guarded optimism about the future of the United States

(Chair) Christopher Holt Ph.D., Senior Advisor **Global ARC** and Associate Director,
Conrad School of Business, University of Waterloo, Canada

Professor Joseph Nye
Author: *'A Life in the American Century'* and *'The Paradox of American Power'*
Former Assistant Secretary of Defense and former Chair of the National Intelligence Council
U.S. Federal Government
University Distinguished Service Professor, Emeritus
Harvard Kennedy School of Government



In a recent survey of international relations scholars, Professor Joseph Nye was ranked as *the* most influential scholar on American foreign policy. Professor Nye is currently University Distinguished Service Professor, Emeritus - having previously served as Dean from 1995 to 2004 - of Harvard's Kennedy School of Government. Outside of academia, Professor Nye has also had an illustrious career in the United Federal Government: having served as Assistant Secretary of Defense for International Security Affairs, Chair of the National Intelligence Council, and Deputy Under Secretary of State for Security Assistance, Science and Technology. Professor Nye pioneered the theory of 'soft power'. His notion of "smart power" ("the ability to combine hard and soft power into a successful strategy") became popular with members of both the Clinton and Obama Administrations. In October 2014, Secretary of State John Kerry appointed Nye to the Foreign Affairs Policy Board. He is also currently a member of the Defense Policy Board. He is the author of over a dozen books, including most recently: *'Do Morals Matter? Presidents and Foreign Policy from FDR to Trump;'* and *'A Life in The American Century.''* Joseph Nye studied Philosophy, Politics and Economics (PPE) as a Rhodes Scholar at Oxford University's Exeter College, and then obtained his PhD in political science from Harvard University.

Correlations

10.00am In a period marked by an uncommon degree of correlation among diverse asset classes, which investment strategies still possess the potential to generate uncorrelated returns?

(Chair) Ingrid Albinsson, Vice Chair
AP2 Pension Fund, Sweden

Michael Gleason, Senior Vice President and Director, Equity Alternative Strategies
Acadian Asset Management

Michael Comparato, Head of Real Estate
Benefit Street Partners - Alcentra

Sengal Selassie, Co-Founder and Chief Executive Officer
Brightwood Capital Advisors

Warren Naphtal, Co-Founder and Chief Investment Officer
P/E Investments

Joseph Cavatoni, Market Strategist, Americas
World Gold Council

Public Credit

10.50am Which segments of the structured finance and corporate bond markets presently provide the most favorable risk-adjusted rates of return?

(Chair) Tom Tull, Fellow
AIF Global Institution

Chris Hentemann, Managing Partner, Chief Investment Officer
400 Capital Management

Dushyant Mehra, Co-Chief Investment Officer
Hildene Capital Management

Steven Oh, Global Head of Credit and Fixed Income
Pinebridge Investments

Udai Bishnoi, Global Head of Asset Based & Structured Credit
Sculptor Capital

The 2024 Election: the Case for [Reluctant] Pessimism

11.30am The 2024 elections: the case for (reluctant) pessimism.

(Chair) Christopher Holt Ph.D., Senior Advisor
Global ARC and Associate Director,
Conrad School of Business, University of Waterloo, Canada

Professor Mark Blyth
The William R. Rhodes '57 Professor of International Economics
Director of The William R. Rhodes Center for International Economics and Finance
Brown University

Professor Mark Blyth is The William R. Rhodes '57 Professor of International Economics and Director of the William R. Rhodes Center for International Economics and Finance, an interdisciplinary institute at Brown University dedicated to exploring how economics and finance impact the world we inhabit today. Mark Blyth is a political economist whose research focuses upon how uncertainty and randomness impact complex systems, particularly economic systems, and why people continue to believe stupid economic ideas despite buckets of evidence to the contrary. Mark Blyth is the author of several books, including the award-winning 'Austerity: the History of a Dangerous Idea' (Oxford University Press) which examined the use of austerity around the world up to the early 2010s and tracing its intellectual lineage, the book argued that the case for increasing economic growth through austerity is grossly overstated, and is counterproductive when implemented during recessions, was also was selected as by both The Financial Times and Bloomberg News as one of The Best Books of the Year. Mark Blyth is also the author of Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century'(Cambridge University Press) completed his Ph.D. in Political Science from Columbia University in 1999.

12.10pm Lunch

Public Equities

1.20pm Which public equity strategies currently provide the most enticing investment opportunities?

(Chair) Amy Hsiang, Director of Public Markets Manager Research
Meketa Investment Group

William Heard, Chief Executive Officer
Heard Capital

George P. Maris, Executive Managing Director - Chief Investment Officer and Global Head of Equities
Principal Asset Management

Derek Drummond, Head of Strategy – Funds Alpha
State of Wisconsin Investment Board (SWIB)

Sponsor panelist details tba

Private Credit

"Despite its illiquidity, private credit offers attractive returns and relatively low volatility. With interest rates at their highest levels in more than a decade, private credit's yield has become more enticing. "
Investment Magazine

2.00pm What capabilities should institutional investors look out for when evaluating whether a private credit manager possesses the necessary expertise to thrive in current market conditions?

(Chair) Russ Ivinjack, Global Chief Investment Officer
Aon Investments

Vivek Mathew, Senior Managing Director
Antares Capital

Randy Schwimmer, Co-Head of Senior Lending
Churchill Asset Management (Nuveen)

Jason Van Dussen, Co-Head of Capital Markets
Golub Capital

Ryan Kelly, Senior Portfolio Manager and Head of Special Situations
PGIM Fixed Income

2.40pm As mid-market private credit markets mature, and institutional investors seek new and innovative sources of alpha, where do private credit managers see the next frontiers of this asset class emerging?

(Chair) Russ Ivinjack, Global Chief Investment Officer
Aon Investments

Speaker tba
AGL Credit Management

Jeffrey Griffiths, Co-Head Global Private Credit
Campbell Lutyens

Keith Williams, Managing Partner and Co-Chief Investment Officer
Crestline Investors

Speaker tba
Manulife Investment Management

Christopher Taylor, Head of Private Credit
Third Point

3.30pm Afternoon coffee

3.55pm Institutional investor perspectives: what are the strategic asset allocations and portfolio construction implications of the recent huge acceleration in private market evolution?

(Chair) Elena Manola-Bonthond Ph.D., Chief Investment Officer
CERN Pension Fund, Switzerland

Christoph Junge, Head of Alternatives
Velliv, Denmark

Chung Ma, Managing Director, Portfolio Solutions Group
Virginia Retirement System

Additional panelists tba

4.35pm Where can investors find the most exciting investment opportunities in asset-based lending (ABL) ?

In a period of persistent inflation, the appeal of ABL to borrowers has increased due to its relatively attractive interest rates and greater lending flexibility. High-quality collateral provided by borrowers in carefully selected ABL transactions can provide attractive risk-adjusted rates of return for investors. The ABL market continues to grow as it increasingly accommodates intangible assets such as licenses and patents for collateral. What are the potential risks for institutional investors of investing in ABL? How can investors ensure that their ABL providers have the requisite experience, and skillsets to manage these risks?

(Chair) Catherine Beard, Senior Vice President, Alternative Consulting
Callan

David Sherr, Founder and Chief Investment Officer
One William Street Capital Management

Additional panelists tba

How to Become Famous

5.05pm How to become famous: lost Einsteins, forgotten superstars, and how the Beatles came to be.

It's hard to imagine our world without its stars, icons, and celebrities. They are part of our culture and history, seeming permanent and preordained.

But in his forthcoming book *'How to Become Famous'* (Harvard University Press, 2024) Harvard law Professor Cass Sunstein shows that is far from the case.

Focusing on both famous and forgotten (or simply overlooked) artists and luminaries in music, literature, business, science, politics, Professor Sunstein examines recent research on informational cascades, network effects, and group polarization to probe the question of how people become famous. He explores what ends up in the history books and in the literary canon, and how this changes radically over time.

Professor Sunstein delves into the rich and entertaining stories of a diverse cast of famous characters, from John Keats, William Blake, and Jane Austen to Bob Dylan, Ayn Rand, and Stan Lee—as well as John, Paul, George, and Ringo.

(Chair) Christopher Holt Ph.D., Senior Advisor **Global ARC**
and Associate Director,
Conrad School of Business, University of Waterloo, Canada

Professor Cass Sunstein

Author of *'How to Interpret the Constitution 'Legal Reasoning and Political Conflict'* and *'The World According to Star Wars'*

Founder and Director of the Harvard University Program on Behavioral Economics and Public Policy

The Robert Walmsley University Professor

Harvard Law School

Professor Cass R. Sunstein is, by a wide margin, *the* most frequently cited legal scholar in the United States and, arguably, the most widely cited legal scholar in the world. In 2018, he received the Holberg Prize from the government of Norway, often described as the equivalent of the Nobel Prize for law and the humanities. In 2020, the World Health Organization (WHO) appointed him Chair of its technical advisory group on Behavioral Insights and Sciences for Health. From 2009 to 2012, he was Administrator of the Obama White House Office of Information and Regulatory Affairs, and after that, he served on the Pentagon's Defense Innovation Board. He has testified before congressional committees on many subjects, and he has advised officials at the United Nations, the World Bank. the European Commission, and many nations on issues of law and public policy. Professor Sunstein joined the Department of Homeland Security in February 2021 as an advisor to the Biden Administration on immigration policy He is the author of dozens of books; the latter including The New York Times bestselling books 'The World According to Star Wars' and most recently 'How to Interpret the Constitution' ' 'Legal Reasoning and Political Conflict' and 'How to Become Famous'. He is now working on a variety of projects involving the regulatory state, "sludge" (defined to include paperwork and similar burdens), fake news, and freedom of speech. Professor Cass R. Sunstein holds a JD, magna cum laude, from Harvard Law School.

5.50pm Networking cocktails and canapés

Day Two: Tuesday October 22nd 2024

7.30am Opening remarks by chair

Bill Kelly, Chief Executive Officer
CAIA Association

Asset Allocation

7.35am How are broad institutional investor strategic asset allocations and/or portfolio construction in 2030 likely to differ from today?

(Chair) Bill Kelly, Chief Executive Officer
CAIA Association

Marcus Svedberg, Chief Economist
Folksam, Sweden

Ellen Hung, State Investment Officer
Nebraska Investment Council

Dan Mikulskis, Chief Investment Officer
People's Partnership, United Kingdom

Aaron Bennett, Chief Investment Officer
University Pension Plan Ontario, Canada

8.20am Which high-alpha strategies currently offer the most attractive investment opportunities? How should investors be reorientating their strategic asset allocations to take advantage of this?

(Chair) Bill Kelly, Chief Executive Officer
CAIA Association

Panelists tba

Risks and Opportunities

8.55am Which market risks, and attendant potential opportunities, are currently preoccupying institutional investors, and why?

(Chair) Tim McCusker, Partner, Chief Investment Officer
NEPC

Michael Eakins, Chief Investment Officer
Phoenix Insurance Group, United Kingdom

Kabelo Rikhotso, Chief Investment Officer and Executive Director
Public Investment Corporation, South Africa

Farouki Majeed, Chief Investment Officer
School Employees Retirement System of Ohio

9.45am Morning coffee

Geopolitical Risk

" [*Sovereign Funds: How the Communist Party of China Finances Its Global Ambitions'*] takes up a particular aspect of China's economic statecraft, showing how it employs its financial resources to promote its interests abroad…It give[s] us a much better understanding of what needs to be done to restrain China abroad."
The Wall Street Journal

10.15am Sovereign funds: how the Communist Party of China finances its global ambitions.

Sovereign Funds shows how institutions such as China Investment Corporation, the State Administration of Foreign Exchange, and Central Huijin Investment have become mechanisms for power projection. China's sovereign funds are essential drivers of the national interest, shaping global markets, advancing the historic Belt and Road Initiative, and funneling state assets into strategic industries. In the era of President Xi, state-owned financial institutions have become powerful tools of political of influence worldwide.

(Chair) Michael Rosen, Chief Investment Officer
Angeles Investments

Dr. Zongyuan Zoe Liu
Author: *' Sovereign Funds: How the Communist Party of China Finances Its Global Ambitions '*
The Maurice R. Greenberg Fellow for China Studies
The Council on Foreign Relations

Dr Zoe Liu is The Maurice R. Greenberg Fellow for China Studies at the Council of Foreign Relations and the author of two books: 'Can BRICS De-dollarize the Global Financial System?' (Cambridge University Press, 2021) and 'Sovereign Funds: How the Communist Party of China Finances its Global Ambitions' (Harvard University Press, 2023). The latter book is the first in-depth account of the sudden growth of China's sovereign wealth funds and offers a comprehensive and up-to-date analysis of the evolution of the China Investment Corporation, the State Administration of Foreign Exchange, and Central Huijin Investment; and shows how these Chinese sovereign funds have become mechanisms for supercharging Chinese power projection and creating Chinese spheres of influence worldwide. She holds a PhD in international relations from Johns Hopkins University.

11.00am Managing portfolio risk in a period of heightened geopolitical uncertainty: institutional investor perspectives.

(Chair) Michael Rosen, Chief Investment Officer
Angeles Investments

Sebastian Vadakumcherry, Chief Risk Officer
Alaska Permanent Fund Corporation

Vasilios Siokis Ph.D., Chief Risk Officer
Emirates Investment Authority, United Arab Emirates

Arjen Pasma, Chief Fiduciary Investment Officer
PGGM Pension, The Netherlands

Ju Hui Lee, Head of Market Risk
United Nations Joint Staff Pension Fund

11.45am Lunch

1.15pm The 2024 U.S. election: geopolitical implications and risks.

As the Biden administration approaches the end of its first term, how would our panelists assess its effectiveness in achieving its foreign policy objectives? What impact might the outcome of the 2024 U.S. election have on the intricate network of military alliances maintained by the US? How might the results of the 2024 election influence, the likelihood of increased military pressure from China on Taiwan? What stance will the United States take regarding its red lines in the ongoing Russo-Ukrainian conflict?

(Chair) David Stewart, Founder
Global ARC Australia

His Excellency Vijay Keshav Gokhale

Foreign Secretary, (2018-20) & Ambassador to China, (2016-17,)
Government of India
and, Senior Non-Resident Fellow
The Carnegie Institute, India

His Excellency Vijay Keshav Gokhale, served as the Foreign Secretary of India from 2018 to 2020. Prior to which, he had served as India's High Commissioner to Malaysia from 2010 to 2013, as Ambassador of India to Germany from 2013 to 2016, and as Ambassador of India to China from 2016 to 2017. He has also served as head of the India-Taipei Association, in Taiwan, from 2003 to 2007. He has worked extensively on matters relating to the Indo-Pacific region with a special emphasis on Chinese politics and diplomacy. H.E. Vijay Keshav Gokhale currently serves as a nonresident senior fellow at Carnegie India and as distinguished visiting faculty at the Rashtriya Raksha University. He is the author of three books on China: 'The Long Game: How the Chinese Negotiate with India', 'Tiananmen Square: The Making of a Protest' and, 'After Tiananmen: The Rise of China.'

and

Professor Rana Mitter

Author: *'China's Good War: How WW2 is Shaping a New Nationalism'*
The S.T. Lee Chair in U.S.-China Relations
Harvard Kennedy School of Government

Professor Rana Mitter joined Harvard as the inaugural S.T. Lee Chair in U.S.-China Relations in 2023. Prior to this, he was the Director of The China Centre at University of Oxford. His current focus is on the origins and causes of nationalism in China and its impact upon the Chinese government's behavior. His book *'China's War With Japan: The Struggle for Survival'* was selected by The Financial Times as one of the best history books of the year and as a Book of the Year by The Economist. He is also author of the prize-winning book *'A Bitter Struggle: China's Struggle With The Modern World,'* and *'China's Good War: How World War II is Shaping a New Nationalism'.* His TV documentary *"The Longest War: China's World War II"* was broadcast on the History Channel.

and

Professor Hal Brands

Author: *'Danger Zone: The Coming Conflict with China'*
The Henry A. Kissinger Distinguished Professor of Global Affairs
Johns Hopkins University SAIS

Professor Hal Brands is the author or editor of numerous books, including 'Danger Zone: The Coming Conflict with China,' 'The Twilight Struggle: What the Cold War Teaches Us about Great-Power Rivalry Today', 'American Grand Strategy in the Age of Trump,' and the Rise of the Post Cold War Order' and 'From Berlin to Baghdad: America's Search for Purpose in the Post- Cold War World.' He served as Special Assistant to the Secretary of Defense for Strategic Planning and as lead writer for the Commission on the National Defense Strategy for the United States and consulted with a range of government offices and agencies in the intelligence and national security communities. He earned a Ph.D. in history from Yale.

Parallel Breakout Sessions

2.25pm Parallel breakout sessions commence

Delegates can customize Global ARC to their needs by choosing between several highly interactive parallel breakouts. Some of these parallel breakouts are continuations of preceding plenary panel topics, whilst others provide delegates with the opportunity to explore fresh topics. To allow for a more in-depth exploration of these subjects, each breakout session is approximately one and a half hours long.

The parallel 90-minute interactive breakout discussions currently scheduled for Tuesday October 22nd include:

A. PARALLEL BREAKOUT

Which geographical regions and industry sectors currently offer the most enticing public market investment opportunities, and which public market strategies can best exploit them?

(Chair) Tom Tull, Fellow
AIF Global Institution

Panellists

William Heard, Chief Executive Officer
Heard Capital

Steven Oh, Global Head of Credit and Fixed Income,
PineBridge Investments

George P. Maris, Executive Managing Director
Principal Asset Management

Institutional Investor Discussants

Mateo Fernández, Chief Investment Officer
AFAP Itaú, Uruguay

Eric Newman, Treasury Manager
City of Stamford

Konstantinos Grigoriadis, Treasury Manager - Pension
DXC Technology

Alex Neszvecsko, Portfolio Manager
European Patent Office, Reserve Funds, Germany

Scott Simon, Chief Investment Officer
Fire and Police Pension Association of Colorado

Steve Thompson, Executive Director Capital markets
Government of Alberta, Canada

Adam Ruddle, Chief Investment Officer
LV=, United Kingdom

Ellen Hung, State Investment Officer
Nebraska Investment Council

Clemens Quast, Head of Treasury
Sächsische Aufbaubank – Förderbank, Germany

Farouki Majeed, Chief Investment Officer
School Employees Retirement System of Ohio

B. PARALLEL BREAKOUT

What capabilities should institutional investors look out for when evaluating whether a private credit manager possesses the necessary expertise to thrive in current market conditions?

(Chair) Catherine Beard, SVP, Alternative Consulting
Callan

Panellists

Chris Hentemann, Managing Partner, Chief Investment Officer
400 Capital Management

Vivek Mathew, Senior Managing Director
Antares Capital

Sengal Selassie, Co-Founder and Chief Executive Officer
Brightwood Capital Advisors

Randy Schwimmer, Co-Head of Senior Lending
Churchill Asset Management (Nuveen)

Jason Van Dussen, Co-Head of Capital Markets
Golub Capital

Dushyant Mehra, Co-Chief Investment Officer
Hildene Capital Management

Ryan Kelly, Senior Portfolio Manager
PGIM Fixed Income

Institutional Investor Discussants

Howard Cooper, Founder
Cooper Family Office

Elena Manola-Bonthond Ph.D., Chief Investment Officer
CERN Pension Fund, Switzerland

Vasilios Siokis, Chief Risk Officer
Emirates Investment Authority, United Arab Emirates

Mohamed Elkordy Ph.D., Senior Investment Officer
New York State Common Retirement Fund

Elmer Huh, Chief Investment Officer
The M.J. Murdock Charitable Trust

C. PARALLEL BREAKOUT

As mid-market private credit markets mature, and institutional investors seek new and innovative sources of alpha, where do private credit managers see the next frontiers of this asset class emerging?

(Chair) Russ Ivinjack, Global Chief Investment Officer
Aon Investments

Panellists

Speaker tba
AGL Credit Management

Michael Comparato, Head of Real Estate
Benefit Street Partners - Alcentra

Keith Williams, Managing Partner, and Co-CIO
Crestline Investors

Speaker tba
Manulife Investment Management

David Sherr, Founder and Chief Investment Officer
One William Street Capital Management

Udai Bishnoi, Global Head of Asset Based & Structured Credit
Sculptor Capital

Christopher Taylor, Head of Private Credit
Third Point

Institutional Investor Discussants

Kevin Edwards, Managing Director
Carnegie Mellon University Investment Office

Corrado Pistarino, Chief Investment Officer
Foresters Friendly Society, United Kingdom

Joe Aguilar, Chief Investment Officer
Illinois State Treasury

Markus Schaen, Senior Fund Manager, Fixed Income
MN, The Netherlands

D. PARALLEL BREAKOUT

Which investment strategies can still generate uncorrelated returns? How can investors mitigate 're-correlation" risk in anticipation of any significant, correlated market unwind?

(Chair) Ingrid Albinsson, Vice Chair
AP2 Pension Fund, Sweden

Panellists

Michael Gleason, SVP & Director, Equity Alternative Strategies
Acadian Asset Management

Warren Naphtal, Co-Founder and Chief Investment Officer
P/E Investments

Institutional Investor Discussants

Patricia Alejo, Quantitative Strategist & Portfolio Manager
Inter American Development Bank

Marcus Svedberg, Chief Economist
Folksam, Sweden

Antonio Candia, Principal of Innovation
Latin-American Reserves Fund (FLAR), Colombia

Luiz Claudio Levy Cardoso, Chief Investment Officer
Nucleos-Instituto de Seguridade Social, Brazil

Derek Drummond, Head of Strategy – Funds Alpha
State of Wisconsin Investment Board (SWIB)

Christoph Junge, Head of Alternatives
Velliv, Denmark

John Hurley, Chief Investment Officer, Alternatives
WorkSafe NB, Canada

E. PARALLEL BREAKOUT

The 2024 Election: The Geopolitical Implications

(Chair) David Stewart, Founder
Global ARC Australia

Academic Expert Panelists

Professor Mark Blyth
William R. Rhodes '57 Professor of International Economics
Brown University

Dr. Zongyuan Zoe Liu
Maurice R. Greenberg Fellow for China Studies
Council on Foreign Relations

His Excellency Vijay Keshav Gokhale
Foreign Secretary, (2018-2020) and Ambassador to China, (2016-2017) **Government of India**

Professor Rana Mitter
The S.T. Lee Chair in U.S.-China Relations
Harvard Kennedy School of Government

Professor Hal Brands
Henry Kissinger Distinguished Professor of Global Affairs
Johns Hopkins University SAIS

Institutional Investor Discussants:

Sebastian Vadakumcherry, Chief Risk Officer & CCO
Alaska Permanent Fund Corporation

Lan Kollengode, Chief Endowment Officer
Azim Premji Foundation, India

Ricardo Martinelli, Senior Advisor
Banco Central do Brasil, Brazil

Steve Mahoney, Chief Investment Officer
Nova Scotia Pension Services Corporation, Canada

Noriko Hayashi, Managing Director, Head of Private Equity
ORIX Life Insurance Corp, Japan

Dan Mikulskis, Chief Investment Officer
People's Partnership – United Kingdom

Arjen Pasma, Chief Fiduciary Investment Officer
PGGM Investments, The Netherlands

Kabelo Rikhotso, Chief Investment Officer and Executive Director
Public Investment Corporation, South Africa

Christopher Brockmeyer, Director of Employee Benefits
The Broadway League Inc

Jorge Toro, Chief Economist
The Central Bank of Colombia, Colombia

Bridget Uku, Investment Officer
UK Local Government Pension Scheme, United Kingdom

F. PARALLEL BREAKOUT

What are the current best practice techniques for selecting your alternative and high-alpha managers?

(Chair) Michael Nicks, Deputy Chief Investment Officer
Pepperdine University Endowment

Panellists

Clark Cheng, Chief Investment Officer
Merrimac Corp

Mauricio Guzman, Head Investment Strategy
SURA Investments, Colombia

Institutional Investor Discussants

Veronica Wong, VP, and Senior Portfolio Manager
Bank of Hawaii Investment Management Services

David Achterhof, VP Investments
Children's Hospital of Philadelphia

Anin Nandanan, Head of Investments
DAR Holdings, Saudi Arabia

Rafael Judar Vicchini, Chief Investment Officer and CFO
Fundação Eletrosul de Previdencia Complementar, Brazil

Arlete Nese, Partner
ON Valor, Brazil

Patrícia Queiroz, Chief Investment Officer
Real Grandeza Pension, Brazil

Angie Cantillon, VP, Investments and Corporate Treasury
The Wawanesa Mutual Insurance Company

3.55pm End of parallel breakout sessions

Technology Investments

"The Magnificent Seven [the seven major tech firms] are attracting such a high proportion of our pension money because of their consistency when it comes to growth and how they react to shocks in the wider market. They are also seen as long-term prospects, given their constant innovation, worldwide reach and sturdy balance sheets."
MoneyWeek

4.00pm Where to next for technology-driven investing?

Which technology sectors and trends show potential for continued high returns? Which ones might be overvalued, posing risks of significant market corrections? How far along the liquidity spectrum do institutional investors have to travel to best capitalize on these opportunities?

Institutional Investor Panelists tba

4.45pm Which scientific advances from the last twelve months have excited us the most, and why?

(Chair) Christopher Holt Ph.D., Senior Advisor, **Global ARC** and Associate Director
Conrad School of Business, University of Waterloo, Canada

President Emerita Professor Susan Hockfield
Author: 'The Age of Living Machines: How Biology Will Build the Next Technology Revolution'
President (2004-12) and President Emerita
Massachusetts Institute of Technology

Professor Susan Hockfield is one of the world's foremost neuroscientists. From 2004 through 2012, she served as the sixteenth President of Massachusetts Institute of Technology ('MIT') the first woman to hold this position. During her tenure as President, she shaped emerging national policy on energy technology and next-generation manufacturing, championing the breakthroughs in fields from clean energy to cancer emanating from the historic convergence of the life sciences and the engineering and physical sciences. Professor Hockfield pioneered the use of monoclonal antibody technology in brain research and discovered a gene that plays a critical role in the spread of cancer in the brain. Her book, 'The Age of Living Machines How Biology Will Build the Next Technology Revolution', describes how the convergence of biology with engineering will change our world for the better, and received the Science Communication Award from the American Institute of Physics. She holds a Ph.D. in Neuroscience from the Georgetown University School of Medicine.

and

Nobel Laureate Professor Frank Wilczek
2004 Nobel Prize Winner for Physics
2022 Templeton Prize Winner
The Herman Feshbach Professor of Physics
Massachusetts Institute of Technology

Professor Frank Wilczek is one of the world's most eminent theoretical physicists. He has received many prizes for his work, including: the Nobel Prize Winner for Physics, UNESCO's Dirac Medal, the American Physical Society's Sakurai Prize, the Michelson Prize from Case Western University, the King Faisal International Prize for Science and the Templeton Prize where he was "recognized for his examination into the fundamental laws of nature." He has made seminal contributions to fundamental particle physics, cosmology and the physics of materials. His current research includes work on Axions, Anyons, and Time Crystals. These are concepts in physics which he named and pioneered; each of which has become a major focus of research worldwide. Frank has authored several well-known books and writes a monthly "Wilczek's Universe" feature for The Wall Street Journal. He holds a Ph.D. in physics from Princeton.

5.45pm Networking cocktails & canapés

Day Three: Wednesday October 23rd 2024

7.30am Opening remarks

(Chair) Cameron Dawson, Chief Investment Officer
NewEdge Wealth

Latest Alternatives Research

7.35am Alternative investments: an overview of the most interesting academic research published over the last twelve months.

A perennial delegate favorite, Professor Nicole Boyson of D'Amore-McKim School of Business, will return for her annual review of the most thought-provoking academic alternatives research from 2024.

(Chair) Cameron Dawson, Chief Investment Officer
NewEdge Wealth

Professor Nicole Boyson
Chair of the Department of Economics and Finance
and Professor of Finance
The D'Amore-McKim School of Business, Northeastern University

Professor Nicole Boyson's research and teaching interests fall in the area of investments and corporate finance, with a particular focus on hedge fund management, hedge fund activism and regulatory arbitrage. Her most recently published research includes: 'Hostile Resistance to Hedge Fund Activism' in The Review of Financial Studies 'Activism Mergers' in The Journal of Financial Economics, 'Thawing Frozen Capital Markets and Backdoor Bailouts, 'Evidence from the Fed's Liquidity Programs' in The Journal of Banking and Finance and 'Liquidity Shocks and Hedge Fund Contagion' in The Journal of Investment Management. Her work 'The Performance of Female Hedge Fund Managers' findings that despite female hedge fund managers on average outperforming their male counterparts, that female managers struggled to raise capital received widespread attention in the financial press. She currently serves as a Co-Editor for Financial Analysts Journal. A CPA, Nicole Boyson's prior work experience includes eight years in industry, at KPMG Peat Marwick, Third Federal Savings and Loan Association of Cleveland, Pension Consulting Services, and Ernst & Young. Nicole Boyson holds a PhD. in Finance from Ohio State University.

ESG

"Brett Christophers book ['The Price is Wrong'] is a radical one, that contravenes the received wisdom of not only the technocrats, mainstream economists and free marketeers who tout the wonders of the market, but also many on the left, for whom the problem with profits is typically their being far too high."

The New Statesman

8.15am What if our understanding of capitalism and climate is back to front? What if the problem is not that transitioning to renewables is too expensive, but that saving the planet is insufficiently profitable?

Today's consensus is that the key to curbing climate change is to produce green electricity and electrify everything possible. The main economic barrier in that project has seemingly been removed. But while prices of solar and wind power have tumbled, the golden era of renewables has yet to materialize. Professor Brett Christophers believes that the problem is that investment is driven by profit, not price, and operating solar and wind farms remains a marginal business, dependent everywhere on the state's financial support. The global economy is moving too slowly toward sustainability because the return on green investment is too low. His iconoclastic argument is that we cannot expect markets and the private sector to solve the climate crisis while the profits that are their lifeblood remain unappetizing. But there is an alternative to providing surrogate green profits through subsidies: to take energy out of the private sector's hands.

(Chair) Jerry Moriarty, Chief Executive Officer
Irish Association of Pension Funds, Ireland

Professor Brett Christophers
Author: *'The Price is Wrong: Why Capitalism Won't Save the Planet'*
Professor of Human Geography
Uppsala University, Sweden

Professor Brett Christophers research has garnered widespread acclaim from critics. His most recent book *'The Price is Wrong: Why Capitalism Won't Save the Planet'* (2024) challenges both orthodox left-wing and orthodox right-wing analysis of the factors influencing transition to greener forms of energy. Whilst his prior, and highly controversial recent book, *'Our Lives in Their Portfolios: Why Asset Managers Own the World'* (2023) outlined what he believes to be the negative consequences of the privatisation of society's infrastructure. Asset managers, he argues, are unlike traditional owners of essential infrastructure in that he believes the crux of their business model is not long-term investment and careful custodianship but making quick profits for themselves and their investors. He completed his undergraduate studies at Oxford University and holds a Ph.D. from University of Auckland, New Zealand.

8.55am Recent developments in, and ongoing challenges surrounding, ESG implementation: institutional investor perspectives.

(Chair) Jerry Moriarty, Chief Executive Officer
Irish Association of Pension Funds, Ireland

Michael Dittrich, Vice Secretary General
Deutsche Bundesstiftung Umwelt (DBU), Germany

Joe Aguilar, Chief Investment Officer
Illinois State Treasury

Curtis Loftis, State Treasurer
South Carolina Treasurer's Office

Additional panelist tba

9.35am Morning coffee

The Retirement Challenge

"How does the U.S. retirement system rank globally? Mercer CFA Institute released this year's stats in their Global Pension Index 2023. The study ranks the Netherlands, Iceland, Denmark, and Israel as having the best systems, receiving an A grade. The United States ranked 22nd .... [and] received a lowly C+ grade, along with Spain and Kazakhstan."

Forbes Magazine

10.05am What are the most pressing structural challenges facing the United States retirement system and how can we begin to address them?

(Chair) Rich Nuzum, Executive Director, Investments,
and Global Chief Investment Strategist
Mercer

Professor James Poterba
President, **National Bureau of Economic Research (NBER)**
The Mitsui Professor of Economics
Massachusetts Institute of Technology

Day Three: Wednesday October 23rd 2024

Professor James Poterba has served as President of the National Bureau of Economic Research (NBER) for 14-years. The NBER is the peak body for North American economists. It is a nonprofit research organization dedicated to conducting and disseminating nonpartisan economic research from more than 1,700 affiliated scholars at North American colleges and universities to carry out research. Professor Poterba also serves as a trustee of the College Retirement Equity Fund (CREF) and the TIAACREF mutual funds. Professor Poterba's main research themes focus on how taxation affects decision-making of firms and households, particularly involving saving and portfolio behaviour. He has a deep interest in retirement security and the instruments available and used by households in retirement savings programs. In 2014 he received the Daniel M. Holland Medal from the National Tax Association for the study and practice of public finance. His public service includes serving as an advisor to the Congressional Budget Office and serving on the President's Advisory Panel on Federal Tax Reform. He holds a Ph.D. in economics from University of Oxford

10.45am Implementing these structural solutions: pension consultant perspectives.

Our panel of leading investment consultants will join Professor Poterba on stage to discuss the practical implications of the strategic retirement challenges, and the potential solutions, raised in Professor Poterba's keynote address.

(Chair) Rich Nuzum, Executive Director, Investments and Global Chief Investment Strategist
Mercer

Patrick Adelsbach, Partner, Co-Head of Advisory, Americas
Aksia

Russ Ivinjack, Global Chief Investment Officer
Aon Investments

Catherine Beard, Senior Vice President, Alternative Consulting
Callan

Professor James Poterba
President, **National Bureau of Economic Research (NBER)**
The Mitsui Professor of Economics
Massachusetts Institute of Technology

Tim McCusker, Partner, Chief Investment Officer
NEPC

Nimisha Srivastava, Head of Investments, NA
Willis Towers Watson

11.35am Champagne Lunch

Why Do Societies Collapse?

"Extraordinary. . . Peter Turchin is a practitioner of "cliodynamics," an ambitious attempt to apply complexity theory and much else to human history. *End Times* is the culmination of many years of highly original and innovative work."

Professor Niall Ferguson, Bloomberg

"End Times offers a… compelling analysis of why societies fail. . . Peter Turchin's theory represents the most persuasive analysis of the historical forces assailing society in the present."

The Times of London

12.55pm Why do societies collapse and how vulnerable is *our* society to such a rupture?

What leads to political turbulence and social breakdown? How do elites maintain their dominant position? And why do ruling classes sometimes suddenly lose their grip on power? For decades, complexity scientist Professor Peter Turchin has been studying world history like no one else. Assembling vast databases mined from 10,000 years of human activity, and then developing new models, he has transformed the way we learn from the past.

(Chair) Christopher Holt Ph.D., Senior Advisor **Global ARC** and Associate Director,
Conrad School of Business, University of Waterloo, Canada

Professor Peter Turchin
Author: '*End Times: Elites, Counter-Elites and the Path of Political Disintegration*'
Professor Emeritus, Ecology and Evolutionary Biology
University of Connecticut

[Note: Professor Turchin will speak live via satellite from Vienna, Austria.]

Professor Peter Turchin is a complexity scientist who works in the field of historical social science that he and his colleagues call Cliodynamics. His research interests lie at the intersection of social and cultural evolution, historical macrosociology, economic history and cliometrics, mathematical modelling of long-term social processes. Currently he investigates a set of broad and interrelated questions: How do human societies evolve? What processes are responsible for the resilience of complex societies to external and internal shocks? What causes political communities to cohere and what causes them to fall apart? Currently his main research effort is directing the Seshat Databank project which builds and analyzes a massive historical database that enables us to empirically test predictions from theories attempting to explain why and how complex human societies evolved, and why they periodically experience political breakdown. Turchin has authored ten books, most recently 'End Times: Elites, Counter-Elites, and the Path of Political Disintegration.'

Parallel Breakout Sessions

1.45pm Parallel breakout sessions commence

Delegates can customize Global ARC to their needs by choosing between several highly interactive parallel breakouts. Some of these parallel breakouts are continuations of preceding plenary panel topics, whilst others provide delegates with the opportunity to explore fresh topics.

To allow for a more in-depth exploration of these subjects, each breakout session is approximately one and a half hours long.

The parallel 85-minute interactive breakout discussions currently scheduled for Wednesday October 23rd are:

A. PARALLEL BREAKOUT

Wealth managers: how do we select which high-alpha products to offer to our clients?

Wealth Manager Panellists

Peter Chiappinelli, Chief Investment Officer
Ballentine Partners

Ohm Srinivasan, Head of Manager Research and Alt. Investments
CIBC Private Wealth Management, U.S.

Cameron Richards, Chief Investment Officer
Guardian Partners, Canada

Laurie Goodman, Managing Director
Jefferies Private Wealth Management

Saumen Chattopadhyay, Chief Investment Officer
OneDigital Retirement +Wealth Management

Scott Lavelle, Head of Manager Research
PNC

Bradley Sussman, VP of Product Development and Research
Raymond James Global Wealth Solutions

Doug Butler, Senior Vice President and Director of Research
Rockland Trust

Alvina Lo, Chief Wealth Strategist, Executive Vice President
Wilmington Trust

Institutional Investor Discussants

Anin Nandanan, Head of Investments
DAR Holdings, Saudi Arabia

Mauricio Guzman, Head Investment Strategy
SURA Investments, Colombia

B. PARALLEL BREAKOUT

Investment consultant perspectives: selecting your alternative investments - the role of a consultant or advisor.

(Chair) Luke Webster, Chief Investment Officer
Greater London Authority, United Kingdom

Investment Consultant Panelists

Patrick Adelsbach, Partner, Co-Head of Advisory, Americas
Aksia

Russ Ivinjack, Global Chief Investment Officer
Aon Investments

Catherine Beard, SVP, Alternative Consulting
Callan

Amy Hsiang, Director of Public Markets Manager Research
Meketa Investment Group

Rich Nuzum, Global Chief Investment Strategist
Mercer

Tim McCusker, Partner, Chief Investment Officer
NEPC

Nimisha Srivastava, Head of Investments, NA
Willis Towers Watson

Institutional Investor Discussants

Howard Cooper, Founder
Cooper Family Office

Konstantinos Grigoriadis, Treasury Manager - Pension
DXC Technology

Scott Simon, Chief Investment Officer
Fire and Police Pension Association of Colorado

Ellen Hung, State Investment Officer
Nebraska Investment Council

Steve Mahoney, Chief Investment Officer
Nova Scotia Pension Services Corporation, Canada

Noriko Hayashi, Managing Director, Head of Private Equity
ORIX Life Insurance Corp, Japan

Farouki Majeed, Chief Investment Officer
School Employees Retirement System of Ohio

Christopher Brockmeyer, Director of Employee Benefits
The Broadway League Inc

Investment Consultant Discussants

Arlete Nese Ph.D., Director
ON Valor, Brazil

C. PARALLEL BREAKOUT

Reviewing the most incisive recent academic research on finance and the finance industry.

(Chair) Cameron Dawson, Chief Investment Officer
NewEdge Wealth

Academic Panellist

Professor Nicole Boyson
Chair of the Department of Economics and Finance
and Professor of Finance
The D'Amore-McKim School of Business, Northeastern University

Pension Consultant Panelists

Pension consultant discussants tba

Institutional Investor Discussants

Ricardo Martinelli, Senior Advisor
Banco Central do Brasil, Brazil

Steve Thompson, Executive Director Capital Markets
Government of Alberta, Canada

Markus Schaen, Senior Fund Manager, Fixed Income
MN - The Netherlands

Michael Nicks, Deputy Chief Investment Officer
Pepperdine University Endowment

Kabelo Rikhotso, Chief Investment Officer and Executive Director
Public Investment Corporation, South Africa

Derek Drummond, Head of Strategy – Funds Alpha
State of Wisconsin Investment Board (SWIB)

Elmer Huh, Chief Investment Officer
The M.J. Murdock Charitable Trust

D. PARALLEL BREAKOUT

ESG strategies and implementation... continued

(Chair) Jerry Moriarty, Chief Executive Officer
Irish Association of Pension Funds, Ireland

Academic Panellist

Professor Brett Christophers
Author: *The Price is Wrong*
Professor of Human Geography
Uppsala University, Sweden

Institutional Investor Panellists

Michael Dittrich, Vice Secretary General
Deutsche Bundesstiftung Umwelt (DBU), Germany

Joe Aguilar, Chief Investment Officer
Illinois State Treasurer's Office

Curtis Loftis Jr., State Treasurer
South Carolina State Treasurer's Office

Additional panelists tba

Institutional Investor Discussants

Alex Neszvecsko, Portfolio Manager
European Patent Office, Reserve Funds, Germany

Corrado Pistarino, Chief Investment Officer
Foresters Friendly Society, United Kingdom

Patricia Alejo, Quantitative Strategist & Portfolio Manager
Inter American Development Bank

Adam Ruddle, Chief Investment Officer
LV=, United Kingdom

Clemens Quast, Head of Treasury
Sächsische Aufbaubank – Förderbank, Germany

Jorge Toro, Chief Economist
The Central Bank of Colombia, Colombia

Angie Cantillon, VP, Investments and Corporate Treasury
The Wawanesa Mutual Insurance Company

John Hurley, Chief Investment Officer, Alternatives
WorkSafe NB, Canada

E. PARALLEL BREAKOUT

AI and big data: an examination of the opportunities and challenges that these fast-accelerating scientific discoveries pose to the finance industry, investment strategies and institutional investors.

(Chair) Mohamed Elkordy Ph.D., Senior Investment Officer
New York Common Retirement Fund

Institutional Investor Panellists

Elena Manola-Bonthond Ph.D., Chief Investment Officer
CERN Pension, Switzerland

Antonio Candia, Principal of Innovation
Latin-American Reserves Fund (FLAR), Colombia

Additional panelists tba

Institutional Investor Discussants

Mateo Fernández, Chief Investment Officer
AFAP Itaú Penson, Uruguay

Ramzi Bibi, Head of Investment & Treasury
Arabia Insurance

Veronica Wong, VP and Senior Portfolio Manager
Bank of Hawaii Investment Management Services

David Achterhof, VP Investments
Children's Hospital of Philadelphia

Eric Newman, Treasury Manager
City of Stamford

Vasilios Siokis, Chief Risk Officer
Emirates Investment Authority, United Arab Emirates

Rafael Judar Vicchini, Chief Investment Officer
Fundação Eletrosul de Previdencia Complementar, Brazil

Clark Cheng, Chief Investment Officer
Merrimac Corp

Luiz Claudio Levy Cardoso, Chief Investment Officer
Nucleos-Instituto de Seguridade Social, Brazil

Patrícia Queiroz, Chief Investment Officer
Real Grandeza Pension, Brazil

Bridget Uku, Investment Officer
UK Local Government Pension Scheme, United Kingdom

3.10pm End of parallel breakout sessions

Reflecting on 2024 Themes

3.15pm Reflecting on the key themes and takeouts from Global ARC 2024.

(Chair) Luke Webster, Chief Investment Officer
Greater London Authority, United Kingdom

Elena Manola-Bonthond Ph.D., Chief Investment Officer
CERN Pension, Switzerland

Alex Neszvecsko, Portfolio Manager
European Patent Office, Reserve Funds, Germany

Steve Thompson, Executive Director, Capital Markets
Government of Alberta, Canada

Elmer Huh, Chief Investment Officer
The M.J. Murdock Charitable Trust

Alien Life

"Confirming an alien radio signal would be possibly *the* most consequential and disruptive scientific discovery of all time."
The Washington Post

3.50pm Are we on the verge of discovering alien life?

For decades, scientists have been tirelessly seeking signs of extraterrestrial life in the vast expanse of the cosmos, yet thus far, their efforts have yielded no definitive results. Nevertheless, recent groundbreaking advancements in search technologies have instilled a sense of optimism among the scientific community. Many prominent researchers now believe that we stand on the brink of a profound discovery, with some asserting that the revelation of alien life within the next decade is within reach.

(Chair) Christopher Holt Ph.D., Senior Advisor **Global ARC** and Associate Director,
Conrad School of Business, University of Waterloo, Canada

Professor Lisa Kaltenegger
Author: *'Alien Earths: The Science for Planet Hunting in the Cosmos'*
Director of the Carl Sagan Institute.
Cornell University INVITED

4.35pm Close of Global ARC 2024

We look forward to welcoming you back in 2025 to the 22nd Annual Global ARC Boston
October 20th - October 22nd 2025

Global ARC Boston
October 21st - 23rd 2024

Register and pay online: www.garcboston.com

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To pay by wire transfer please select the **invoice** option during the registration process.

Registration Rates

USD registration per delegate for 3 days (general sessions only)	EARLY BIRD RATE: register before June 1st 2024	Register before July 1st 2024
Standard registration	USD 12,450	USD 12,950
Full time employees of not-for-profit pensions and endowments *	USD 250 *	USD 275 *

About Global ARC

Founded in 2002, Global ARC convenes a network of the world's foremost pension funds, endowments, sovereign wealth funds and asset managers focused on the intersection of macroeconomic developments, capital markets, active management and alternative investments. All gatherings are held strictly off-the-record with no media or press in attendance. Global ARC is an independent organization. It is wholly owned by its founder David Stewart and is not affiliated with any media company or individual supplier of services to the investment industry.

Global ARC Contacts

For program or sponsorship queries contact: David Stewart at **david@global-arc.net** or Samantha Allwork at **samantha@global-arc.net**

For institutional investor queries contact: David Stewart at **david@global-arc.net** or Robert Bennett-Lovsey at **robert@global-arc.net**

For registration queries contact Samantha Allwork at **samantha@global-arc.net**

Global ARC Boston Venue

The official hotel for Global ARC 2024 is The InterContinental Boston, which is located at 510 Atlantic Avenue, Boston, Massachusetts, MA 02210, USA. Delegates staying at The InterContinental Boston are entitled to a special rate. www.intercontinentalboston.com

For further details please contact **samantha@global-arc.net**

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Meeting Date
06/26/2024
Agenda Item
#3.A-III

CCCERA

Contra Costa County Employees' Retirement Association

EMPLOYER AUDIT REPORT

May 13, 2024

EMPLOYER AUDIT

Contra Costa County District Attorney

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Contra Costa County Employees' Retirement Association

May 13, 2024

Diana Becton
Contra Costa County District Attorney
900 Ward Street
Martinez, CA 94553

RE: CCCERA Employer Audit Report – Contra Costa County District Attorney

Dear Ms. Becton,

Enclosed is the employer audit report of Contra Costa County District Attorney, conducted pursuant to Government Code Section 31543. I want to thank you and all District Attorney staff for their assistance in gathering all the records and documents and making them readily available during this audit. This cooperation was greatly appreciated and allowed for the audit to be completed in an efficient manner.

The *Employer Audit Report* is enclosed for your review. There were no "Follow-Up Items" noted for the District Attorney to address. However, the audit noted gaps in the areas of pension benefit calculations, retirees returned to work, and felony forfeiture. The audit recommends the County establish a formal process to report future job-related felony convictions to CCCERA in accordance with the law. CCCERA is in receipt of a written response from the District Attorney dated May 9, 2024. This response is included in the "*Final Report"* which will be submitted to CCCERA's Audit Committee for its review.

This report will be placed on the agenda and will be presented to the CCCERA Board of Retirement Audit Committee at its June 12, 2024 meeting.

In addition, I would like to extend my gratitude to District Attorney's fiscal and administrative staff and the courtesy that they extended to CCCERA during the review. Should you wish to discuss or have any questions regarding the items reviewed and the observations contained within this report, please contact me at 925-521-3960.

Best regards,

Cherry Chang
Internal Auditor

CC: Monica Carlisle, Chief of Administrative Services, District Attorney's Office
Dan Wallace, Administrative Services Analyst III, District Attorney's Office
Monica Nino, Contra Costa County Administrator
Robert Campbell, Contra Costa County Auditor-Controller
Christina Dunn, Chief Executive Officer, CCCERA
Wrally Dutkiewicz, Compliance Officer, CCCERA

BACKGROUND

The Contra Costa County Employees' Retirement Association (CCCERA) is a public employee retirement system that was established by Contra Costa County on July 1, 1945, and is administered by the Board of Retirement (Board) to provide service retirement, disability, death, and survivor benefits for Contra Costa County (County) employees and 15 other participating agencies under the California State Government Code, Section 31450, *et. seq.* (County Employees Retirement Law of 1937 or CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

CCCERA administers the retirement benefits for the employees of Contra Costa County and participating District employers. Participating employers within the CCCERA retirement system transmit payroll information and contributions to fund the benefits for their employees. CCCERA sets up retirees' accounts, processes applications, calculates retirement allowances, prepares monthly retirement benefit payment rolls, and makes adjustments to retirement benefits when needed.

Retirement allowances are computed in accordance with statute using three factors: years of service, age at retirement, and final compensation. For Legacy (pre-PEPRA) members, final compensation is defined as the highest average annual compensation earnable (as defined in G.C. Section 31461) by a member during one or three consecutive years of employment depending on the member's Tier. For PEPRA members, final compensation is defined as the highest average annual pensionable compensation (as defined in G.C. Section 7522.34) earned by the member during a period of 36 consecutive months.

The employer's knowledge of the rules relating to membership and payroll reporting facilitates the employer in providing CCCERA with appropriate employee information. Correct enrollment of eligible employees and correct reporting of payroll information are necessary for the accurate computation of a member's retirement allowance.

The District Attorney is by state law the public prosecutor responsible for the prosecution of criminal violations of state law and county ordinances. The District Attorney protects the public's safety and provides assistance to those harmed by violence. In 2022, the District Attorney's Office prosecuted over 3,000 felony cases and over 4,600 misdemeanor cases.

The District Attorney's Office has these major programs:

- Mainline Prosecution: The Mainline Prosecution divisions are responsible for reviewing, filing and prosecuting, on behalf of the people, all public offenses occurring in Contra Costa County. The division includes specialized teams that address homicide, community violence, interpersonal violence, human trafficking, general felony, misdemeanor prosecution and juvenile delinquency.
- Special Prosecution: Special Operations addresses specific areas of criminal activity and civil wrongdoing often involving multiple jurisdictions and investigative agencies. The divisions within

Special Operations Unit include Environmental Protection, Consumer Protection, Major Financial Crimes, Auto Fraud, Real Estate Fraud, and Workplace Justice.

- Investigations Bureau: The Investigations Bureau is responsible for facilitating the prosecution of offenses within the District Attorney's jurisdiction. In this capacity, Senior Inspectors assist in case follow up, locating and interviewing suspects and witnesses, investigate law enforcement involved fatal incidents (LEIFI), author search warrant affidavits, serves search warrants, conducts surveillance, and testify as witnesses in criminal and civil cases.
- Victim Witness Assistance: The Victim Witness Assistance Program provides constitutionally and statutorily mandated services to empower victims of crime through advocacy and support. Advocates give a voice to victims in the criminal justice system at all stages of the court proceedings. They provide crisis intervention, orientation to the criminal justice system and pursue restitution on behalf of victims and the Victims Compensation Fund.

Per CCCERA records, the District Attorney's Office had 218 active members as of 6/30/23. For the District Attorney's Office, the County reported pensionable compensation of approximately $23.3 and $24.4 million in 2021 and 2022, respectively. The table below summarizes membership counts, pensionable compensation, pension contribution, retiree counts and pension benefit payment for calendar years 2021, 2022 and 2023.

	CY2021	CY2022	CY2023*
Active Members	225	233	218
Pensionable Compensation	$23,327,606	$24,447,431	$12,943,774
Employer Contribution	$7,323,808	$7,567,295	$3,985,478
Member Contribution	$2,683,295	$2,753,175	$1,500,014
Retirees & Beneficiaries	207	209	209
Pension Benefit Payment	$12,303,943	$13,043,475	$10,167,952

* through 6/30/23 for active members and 9/1/23 for retirees

SCOPE

The 2013 pension reform legislation granted CCCERA the authority under Government Code Section 31543 to conduct audits of employers to ensure that employee and payroll information used in the calculation of retiree pension benefits is correct and verifiable. The scope of these reviews includes:

- Correctness of retirement benefits;
- Reportable compensation;
- Enrollment in, and reinstatement to the system (GC 31554);
- Pensionable compensation (GC 31461 and GC 7522.34);
- Review MOUs with respect to compensation and salary regulations (i.e. Vacation Sales, etc.);
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and GC 7522.34(c)(1));
- Evaluate employer's compliance with restrictions on retirees returning to work (GC 7522.56, I.R.S. bona fide separation and normal retirement age rules); and
- Determine if employees convicted of certain felonies have forfeited benefits earned or accrued from the commission of the felony (GC 7522.72(g) and GC 7522.74(g)).

The CCCERA audit of the Contra Costa County District Attorney was conducted virtually between March and April 2024. The review period encompassed active employee records and retiree records from January 2021 through June 2023.

OBSERVATIONS AND FINDINGS

ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA

- *Scope Item 1: Exceptions were observed in this section.*

PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW

Pursuant to Board of Retirement Regulations Section IV: Employer pensionable payroll and corresponding pension contributions are to be reported to the retirement system timely and accurately. *(Contributions And Reporting, 2. Due Dates, 4. Employer Certification)*.

Due Dates:

Each employer shall report to the Association in a manner and frequency as determined by the Board sufficient for the Board to credit contributions and service to each member's record.

Unless otherwise specified, reports shall be due no later than the tenth of each month for the previous month's payroll and shall be accompanied by member and employer contributions. If the tenth of the month falls on a weekend or holiday, the due date shall be the last working day before the tenth. Reports, which are unreadable or incorrect, shall not be accepted and shall be returned to the employer. (Emphasis added.)

Reports and contributions received after the due date shall be considered late and subject to a late reporting penalty equal to the prime rate in effect on the due date computed on a daily, non-compounding basis and applied to the contributions due.

The County represents that due to its large payroll size and complex reconciliation process, it requires an additional 30 days beyond the deadline set forth in CCCERA's Regulations for reporting. The County will provide CCCERA with contribution reports no later than the tenth day of the second month following the payroll month that is the subject of the report, with the exception of the month of December contribution reporting.

- *Observation 1: Any observations in this area have been communicated to the County Auditor-Controller's Office.*

INPUT FILE REVIEW

Employer Certification

Each payroll and pension contribution report shall include or be accompanied by a certification, under penalty of perjury, as to its accuracy. The certification shall be made by a duly authorized representative of the employer. (Board of Retirement Regulations *Section IV, 4. Employer Certification.*)

➢ *Observation 2: Any observations in this area have been communicated to the County Auditor-Controller's Office and CCCERA Management.*

COMPENSATION LIMITS

Federal and state laws place annual limits on the compensation that can be used to determine contributions and benefits for CCCERA plan members.

Legacy Members:

- The Internal Revenue Code Section 415(b) provides for dollar limitations on benefits and contributions under qualified retirement plans which are adjusted annually for cost-of-living increases.
- Members who commenced participation in CCCERA on or after January 1, 1996 are subject to the annual federal Internal Revenue Code Section 401(a)(17) compensation limit.
- For CERL benefit formulas (General Tiers 1, 3, Safety Tiers A & C), the 2022 calendar year compensation limit was increased by the I.R.S. from $290,000 to $305,000 for calendar year 2021.
- Members who commenced participation in CCCERA prior to January 1, 1996 are not subject to the Internal Revenue Code annual compensation limit.

PEPRA Members:

- For new employees who commenced participation in CCCERA on or after January 1, 2013 under PEPRA benefit formulas (General Tiers 4,5, Safety Tiers D & E), the compensation which exceeds that annual pensionable compensation limit under California Government Code Section 7522.10(c) and (d) is not included in determining benefits or contributions.
- The 2022 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security – increased to $134,974.
  - For employees not enrolled in Social Security – increased to $161,969.
- The 2021 calendar year PEPRA compensation limits are as follows:
  - For employees enrolled in Social Security the limit was $128,059.
  - For employees not enrolled in Social Security the limit was $153,671.

➢ *Observation 3: None*

PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW

Compensation Earnable Applicable Law for Legacy Members

"Compensation earnable" by a member means the average compensation as determined by the board, for the period under consideration upon the basis of the average number of days ordinarily worked by persons in the same grade or class of positions during the period, and at the same rate of pay. The computation for any absence shall be based on the compensation of the position held by the member at the beginning of the absence. Compensation, as defined in Section 31460, that has been deferred shall be deemed "compensation earnable" when earned, rather than when paid. (Gov. Code Section 31461(a).)

CCCERA's Compensation Earnable Policy sets forth the definition of Compensation Earnable as well as exclusions from Compensation Earnable.

Pursuant to CCCERA's "Compensation Earnable Policy"[1], Section III.D. "Compensation Earnable" excludes payments for additional services rendered outside of normal working hours.

CCCERA Policies and Practices. Pay received for services rendered outside normal working hours is not included in "compensation earnable." To be included, the time for which compensation is received:

(1) must be the normal working hours set forth in the applicable regulation, resolution or employment agreement;
(2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked) as set forth in the applicable regulation, resolution or employment agreement; and
(3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay.

Pay that will be reviewed under these conditions is often described as "standby" and "on-call." Employers should utilize two separate pay codes: one for pensionable pay that meets the above three-point test; and the other for non-pensionable pay that does not meet the test; and must report to CCCERA as pensionable only that pay that meets the test set forth above. Employer contributions should only be taken against the pensionable pay code.

Pensionable Compensation Applicable Law for PEPRA members

PEPRA defines "pensionable compensation" as follows:

"Pensionable compensation" of a new member of any public retirement system means the normal monthly rate of pay or base pay of the member paid in cash to similarly situated members of the same group or class of employment for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedules.

Compensation that has been deferred shall be deemed pensionable compensation when earned rather than when paid. (Gov. Code Section 7522.34(a) and (b).)

PEPRA excludes from "pensionable compensation" the following:

---

[1] https://www.cccera.org/sites/main/files/file-attachments/post_ab_197_compensation_earnable_policy_final.pdf?1620253572

(1) Any compensation determined by the board to have been paid to increase a member's retirement benefit under that system.
(2) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member and which was converted to and received by the member in the form of a cash payment.
(3) Any one-time or ad hoc payments made to a member.
(4) Severance or any other payment that is granted or awarded to a member in connection with or in anticipation of a separation from employment, but is received by the member while employed.
(5) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, regardless of when reported or paid.
(6) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.
(7) Any employer-provided allowance, reimbursement, or payment, including, but not limited to, one made for housing, vehicle, or uniforms.
(8) Compensation for overtime work, other than as defined in Section 207(k) of Title 29 of the United States Code [FLSA].
(9) Employer contributions to deferred compensation or defined contribution plans.
(10) Any bonus paid in addition to the compensation described in subdivision (a) [of G.C. § 7522.34].
(11) Any other form of compensation a public retirement board determines is inconsistent with the requirements of subdivision (a) [of G.C. § 7522.34].
(12) Any other form of compensation a public retirement board determines should not be pensionable compensation. (Gov. Code Section 7522.34(a) and (b).)

Pursuant to CCCERA's "Pensionable Compensation Policy", Section III:

The CCCERA Board has determined that "Pensionable Compensation" includes "base pay." Pensionable compensation does not include any pay other than base pay, in accordance with Govt. Code Sections 7522.34(c)(11) and (12).

Pensionable compensation (GC 31461 and 7522.34) is to be reported to the retirement system and the corresponding contributions are to be reported to the retirement system.

➢ *Observation 4: None*

SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE

➢ *Scope Item 2: No exceptions were observed in this section.*

Pursuant to CCCERA's Policy On Determining "Pensionable Compensation" Under PEPRA For Purposes Of Calculating Retirement Benefits, a "publicly available pay schedule" must meet all of the following requirements:

1. Has been duly approved and adopted by the employer's governing body in accordance with requirements of applicable public meetings laws;
2. Identifies the position title for every employee position;
3. Shows the pay rate for each identified position, which may be stated as a single amount or as multiple amounts within a range;
4. Indicates the time base, including, but not limited to, whether the time base is hourly daily, bi-weekly, monthly, bi-monthly, or annually;
5. Is posted at the office of the employer or immediately accessible and available for public review from the employer during normal business hours or posted on the employer's internet website;
6. Indicates an effective date and date of any revisions;
7. Is retained by the employer and available for public inspection for not less than five years; and
8. Does not reference another document in lieu of disclosing the pay rate.

➢ *Observation 5: None*

ENROLLMENT OF ELIGIBLE EMPLOYEES

➢ *Scope Item 3: No exceptions were observed in this section.*

1. Exclusion from Membership – By Type of Employment

A. All officers and employees of the County or districts shall be members of the association as provided in Article 4 under Sections 31550-31567 of the County Employees' Retirement Law of 1937 (Gov. Code Secs. 31450, et seq. "CERL"), unless excluded from membership by this Section.

B. The following employees shall be excluded from membership:

i. Temporary, seasonal or independent contract employees who are employed or re-employed for temporary service or at certain specified periods each year.

ii. Intermittent or permanent-intermittent employees who are appointed to serve less than 80% of the full number of working hours required of regular employees or who actually serve less than 80% of such full number of working hours in one year as certified by their appointing authority.

iii. Part-time employees whose service for the County or district is less than fifty (50) percent of the full number or working hours required of fulltime employees at that employer.

iv. Project employees, unless the appointing authority certifies that the project is expected to be of one year or more in duration on a greater than part-time basis.

v. Provisional employees, unless they otherwise meet the requirements for reciprocal benefits with other retirement systems under Article 15 of CERL.

C. In making its determination regarding an employee's inclusion in or exclusion from membership, the Board will not rely solely upon the term given to the type of employment. Rather, the Board will rely upon such additional facts such as the nature of the employment, its expected or actual duration, and its relationship to what is considered full-time, permanent employment.

2. Exclusion from Membership – by Compensation

Except as otherwise herein provided, all employees of the County or district who receive compensation amounting to less than one-hundred ($100) dollars per month, and in the case of employees paid on other than a monthly basis an average of one-hundred ($100) dollars per month for the preceding year, including maintenance valued according to the schedule adopted by the governing body, are hereby excluded and exempted from membership in the Retirement Association. Any member of the Retirement Association whose salary is reduced to an amount less than one-hundred ($100) dollars per month shall have the option of continuing or discontinuing his/her active membership in the Association.

2.1 Exclusion from Membership – by Waiver

Newly hired employees aged 60 and older may waive membership as authorized by Gov. Code Section 31552. Any such waiver of membership shall be effective only if it is submitted to the CCCERA Chief Executive Officer within 90 days of the employee's date of hire; provided, however, that the Chief Executive Officer may, in his/her sole and reasonable discretion, waive the time limitation if the newly hired employee establishes good cause for such a waiver.

3. Certifications

Every employee of the County or district within the county whose employees are members of the Association shall, upon entry into the Association, complete a sworn statement as provided for in Gov. Code Section 31526(b). A certified copy of the member's birth certificate or other evidence of birth may be required by the Board.

It shall be the employer's responsibility to ensure compliance with this section. The Board shall assess the employer five hundred ($500) dollars per employee for every month or fraction thereof that the required certification is not submitted. The Board shall notify the employer in writing of the imposition of assessment at least thirty days before the assessment.

- *Observation 6: None*

PENSION BENEFIT REVIEW

➢ *Scope Item 4: Exceptions were observed in this section.*

REVIEW OF PENSION BENEFIT CALCULATIONS

1. Compensation Policies
   i. *Compensation Earnable Policy* – Adopted: 9/10/2014, Amended: 5/5/2021; GC 31461;
   ii. *Policy On Determining "Pensionable Compensation" Under PEPRA For Purposes Of Calculating Retirement Benefits* - Adopted: 9/10/2014; GC 7522.34;
   iii. *Policy Regarding Assessment and Determination Of Compensation Enhancements* – Adopted 11/1/2012, Amended: 3/8/2017, Last Reviewed: 4/12/2023; GC 31461(b)(1) and 7522.34(c)(1)

➢ *Observation 7: Internal Audit tested final average compensation calculation for a sample of 35 District Attorney retirees and found final average compensation was correctly calculated for all sampled retirees except for one. The correction lowers the one retiree's monthly benefit payment by $0.01, which is within our tolerance threshold. Therefore, no actions are needed from CCCERA or the District Attorney's Office.*

RETIREE RETURN TO WORK MONITORING

2. Retiree Return to Work Monitoring
   i. GC 7522.56 Retired Persons; Service and Employment Restrictions

➢ *Observation 8: The District Attorney's Office had nine retirees returned to work during 2021-2023. All nine retirees returned to work, complied with the 180-day waiting period where applicable, and complied with the 960 hours limit. However, one retiree's Certification for Post-Retirement Employment (Form 213) was not submitted to CCCERA. The staff handling Form 213 at the District Attorney's Office was not aware of the form. The retiree is no longer working at the District Attorney's Office and the District Attorney's Office has no outstanding follow-up items on this observation.*

FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY

3. Felony Forfeiture Monitoring and Notification – The law requires public agencies that employ or employed a public employee who was convicted of a such felony to notify the public retirement system of the conviction within 90 days of the conviction. A public retirement system may assess a public employer a reasonable amount to reimburse the cost of audit, adjustment, or correction, if it determines that the public employer failed to comply with this section.
   GC 7522.72(g) and GC 7522.74(g)

- *Observation 9: There were two former County employees who had job related felony convictions during 2021-2024. The County provided notification to CCCERA of their felony convictions; however, the notification was not timely on one of the two convictions. The County has no written policies or procedures on reporting job related felony convictions to CCCERA. CCCERA Internal Auditor recommends the County establish a formal process (i.e. designating a centralized department or point of contact) to report future job-related felony convictions to CCCERA in accordance with the law.*

INTERNAL REVENUE CODE SECTION 415 COMPLIANCE

As adopted on December 8, 2010 and amended on January 9, 2013, July 11, 2018, September 8, 2021 and August 9, 2023

- *Observation 10: None*

FOLLOW-UP ITEMS

The following item was noted during the review and requires follow-up by Contra Costa County District Attorney and CCCERA:

> Contra Costa County District Attorney has no outstanding follow-up items resulting from the audit. However, CCCERA Internal Auditor recommends the County establish a formal process (i.e. designating a centralized department or point of contact) to report future job-related felony convictions to CCCERA in accordance with the law.

EMPLOYER REPLY

CCCERA received the following reply from Contra Costa County District Attorney:

Observation #9

The two county employees prosecuted by Contra Costa County District Attorney's Office [CCCDAO] during the audit period were employed by other departments within the county. Upon conviction, CCCDAO notified the relevant departments of the felony conviction/s the county employee sustained as they are best positioned regarding their employee's pension status.

Meeting Date
06/26/2024
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Contra Costa County Employees' Retirement Association

EMPLOYER AUDIT REPORT

May 28, 2024

EMPLOYER AUDIT

Rodeo Sanitary District

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Contra Costa County Employees' Retirement Association

May 28, 2024

Steven Beall
District Manager
Rodeo Sanitary District
800 San Pablo Avenue
Rodeo, CA 94572

RE: Employer Audit Report – Rodeo Sanitary District

Dear Mr. Beall,

Enclosed is the report of CCCERA's employer audit, conducted pursuant to Government Code Section 31543. I want to thank you and Nancy Lefebvre, District Administrator, for all the assistance in gathering all the records and documents and making them readily available during this audit. This cooperation was greatly appreciated and allowed for the audit to be completed in an efficient manner.

The *Employer Audit Report* is enclosed for your review. There are no follow-up items based on the review and analysis of the audit scope items.

This report will be placed on the agenda and will be presented to the CCCERA Board of Retirement Audit Committee at its Wednesday, June 12, 2024, meeting.

Should you wish to discuss or have any questions regarding the items reviewed and the observations contained within this report, please contact me at 925-521-3960.

Best regards,

Wrally Dutkiewicz
Compliance Officer

CC: Nancy Lefebvre, District Administrator, Rodeo Sanitary District

BACKGROUND

The Contra Costa County Employees' Retirement Association (CCCERA) is a public employee retirement system that was established by Contra Costa County on July 1, 1945, and is administered by the Board of Retirement (Board) to provide service retirement, disability, death, and survivor benefits for Contra Costa County (County) employees and 15 other participating agencies under the California State Government Code, Section 31450, et. seq. (County Employees Retirement Law of 1937 or CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

CCCERA administers the retirement benefits for the employees of Contra Costa County and participating District employers. Participating employers within the CCCERA retirement system provide payroll information and retirement contributions to fund the benefits for their employees. CCCERA establishes member accounts, processes service and disability applications, calculates retirement allowances, prepares monthly retirement benefit payment rolls, makes adjustments to retirement benefits when needed and prepares tax reporting records.

Retirement allowances are computed in accordance with statute using three factors: years of service, age at retirement, and final compensation. For Legacy (pre-PEPRA) members, final compensation is defined as the highest average annual compensation earnable (as defined in G.C. Section 31461) by a member during the last one or three consecutive years of employment depending on the member's Tier, unless the member elects a different period with a higher average. For PEPRA members, final compensation is defined as the highest average annual pensionable compensation (as defined in G.C. Section 7522.34) earned by the member during a period of 36 consecutive months.

The employer's knowledge of the rules relating to membership and payroll reporting facilitates the employer in providing CCCERA with appropriate employee information. Correct enrollment of eligible employees and correct reporting of payroll information are necessary for the accurate computation of a member's retirement allowance.

The Rodeo Sanitary District (District) is an independent Special District of the State of California formed in 1939. The employees of the District became members of CCCERA through the Board of Retirement consent on August 21, 1963. The District had nine active employees in 2023 with employee pension contributions of approximately $93,000 and employer pension contributions of approximately $156,000 on reported total pensionable compensation of approximately $958,000. The District had seven (7) retirees receiving approximately $250,800 of pension payments in 2023.

A focused Employer Audit on the District's "on-call" pay was performed in 2021 and an Employer Audit Report was received by the Board of Retirement at its March 10, 2021, meeting. The finding in the report based on the review and analysis of the District's on-call compensation paid to its members, was not in compliance with applicable law and CCCERA's "compensation earnable" policy and was considered excludable from "compensation earnable". The District was provided with an advisory dated February 25, 2021, that affirmed that the District's "on-call pay" should be excluded from "compensation earnable" for Legacy members. In 2022, pension contribution corrections for "on-call pay" were performed.

SCOPE

The 2013 Pension Reform legislation granted CCCERA the authority under Government Code Section 31543 to conduct audits of employers to ensure that employee and payroll information used in the calculation of retiree pension benefits is correct and verifiable. The scope of this audit focused on District compensation paid to its employees and reported to the retirement system. The purpose of this audit is to review and test the following:

- Correctness of retirement benefits;
- Reportable compensation;
- Pensionable compensation (GC 31461 and GC 7522.34);
- Review MOUs with respect to compensation and salary regulations (i.e. on-call compensation, etc.);
- Determine if compensation is paid to enhance a member's retirement benefit (GC 31461(b)(1) and GC 7522.34(c)(1));
- Enrollment in, and reinstatement to the system (GC 31554);
- Evaluate employer's compliance with restrictions on retirees returning to work (GC 7522.56, IRS bona fide separation and normal retirement age rules); and
- Determine if employees convicted of certain felonies have forfeited benefits earned or accrued from the commission of the felony (GC 7522.72(g) and GC 7522.74 (g).

The audit of Rodeo Sanitary District was conducted virtually. The review period encompassed active employee records and retired employee records for years 2021, 2022 and 2023.

OBSERVATIONS AND FINDINGS

ACCURACY OF PAYROLL INFORMATION PROVIDED TO CCCERA

➢ ***Scope Item 1:*** *No exceptions were observed in this section.*

PAYROLL AND REPORTING PROCESS AND RECEIVABLES REVIEW

Pursuant to Board of Retirement Regulations Section IV: Employer pensionable payroll and corresponding pension contributions are to be reported to the retirement system timely and accurately. *(Contributions And Reporting, 2. Due Dates, 4. Employer Certification)*.

Due Dates:

Each employer shall report to the Association in a manner and frequency as determined by the Board sufficient for the Board to credit contributions and service to each member's record.

Unless otherwise specified, reports shall be due no later than the tenth of each month for the previous month's payroll and shall be accompanied by member and employer contributions. If the tenth of the month falls on a weekend or holiday, the due date shall be the last working day before the tenth. Reports, which are unreadable or incorrect, shall not be accepted and shall be returned to the employer. (Emphasis added.)

Reports and contributions received after the due date shall be considered late and subject to a late reporting penalty equal to the prime rate in effect on the due date computed on a daily, non-compounding basis and applied to the contributions due.

➢ ***Observation 1:*** *No exceptions were observed in this section.*

INPUT FILE REVIEW

Employer Certification

Each payroll and pension contribution report shall include or be accompanied by a certification, under penalty of perjury, as to its accuracy. The certification shall be made by a duly authorized representative of the employer. (Board of Retirement Regulations *Section IV, 4. Employer Certification.*)

➢ ***Observation 2:*** A technical issue with CCCERA's secure file transfer site service provider was detected, in which the *Employer Certification* was not being generated when the District submits reports to the retirement system. This has been remediated starting with the District's May 2023 reports where the employer certification was added to the file transmission confirmation that both the employer and CCCERA receive.

PAYROLL REPORTING – PENSIONABLE COMPENSATION AND CONTRIBUTION REVIEW

Compensation Earnable Applicable Law for Legacy Members

"Compensation earnable" does not include, in any case, the following:
"Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise." (G.C. § 31461(b)(3).)

Pursuant to CCCERA's "Compensation Earnable Policy"[1], Section III.D. "Compensation Earnable" excludes payments for additional services rendered outside of normal working hours.

Pay received for "overtime" is not included in "compensation earnable." To be included, the time for which compensation is received:

(1) must be the normal working hours set forth in the applicable employment agreement;
(2) must be required by the employer to be worked by the employee (as distinguished from voluntarily worked); and
(3) must be ordinarily worked by all others in the same grade or classification at the same rate of pay during the FAS period.

Pay that will be reviewed under these conditions is often described as "standby" and "on-call." Employers must report to CCCERA as pensionable only that pay for work that is required of and ordinarily served by everyone in the same grade or classification, at the same rate of pay.

Pensionable Compensation Applicable Law for PEPRA members

PEPRA defines "pensionable compensation" as follows:

"Pensionable compensation" of a new member of any public retirement system means the normal monthly rate of pay or base pay of the member paid in cash to similarly situated members of the same group or class of employment for services rendered on a full-time basis during normal working hours, pursuant to publicly available pay schedules.

Compensation that has been deferred shall be deemed pensionable compensation when earned rather than when paid. (Gov. Code Section 7522.34(a) and (b).)

PEPRA excludes from "pensionable compensation" the following:

[1] Policy On Determining "Compensation Earnable" Under Assembly Bill 197 For Purposes of Calculating Retirement Benefits For "Legacy" (Pre-PEPRA) Members.

(1) Any compensation determined by the board to have been paid to increase a member's retirement benefit under that system.
(2) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member and which was converted to and received by the member in the form of a cash payment.
(3) Any one-time or ad hoc payments made to a member.
(4) Severance or any other payment that is granted or awarded to a member in connection with or in anticipation of a separation from employment, but is received by the member while employed.
(5) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, regardless of when reported or paid.
(6) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.
(7) Any employer-provided allowance, reimbursement, or payment, including, but not limited to, one made for housing, vehicle, or uniforms.
(8) Compensation for overtime work, other than as defined in Section 207(k) of Title 29 of the United States Code [FLSA].
(9) Employer contributions to deferred compensation or defined contribution plans.
(10) Any bonus paid in addition to the compensation described in subdivision (a) [of G.C. § 7522.34].
(11) Any other form of compensation a public retirement board determines is inconsistent with the requirements of subdivision (a) [of G.C. § 7522.34].
(12) Any other form of compensation a public retirement board determines should not be pensionable compensation. (Gov. Code Section 7522.34(a) and (b).)

Pursuant to CCCERA's "Pensionable Compensation Policy", Section III:

The CCCERA Board has determined that "Pensionable Compensation" includes "base pay." Pensionable compensation does not include any pay other than base pay, in accordance with Govt. Code Sections 7522.34(c)(11) and (12).

Pensionable compensation (GC 31461 and 7522.34) is to be reported to the retirement system and the corresponding contributions are to be reported to the retirement system.

- ***Observation 4: Compensation Earnable Review***
  There were seven (7) compensation items that were noted during the review, four of which were identified by CCCERA staff during the review of the District's payroll and pension contribution reports. The remaining three compensation items were identified in the District's labor agreements and payroll regulations during this audit. Each of the compensation items were reviewed to determine whether they were includable in pensionable compensation or excludable pursuant to CCCERA's "Compensation Earnable Policy" (Legacy Members) and "Pensionable Compensation Policy" (PEPRA Members).

CCCERA Staff identified and reviewed the following compensation items paid by the District:

- **Leave Sell Back**: The District was provided with an advisory dated October 5, 2023 that the District's *Leave Sell Back* compensation is included in "compensation earnable", to the extent that the hours are earned and payable. The CCCERA Board has determined that if a Legacy Member has an employment agreement that allows an annual "sell back" of a certain number of leave hours (e.g., every calendar or fiscal year), then the payment to be included in the FAS period will be limited to that same number of hours per year, regardless of whether the member actually cashed out more during the selected one- or three-year FAS period. Thus, if a member earns 240 hours of vacation leave in a calendar year and is allowed to sell back 80 hours of unused leave each calendar year, the amount that can be counted as "earned and payable" during the FAS period will be 80 hours, even if the member chose a FAS period that "straddles" two calendar years and sells back 80 hours twice during that period. This avoids the distortion that could arise between comparable members solely due to the selection of the twelve (or thirty-six) month FAS period and yields a true "average annual" compensation earnable.[2]

  The District was also advised that CCCERA's employers are required to collect and pay both employer and employee pension contributions on such amounts. The District submitted a correction file to CCCERA for the period July 2016 through November 2022 for earn code "VPO" to bring its payroll and pension compensation reports into compliance with CCCERA's Compensation Earnable Policy.

- **Annual Safety Boot Allowance**: The District was provided with an advisory dated December 22, 2023, stating that the Annual Safety Boot Allowance does not qualify as "compensation earnable" for Legacy members because it is not a payment provided directly to the employee.

- **Cash-In-Lieu-Of Health Coverage:** The District was provided with an advisory dated October 5, 2023 stating that the District's Cash-In-Lieu-Of Health Coverage is included in "compensation earnable" for Legacy members since the payment is made to all similarly situated members in the member's grade or class.

- **District Cell Phone Stipend:** The District was provided with an advisory dated October 5, 2023, stating that the District Cell Phone Stipend is included in "compensation earnable" for Legacy members, since it is an allowance provided to all eligible employees at the same rate of pay.

To the extent that the District was advised of a pay item being included in "compensation earnable" for Legacy members, the District was also advised that the District needed to collect and pay both employer and employee contributions on such amounts. The District

[2] Section III.B of CCCERA Compensation Earnable Policy

was also advised that no pay item that was paid above base compensation for PEPRA members was eligible to be pensionable compensation.

During this audit, the review of the District's labor agreements and policy manuals, other compensation paid by the district was identified:

- **Swing Shift Differential & Graveyard Shift Differential: IUOE, Local No 39, AFL-CIO Labor Contract of July 1, 2018 to June 30, 2023** Section 5 - Hours of Work & Work Schedule
  c) Normally, all employees will be assigned to regular day-work schedules (7:00 A.M. to 3:30 P.M). In the event regular shift work schedules are established, employees shall receive an hourly differential based on clock-hours worked as follows: For all hours between: Swing Shift 4:30PM to 1:00 A.M. $1.75 per hour Graveyard Shift 10:30 P.M. to 7:00 A.M. $2.25 per hour.

  No Swing Shift nor Graveyard Shift Compensation was identified during the review of the District's payroll reports and the District confirmed that it had not been paid.

  In the most recent labor agreement, IUOE, Local No 39, AFL-CIO Labor Contract of July 1, 2023 to June 30, 2028 the District has discontinued offering Swing Shift and Graveyard Shift compensation.

  .
- **Overcertification:** When the District employee meets the following eligibility criteria: Holds a certificate of a Grade III wastewater treatment plant operator OR Grade III collection system operator. Demonstrates continued satisfactory performance. AND performs duties related to the certificate held. A District employee in the classification of Operator II is eligible for additional compensation above their current salary step as follows: Possession of Grade III certificate: Three percent above base. The District shall pay yearly fees necessary to maintain CWEA certifications.

  Overcertification compensation is pay for special skills and qualifications acquired by the employee through the CWEA certification process and included in "compensation earnable".[3] It is the practice of the District to pay those employees eligible for the Overcertification compensation using an alternative pay schedule reflecting the increased base pay hourly wage versus paying the compensation under a distinct earn code.

[3] CCCERA Compensation Earnable Policy, Adopted 9/10/2014, Amended 5/5/2021, *Chart of General Pay items That Are Included and Excluded from "Compensation Earnable" Effective July 12, 2014 Under Assembly Bill 197 for "Legacy" "Pre-PEPRA Members.*

The base-pay schedules are reflected in the chart below.

Without Overcertification

Appendix A

Hourly Wage Rates Commencing July 1, 2022
To be adjusted each July 1, in accordance with Section 22 Wages

Classification	Start to 6 months	Start to 12 months	6 months to 12 months	12 months to 18 months	After 18 months
Operator in Training	$29.52	n/a	$30.70	n/a	$31.93
Operator I	n/a	$34.70	n/a	$36.29	$39.40
Operator II	n/a	$39.76	n/a	$41.35	$44.63
Senior Operator I	n/a	$48.52	n/a	n/a	n/a
Senior Operator II	n/a	$50.95	n/a	n/a	n/a
Senior Operator III	n/a	$53.48	n/a	n/a	n/a

Classification	Start to 12 months	12 months to 48 months	After 48 months
Administrative Assistant	$32.94	$35.81	$40.41

With Overcertification

Appendix A

Hourly Wage Rates Commencing July 1, 2022
With Over Certification Pay of 3 Percent
To be adjusted each July 1, in accordance with Section 22 Wages

Classification	Start to 6 months	Start to 12 months	6 months to 12 months	12 months to 18 months	After 18 months
Operator in Training	n/a	n/a	n/a	n/a	n/a
Operator I	n/a	n/a	n/a	n/a	n/a
Operator II	n/a	$40.96	n/a	$42.60	$45.97
Senior Operator I	n/a	$49.96	n/a	n/a	n/a
Senior Operator II	n/a	$52.47	n/a	n/a	n/a
Senior Operator III	n/a	$55.08	n/a	n/a	n/a

SALARIES IN ACCORDANCE WITH PUBLICLY AVAILABLE PAY SCHEDULE

➢ ***Scope Item 2:*** *No exceptions were observed in this section.*

Pursuant to CCCERA's Policy On Determining "Pensionable Compensation" Under PEPRA For Purposes Of Calculating Retirement Benefits, a "publicly available pay schedule" must meet all of the following requirements:

1. Has been duly approved and adopted by the employer's governing body in accordance with requirements of applicable public meetings laws;
2. Identifies the position title for every employee position;
3. Shows the pay rate for each identified position, which may be stated as a single amount or as multiple amounts within a range;
4. Indicates the time base, including, but not limited to, whether the time base is hourly daily, bi-weekly, monthly, bi-monthly, or annually;
5. Is posted at the office of the employer or immediately accessible and available for public review from the employer during normal business hours or posted on the employer's internet website;
6. Indicates an effective date and date of any revisions;
7. Is retained by the employer and available for public inspection for not less than five years; and
8. Does not reference another document in lieu of disclosing the pay rate.

➢ ***Observation 5:*** *None*

ENROLLMENT OF ELIGIBLE EMPLOYEES

➢ *Scope Item 3: None*

1. Exclusion from Membership – By Type of Employment

A. All officers and employees of the County or districts shall be members of the association as provided in Article 4 under Sections 31550-31567 of the County Employees' Retirement Law of 1937 (Gov. Code Secs. 31450, et seq. "CERL"), unless excluded from membership by this Section.

B. The following employees shall be excluded from membership:

i. Temporary, seasonal or independent contract employees who are employed or re-employed for temporary service or at certain specified periods each year.

ii. Intermittent or permanent-intermittent employees who are appointed to serve less than 80% of the full number of working hours required of regular employees or who actually serve less than 80% of such full number of working hours in one year as certified by their appointing authority.

iii. Part-time employees whose service for the County or district is less than fifty (50) percent of the full number or working hours required of fulltime employees at that employer.

iv. Project employees, unless the appointing authority certifies that the project is expected to be of one year or more in duration on a greater than part-time basis.

v. Provisional employees, unless they otherwise meet the requirements for reciprocal benefits with other retirement systems under Article 15 of CERL.

C. In making its determination regarding an employee's inclusion in or exclusion from membership, the Board will not rely solely upon the term given to the type of employment. Rather, the Board will rely upon such additional facts such as the nature of the employment, its expected or actual duration, and its relationship to what is considered full-time, permanent employment.

2. Exclusion from Membership – by Compensation

Except as otherwise herein provided, all employees of the County or district who receive compensation amounting to less than one-hundred ($100) dollars per month, and in the case of employees paid on other than a monthly basis an average of one-hundred ($100) dollars per month for the preceding year, including maintenance valued according to the schedule adopted by the governing body, are hereby excluded and exempted from membership in the Retirement Association. Any member of the Retirement Association whose salary is reduced to an amount less than one hundred ($100) dollars per month shall have the option of continuing or discontinuing his/her active membership in the Association.

2.1 Exclusion from Membership – by Waiver

Newly hired employees aged 60 and older may waive membership as authorized by Gov. Code Section 31552. Any such waiver of membership shall be effective only if it is submitted to the CCCERA Retirement Chief Executive Officer within 90 days of the employee's date of hire; provided, however, that the Retirement Chief Executive Officer may, in his/her sole and reasonable discretion, waive the time limitation if the newly hired employee establishes good cause for such a waiver.

3. Certifications

Every employee of the County or district within the county whose employees are members of the Association shall, upon entry into the Association, complete a sworn statement as provided for in Gov. Code Section 31526(b). A certified copy of the member's birth certificate or other evidence of birth may be required by the Board.

It shall be the employer's responsibility to ensure compliance with this section. The Board shall assess the employer five hundred ($500) dollars per employee for every month or fraction thereof that the required certification is not submitted. The Board shall notify the employer in writing of the imposition of assessment at least thirty days before the assessment.

Observation 6: None

PENSION BENEFIT REVIEW

- *Scope Item 4: No exceptions were observed in this section.*

REVIEW OF PENSION BENEFIT CALCULATIONS

a. Compensation Policies
    i. *Compensation Earnable Policy* – Adopted: 9/10/2014; Amended 5/5/2021; GC 31461;
    ii. *Policy On Determining "Pensionable Compensation" Under PEPRA For Purposes Of Calculating Retirement Benefits* - Adopted: 9/10/2014; GC 7522.34;
    iii. *Policy Regarding Assessment and Determination Of Compensation Enhancements* – Adopted 11/1/2012, Amended: 3/8/2017; Last Reviewed: 4/12/2023 GC 31461(b)(1) and 7522.34(c)(1)

- *Observation 7: None*

RETIREE RETURN TO WORK MONITORING

b. Retiree Return to Work Monitoring
    i. GC 7522.56 Retired Persons; Service and Employment Restrictions

➢ *Observation 8: None*

FORFEITURE OF BENEFITS EARNED OR ACCRUED FROM THE COMMISSION OF A FELONY

c. Felony Forfeiture Monitoring and Notification – GC 7522.72(g) and GC 7522.74(g)

➢ *Observation 9: None*

INTERNAL REVENUE CODE SECTION 415 COMPLIANCE

As adopted on December 8, 2010 and amended on January 9, 2013, July 11, 2018, September 8, 2021 and August 9, 2023.

Observation: None

FOLLOW-UP ITEMS

The following items were noted during the review and require follow-up by the District and CCCERA:

NONE

EMPLOYER REPLY

The following reply was received from the Rodeo Sanitary District by CCCERA on May 16, 2024:

RODEO SANITARY DISTRICT

800 SAN PABLO AVE. · RODEO, CA 94572-1232
(510) 799-2970 · FAX (510) 799-5403

May 16, 2024

Contra Costa County Employee Retirement Association
1200 Concord Ave, Ste 300
Concord, CA 94520

Re: Employer Audit Report

Dear Mr. Dutkiewicz,

The Rodeo Sanitary District is in receipt of the District Employer Audit Report Final Draft. The District concurs with the information provided and will include the "compensation earnable" items reviewed in the audit report in the District's pension contribution reports.

Sincerely,

Steven S. Beall, P.E.
District Manager
Rodeo Sanitary District
bealls@rodeosan.org

CALIFORNIA WATER ENVIRONMENT ASSOCIATION SF BAY SECTION 2018 SMALL PLANT OF THE YEAR

Meeting Date
06/26/2024
Agenda Item
#4

Contra Costa County Employees' Retirement Association
Board of Retirement Presentation
of the December 31, 2023 Audit Results
By: Brooke Baird, CPA
Brown Armstrong Accountancy Corporation
Date: June 26, 2024

1. Purpose of the Audit

2. The Audit Process
   a. Timeline coordination with CCCERA staff
   b. Understanding and evaluation of internal controls through inquiry and observation
   c. Confirmations with independent third parties
   d. Interim testing
   e. Year-end procedures
   f. Report presentation

3. Significant Audit Areas/Scope of Audit Work
   a. Risk based approach
   b. Investments and related earnings
   c. Participant data and actuarial information
   d. Employee and employer contributions
   e. Benefit payments

4. Audit Reports
   a. Independent Auditor's Report (opinion) on Financial Statements – unmodified ("clean") opinion
   b. Report to the Board of Retirement and Audit Committee
      i. Required Communication to the Board of Retirement and Audit Committee in Accordance with Professional Standards (SAS 114)
      ii. Independent Auditor's Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

5) Thank Staff

6) Questions and/or Comments?

BROWN ARMSTRONG
CERTIFIED PUBLIC ACCOUNTANTS

www.ba.cpa
661-324-4971

INDEPENDENT AUDITOR'S REPORT

To the Board of Retirement and Audit Committee of
Contra Costa County Employees' Retirement Association
Concord, California

Report on the Audit of the Financial Statements

Opinion

We have audited the accompanying Pension Plan and Other Post-Employment Benefits Trust Statement of Fiduciary Net Position of the Contra County Employees' Retirement Association (CCCERA), a component unit of the County of Contra Costa, California, as of December 31, 2023, and the related Pension Plan and Other Post-Employment Benefits Trust Statement of Changes in Fiduciary Net Position for the year then ended, and the related notes to the financial statements, which collectively comprise CCCERA's basic financial statements as listed in the table of contents.

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Pension Plan and Other Post-Employment Benefits Trust of CCCERA as of December 31, 2023, and the changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of CCCERA and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about CCCERA's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Management is also responsible for maintaining a current plan instrument, including all plan amendments; administering the plan; and determining that the plan's transactions that are presented and disclosed in the financial statements are in conformity with the plan's provisions, including maintaining sufficient records with respect to each of the participants, to determine the benefits due or which may become due to such participants.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of CCCERA's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about CCCERA's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis (MD&A) and required supplementary information (RSI), as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board (GASB), who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the MD&A and RSI in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise CCCERA's basic financial statements. The other supplementary information, as listed in the table of contents, is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the other supplementary information, as listed in the table of contents is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the Annual Comprehensive Financial Report. The other information comprises the introductory, investment, actuarial, and statistical sections but does not include the basic financial statements and our auditor's report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Report on Summarized Comparative Information

We have previously audited CCCERA's December 31, 2022 financial statements, and our report dated June 14, 2023, expressed an unmodified opinion on those audited financial statements. In our opinion, the summarized comparative information presented herein as of December 31, 2022, is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June 12, 2024, on our consideration of CCCERA's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, agreements, and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of CCCERA's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering CCCERA's internal control over financial reporting and compliance.

BROWN ARMSTRONG
ACCOUNTANCY CORPORATION

Brown Armstrong
Accountancy Corporation

Bakersfield, California
June 12, 2024

CONTRA COSTA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

REPORT TO THE BOARD OF RETIREMENT AND AUDIT COMMITTEE

FOR THE YEAR ENDED DECEMBER 31, 2023

CONTRA COSTA COUNTY EMPLOYEES'
RETIREMENT ASSOCIATION

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REQUIRED COMMUNICATION TO THE BOARD OF RETIREMENT AND AUDIT COMMITTEE IN ACCORDANCE WITH PROFESSIONAL STANDARDS

To the Board of Retirement and Audit Committee of
Contra Costa County Employees' Retirement Association
Concord, California

We have audited the financial statements of Contra Costa County Employees' Retirement Association (CCCERA), a component unit of the County of Contra Costa, California, as of and for the year ended December 31, 2023, and have issued our report dated June 12, 2024. Professional standards require that we provide you with information about our responsibilities under auditing standards generally accepted in the United States of America and *Government Auditing Standards*, as well as certain information related to the planned scope and timing of our audit. We have communicated such information in our engagement letter to you dated January 8, 2024, and in our scope of services dated February 14, 2024. Professional standards also require that we communicate to you the following information related to our audit.

Significant Audit Matters

Qualitative Aspects of Accounting Practices
Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by CCCERA are described in Note 2, Summary of Significant Accounting Policies, to the financial statements. There were no new standards implemented in the current year. We noted no transactions entered into by CCCERA during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

Accounting estimates are an integral part of the financial statements prepared by management and are based on management's knowledge and experience about past and current events and assumptions about future events. Certain accounting estimates are particularly sensitive because of their significance to the financial statements and because of the possibility that future events affecting them may differ significantly from those expected. The most sensitive estimates affecting CCCERA's financial statements were:

- Management's estimates of the fair value of investments which are derived by various methods as explained in the notes to the financial statements. We evaluated the methods, assumptions, and data used to develop the estimates of the fair value of investments in determining that they are reasonable in relation to the financial statements taken as a whole.

- The recommended rates for employer contributions and net pension and net other post-employment benefits (OPEB) liabilities are based on the actuarial valuations including actuarially-presumed interest rate and assumptions which involve estimates of the value of reported amounts and probabilities about the occurrence of future events far into the future. We evaluated the methods, assumptions, and data used to develop the employer contribution amounts and net pension and net OPEB liabilities in determining that they are reasonable in relation to the financial statements taken as a whole.

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209-451-4833

Certain financial statement disclosures are particularly sensitive because of their significance to financial statement users. The most sensitive disclosures affecting the financial statements were:

- The disclosures for deposits and investments in Note 2 – Summary of Significant Accounting Policies, Note 3 – Deposits, and Note 4 – Investment Risk Disclosures, and Fair Value Measurements, respectively, were derived from CCCERA's investment policy. The estimated fair value of investments was derived by various methods as detailed in the notes to the financial statements.

- Additionally, the disclosures related to the net pension and net OPEB liabilities and actuarial methods and assumptions in Note 6 – Net Pension Liability and Note 7 – Other Post-Employment Benefits (OPEB) Liability/(Asset) and Section 115 Trust were derived from actuarial valuations, which involved estimates of the value of report amounts and probabilities about the occurrence of future events.

The financial statement disclosures are neutral, consistent, and clear.

Difficulties Encountered in Performing the Audit
We encountered no significant difficulties in dealing with management in performing and completing our audit.

Corrected and Uncorrected Misstatements
Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. There were no such misstatements noted as a result of our audit procedures.

Disagreements with Management
For purposes of this letter, a disagreement with management is a financial accounting, reporting, or auditing matter, whether or not resolved to our satisfaction, that could be significant to the financial statements or the auditor's report. We are pleased to report that no such disagreements arose during the course of our audit.

Management Representations
We have requested certain representations from management that are included in the management representation letter dated June 12, 2024.

Management Consultations with Other Independent Accountants
In some cases, management may decide to consult with other accountants about auditing and accounting matters, similar to obtaining a "second opinion" on certain situations. If a consultation involves application of an accounting principle to CCCERA's financial statements or a determination of the type of auditor's opinion that may be expressed on those statements, our professional standards require the consulting accountant to check with us to determine that the consultant has all the relevant facts. To our knowledge, there were no such consultations with other accountants.

Other Audit Findings or Issues
We generally discuss a variety of matters, including the application of accounting principles and auditing standards, with management each year prior to retention as CCCERA's auditors. However, these discussions occurred in the normal course of our professional relationship and our responses were not a condition to our retention.

Other Matters
We applied certain limited procedures to the Management's Discussion and Analysis, Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios, Schedule of Employer Contributions, Schedule of Investment Returns, and Notes to the Required Supplementary Information (RSI), which are RSI that supplements the basic financial statements. Our procedures consisted of inquires of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI.

We were engaged to report on the Schedule of Administrative Expenses, Schedule of Investment Expenses, and Schedule of Payments to Consultants, which accompany the financial statements but are not RSI. With respect to the other supplementary information, we made certain inquiries of management and evaluated the form, content, and methods of preparing the information to determine that the information complies with accounting principles generally accepted in the United States of America, the methods of preparing it has not changed from the prior period, and the information is appropriate and complete in relation to our audit of the financial statements. We compared and reconciled the other supplementary information to the underlying accounting records used to prepare the financial statements or to the financial statements themselves.

We were not engaged to report on the introductory, investment, actuarial, and statistical sections, which accompany the financial statements but are not RSI. Such information has not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on it.

Restriction on Use

This information is intended solely for the information and use of the Board of Retirement, Audit Committee, and management of CCCERA and is not intended to be, and should not be, used by anyone other than these specified parties.

BROWN ARMSTRONG
ACCOUNTANCY CORPORATION

Brown Armstrong
Accountancy Corporation

Bakersfield, California
June 12, 2024

INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

To the Board of Retirement and Audit Committee of
Contra Costa County Employees' Retirement Association
Concord, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the financial statements of the Contra Costa County Employees' Retirement Association (CCCERA), a component unit of the County of Contra Costa, California, as of and for the year ended December 31, 2023, and the related notes to the financial statements, which collectively comprise CCCERA's basic financial statements, and have issued our report thereon dated June 12, 2024.

Report on Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered CCCERA's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of CCCERA's internal control. Accordingly, we do not express an opinion on the effectiveness of CCCERA's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of CCCERA's financial statements will not be prevented, or detected and corrected on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether CCCERA's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

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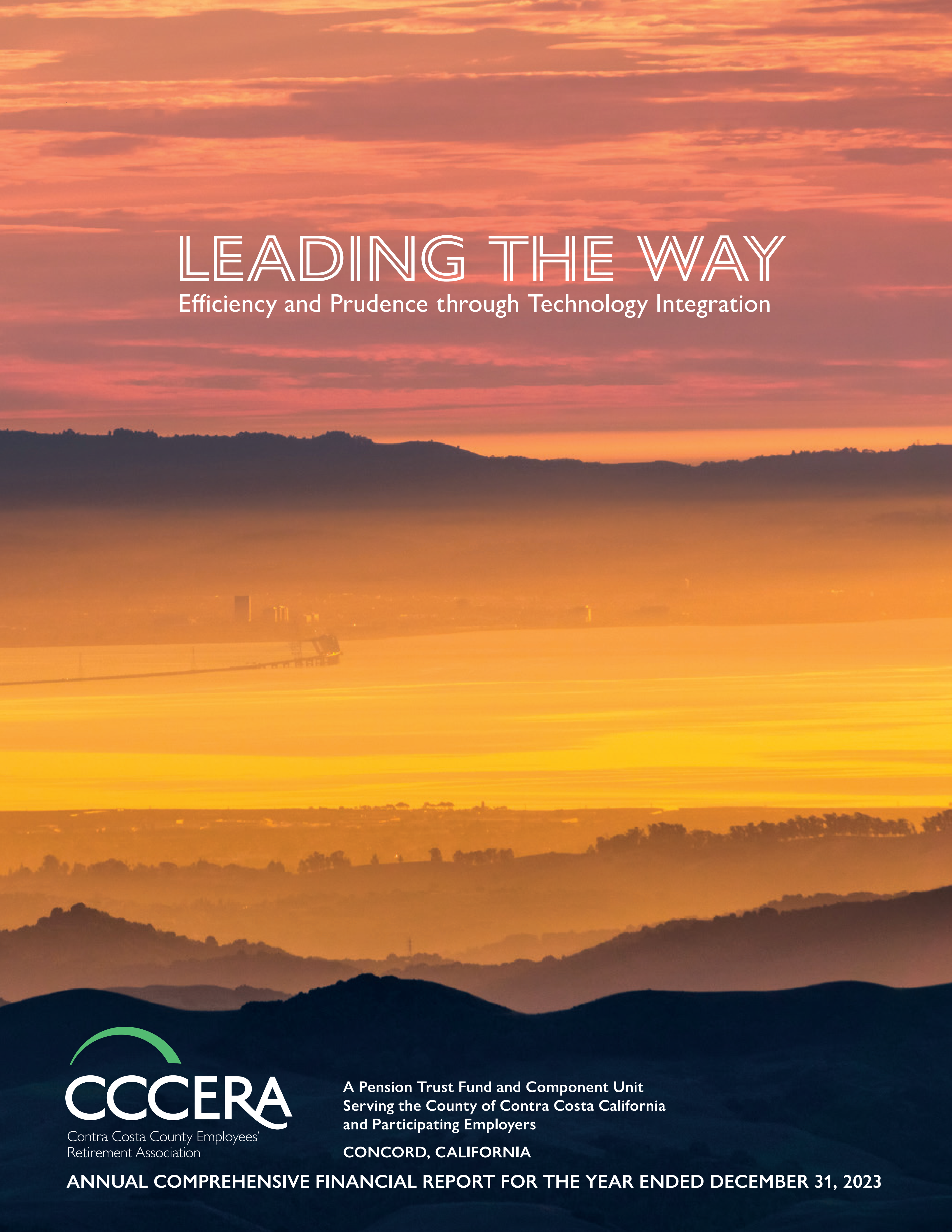
Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of CCCERA's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering CCCERA's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

BROWN ARMSTRONG
ACCOUNTANCY CORPORATION

Brown Armstrong
Accountancy Corporation

Bakersfield, California
June 12, 2024



LEADING THE WAY

Efficiency and Prudence through Technology Integration

CCCERA
Contra Costa County Employees' Retirement Association

A Pension Trust Fund and Component Unit
Serving the County of Contra Costa California
and Participating Employers

CONCORD, CALIFORNIA

ANNUAL COMPREHENSIVE FINANCIAL REPORT FOR THE YEAR ENDED DECEMBER 31, 2023

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LEADING THE WAY

Efficiency and Prudence through Technology Integration

Annual Comprehensive Financial Report
for the Year Ended December 31, 2023

Issued by:
Christina Dunn
Chief Executive Officer

Henry J. Gudino, CPA
Accounting Manager

Contra Costa County Employees'
Retirement Association
1200 Concord Avenue, Suite 300
Concord, California 94520
www.cccera.org

CCCERA
Contra Costa County Employees'
Retirement Association

A Pension Trust Fund and Component Unit Serving the
County of Contra Costa California and Participating Employers

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STATISTICAL SECTION 107

CCCERA's mission

is to effectively and accurately administer pension benefits earned by our members and to be prudent stewards of plan assets.

INTRODUCTORY

Letter of Transmittal

Chief Executive Officer
CHRISTINA DUNN

June 12, 2024

Board of Retirement
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520-5728

Dear Board Members and Plan Participants:

As your new Chief Executive Officer, along with the Contra Costa County Employees' Retirement Association (CCCERA) team, I am honored to present CCCERA's *Annual Comprehensive Financial Report (ACFR) for the Year Ended December 31, 2023*. This report is created annually and presents a detailed overview of CCCERA's financial, investment, and actuarial-related results for the year.

CCCERA is a public employee retirement system that was established by the County of Contra Costa (the County) on July 1, 1945, and is administered by the Board of Retirement (Board). CCCERA provides service retirement, disability, death, and survivor benefits for over 25,000 members employed by the County and 15 other participating agencies. CCCERA is an independent government entity, separate from Contra Costa County.

CCCERA is governed by the California Constitution, the County Employees Retirement Law of 1937 (CERL), the California Public Employees' Pension Reform Act of 2013 (PEPRA), and the regulations, procedures, and policies adopted by CCCERA's Board of Retirement. The Contra Costa County Board of Supervisors may also adopt resolutions, as permitted by CERL, which may affect benefits of CCCERA members.

The twelve-member Board of Retirement is responsible for the general management of CCCERA. Of the twelve members, three are alternates, one for the appointed members, one for safety, and one for retirees. Five board members are appointed by the Contra Costa County Board of Supervisors, one as an alternate. Four board members, including the safety alternate, are elected by CCCERA's active membership. Two board members are elected by the retirees, one as an alternate. The County Treasurer serves as an ex-officio member. Board members, with the exception of the County Treasurer, serve three-year terms in office, with no term limits.

Participating Agencies

Currently, CCCERA has 16 participating agencies which include:

- County of Contra Costa
- Bethel Island Municipal Improvement District
- Byron-Brentwood-Knightsen Union Cemetery District
- Central Contra Costa Sanitary District
- Contra Costa County Employees' Retirement Association
- Contra Costa County Fire Protection District
- Contra Costa Mosquito and Vector Control District
- First 5—Contra Costa Children & Families Commission
- Housing Authority of the County of Contra Costa
- In-Home Supportive Services Public Authority (IHSS)
- Local Agency Formation Commission (LAFCO)
- Moraga-Orinda Fire Protection District
- Rodeo-Hercules Fire Protection District
- Rodeo Sanitary District
- San Ramon Valley Fire Protection District
- Superior Court of California, County of Contra Costa

Report Contents

CCCERA management is responsible for both the accuracy of the data and the completeness and fairness of the presentation of financial information within this Annual Report, including all disclosures. The Annual Report is divided into five sections:

The **Introductory** section includes a description of CCCERA's management and organizational structure, a letter of transmittal, a listing of the members of the Board, and a listing of professional consultants.

The **Financial** section presents the financial condition and funding status of CCCERA. This section contains the opinion of the independent certified public accountants, Brown Armstrong Accountancy Corporation, Management's Discussion and Analysis of CCCERA's financial activities, the financial statements, and the related supplementary financial information.

The **Investment** section provides an overview of CCCERA's investment program. This section contains reports on investment activity, investment policies, investment results, and various investment schedules, charts, and graphs.

The **Actuarial** section communicates CCCERA's funding status and presents other actuarial related information including Other Post-Employment Benefits (OPEB). This section contains the certification of the consulting actuary, Segal Consulting, actuarial statistics, and general plan provisions.

The **Statistical** section presents information on CCCERA's operations on a multi-year basis.

Financial Information

This report has been prepared in accordance with generally accepted accounting principles (GAAP) in the United States of America as promulgated by the Governmental Accounting Standards Board (GASB). GAAP requires that management provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of management's discussion and analysis (MD&A). This letter of transmittal is designed to complement the MD&A and should be read in conjunction with it. CCCERA's MD&A can be found immediately following the independent auditor's report.

CCCERA management is responsible for establishing and maintaining an internal control structure designed to ensure CCCERA's assets are protected from loss, theft, or misuse. The internal controls are designed to provide reasonable, but not absolute, assurance that these objectives are met. Reasonable assurance recognizes the cost of a control relative to the benefits likely to be derived and that these judgments by management are based on estimates. Responsibility for the accuracy, completeness, fair representation of information and all disclosures rests with CCCERA's management. The accounting firm of Brown Armstrong Accountancy Corporation, a certified public accounting firm, provides financial statement independent audit services to CCCERA. The financial audit provides reasonable assurance that CCCERA's financial statements are presented in conformity with GAAP and are free from material misstatement.

Actuarial Funding Status

CCCERA contracts with an independent actuarial consulting firm, Segal Consulting, to act as the pension plan's actuary and conduct annual actuarial valuations, which are presented to the Board annually. On a triennial basis, the actuary also conducts an experience study of the members of CCCERA and makes recommendations to the Board on all economic and non-economic assumptions. The most recent triennial experience study is for the three-year period ended December 31, 2020, which will be used in the preparation of the December 31, 2023, valuation report anticipated to be completed by August 2024.

CCCERA's funding objective is to meet long-term defined benefit obligations through contributions and investment income. Funds are derived from the excess of additions, which include contributions and investment earnings, over deductions, which are comprised of benefits and administrative expenses. Funds are accumulated to meet future benefit obligations to retirees and beneficiaries.

Segal Consulting's most recent actuarial valuation as of December 31, 2022, determined the actuarial accrued liability funding ratio to be 91.2%, a decrease of 1.2% over the prior year, using approved assumptions. This ratio compares the actuarial value of assets of the pension plan to the actuarial accrued liabilities of the pension plan. For a more in-depth review of the funding of the pension plan, please refer to the actuarial section of this report beginning on page 83.

For fiscal years ending December 31, 2023, and 2022, CCCERA, as an employer for its staff, contracted with Milliman Inc. to prepare a biennial full and roll-forward actuarial valuation of Other Post-Employment Benefits (OPEB) liabilities in accordance with GASB Statement Nos. 74 and 75, including the creation in 2018 of an IRS Section 115 Trust for pre-funding purposes. More information about OPEB liabilities and funding of the trust may be found in *Note 7, Other Post-Employment Benefits (OPEB) Liability and Section 115 Trust,* and in the actuarial section of this report.

Investments

The Board maintains exclusive control of all retirement system investments and is responsible for establishing investment objectives, strategies, and policies. The California Constitution and Government Code Sections 31594 and 31595 authorize the Board to invest in any investment deemed prudent in the Board's opinion.

The Board has adopted an Investment Policy Statement, which provides the framework for the management of CCCERA's investments. This policy establishes CCCERA's investment objectives and defines the principal duties of the Board, custodian bank, and investment managers. The asset allocation is an integral part of the Investment Policy Statement and is designed to provide an optimum mix of asset classes with return expectations that reflect expected liabilities. Within the Investment Section of this report, a summary of the asset allocation can be found on page 73, along with schedules of investment management fees and brokerage commissions on pages 78 and 79.

On a fair value basis, the total net position-restricted for benefits increased from $10.1 billion at December 31, 2022, to $10.8 billion at December 31, 2023. For the year ended December 31, 2023, CCCERA's investment portfolio returned 9.0%, net of investment management fees, reflecting market conditions throughout the year. CCCERA's annualized rate of return was 3.5% over the last three years, 6.8% over the last five years, and 6.1% over the last ten years, net of investment expenses.

Major Initiatives and Accomplishments

2021–2023 Strategic Plan

The triennial strategic plan for 2021–2023 incorporates the core values of Trust, Innovation and Accountability. These core values are defined in the strategic plan as follows:

Trust—Trust and integrity are the foundation of CCCERA. We will treat all with fairness, dignity, and respect.

Innovation—Enhanced and streamlined processes are beneficial for the plan and its stakeholders. CCCERA will engage in continuous improvement to increase efficiencies and effectiveness.

Accountability—Responsibility and reliability are essential. CCCERA will facilitate a professional environment that fosters ownership of work product and services provided to stakeholders.

The strategic plan's core values are supported with the following strategic initiatives:

- Enhance the timely and accurate delivery of retirement benefits and to improve member communications.
- Provide modernized resources and tools in support of the administration of the pension plan with an emphasis on the development of a new and improved pension administration system.
- Leverage technology across the organization to operate efficiently and achieve goals that are supported by accuracy, data security, and efficient reporting.
- Enhance portfolio strategy, implementation and monitoring to drive cost effective prudent stewardship of plan assets.
- Develop and implement additional training and recognition programs to promote continued employee growth and development.

Pension Administration System Project

CCCERA strives to provide excellent customer service, operate the pension plan in an efficient and cost-effective manner, and to maintain member data safely and accurately. To accomplish these principles, a contract for a pension administration system that is capable of workflow solutions and member and employer-facing web portals was awarded to Sagitec Solutions LLP in April 2021. During 2022, thorough and lengthy design sessions were conducted with staff members to discuss and design the new pension administration system to operate efficiently and provide the excellent customer service CCCERA strives for. Members and participating employers received information related to the upcoming system and the pilot employers began testing contribution reporting designs. Testing of the newly designed functionality by CCCERA staff members began in April 2023.

Investment Portfolio Management

As an integral part of the investment policy, CCCERA has an internally developed portfolio construction methodology, known as the Functionally Focused Portfolio (FFP), to assign portfolio allocations according to strategic priorities as defined by the Board. The FFP was approved by the Board in September 2016 and was rolled out in phases over approximately three years. The FFP consists of three sub-portfolios, Liquidity, Growth, and Risk Diversifying, and is designed to accomplish CCCERA's primary function, paying for two to three years of pension benefits. CCCERA will continue to allocate the bulk of the remaining assets into a globally diversified growth sub-portfolio of stocks, real estate, and alternative asset strategies and the remaining into risk diversified investments.

Streamlined Retirement Application and Calculation Process

CCCERA redesigned its retirement application and calculation process to reduce the time that new retirees wait to receive their first benefit payment. With the new process, CCCERA commits that retirees who submit completed retirement applications and documentation, will receive their first benefit payment within 75 days of their last employer paycheck. In 2023 the average processing time for a retiree to receive their first benefit payment was approximately 55 days after their last employer paycheck.

Internal Audit Function

CCCERA enhanced its internal audit function through hiring a full time Internal Auditor, establishing an Internal Audit Charter, developing internal and employer audit plans, and conducting a comprehensive risk assessment. Risk considerations include, but are not limited to, maintaining accurate and reliable financial records, protecting member privacy, preventing fraud, safeguarding pension assets, and ensuring accurate employer reporting. Internal Audit enhances CCCERA's overall transparency and accountability to accomplish our mission to protect member assets.

Service Accomplishments

CCCERA continues to fulfill its mission to administer pension benefits earned by our members and to be prudent stewards of plan assets. It is imperative that CCCERA continue to conduct essential operations. To that end, here is an update regarding how some of the primary functions performed in 2023:

- Approximately 7,000 payees located in Contra Costa County and nearby communities were paid almost $26 million each month through member earned benefit payments.
- CCCERA processed monthly retirement payrolls equaling approximately $53 million to 11,000 payees throughout the world.
- Member Communication: CCCERA responded to over 20,000 phone calls, almost 3,200 email inquiries, sent over 5,500 member letters, and distributed almost 75,000 newsletters during the year.
- Conducted 16 member presentations with over 500 attendees educating members on CCCERA pension benefits including the retirement application process, enrolling in CCCERA, completing retirement service purchases, and establishing reciprocal benefits.
- CCCERA website: Continued with regular updates with the latest news and information for our members and employers. Created new videos including, *When to Retire*, *Terminating Your Membership*, *Reciprocity*, and *A Guide to Filling out Enrollment Forms*.
- Expanded our social media presence, providing information about CCCERA retirement benefits to members and external parties.
- Employer Payroll Information and Contribution Payments: Participating agencies submit demographic and payroll information via a secure web portal and remit employer and member contributions via electronic funds transfer to our custodian bank.

Awards

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to CCCERA for its *Annual Comprehensive Financial Report for the Year Ended December 31, 2022*. This was the 23rd consecutive year that CCCERA has received this award. The Certificate of Achievement is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government financial reports.

In order to be awarded a Certificate of Achievement, a government unit must publish an easily readable and efficiently organized Annual Comprehensive Financial Report, the contents of which meet or exceed program standards. The Annual Comprehensive Financial Report must satisfy both accounting principles generally accepted in the United States of America and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current Annual Comprehensive Financial Report continues to meet the Certificate of Achievement program requirements, and it is being submitted to the GFOA to determine its eligibility for another certificate.

CCCERA is a recipient also of the GFOA Award for Outstanding Achievement in Popular Annual Financial Reporting (PAFR) for the year ended December 31, 2022. This marks the 14th consecutive year to receive this honor.

CCCERA was awarded the Public Pension Coordinating Council's (PPCC) Public Pension Standards Award in 2023. The Public Pension Standards are intended to reflect minimum expectations for public retirement system management and administration, and to serve as a benchmark by which all defined benefit public plans should be measured.

Acknowledgements

The compilation of this report would not be possible without the skill, effort, and dedication of the entire CCCERA team. We would like to express our gratitude to the CCCERA Board of Retirement and staff, as well as our professional service partners, who work each day to ensure our members are provided with the highest level of service. This report is intended to provide complete and reliable information as the basis for making management decisions, as a means of determining compliance with legal provisions, and as a means of determining responsible stewardship of the funds of CCCERA.

Thank you to our participating agencies and members for placing your trust in CCCERA.

Respectfully submitted,

Christina Dunn	Henry Gudino
Chief Executive Officer	Accounting Manager, CPA

Retirement Board

(As of December 31, 2023)

Chairperson

SCOTT W. GORDON

Term Expires June 30, 2025
Appointed by Board of Supervisors

Vice-Chairperson

DAVID J. MACDONALD

Term Expires June 30, 2025
Elected by General Members

Secretary

JERRY R. HOLCOMBE

Term Expires June 30, 2026
Appointed by Board of Supervisors

County Treasurer

RUSSELL V. WATTS

Term Expires December 31, 2023
Ex Officio by Statute

CANDACE ANDERSEN

Term Expires June 30, 2026
Appointed by Board of Supervisors

JOHN B. PHILLIPS

Term Expires June 30, 2026
Appointed by Board of Supervisors

JAY KWON

Term Expires June 30, 2026
Appointed by Board of Supervisors

LOUIE KROLL

Term Expires June 30, 2025
Elected by Retirees

MIKE SLOAN

Term Expires June 30, 2025
Elected by Retirees

DONNIE FINLEY

Term Expires June 30, 2026
Elected by Safety Members

SAMSON WONG

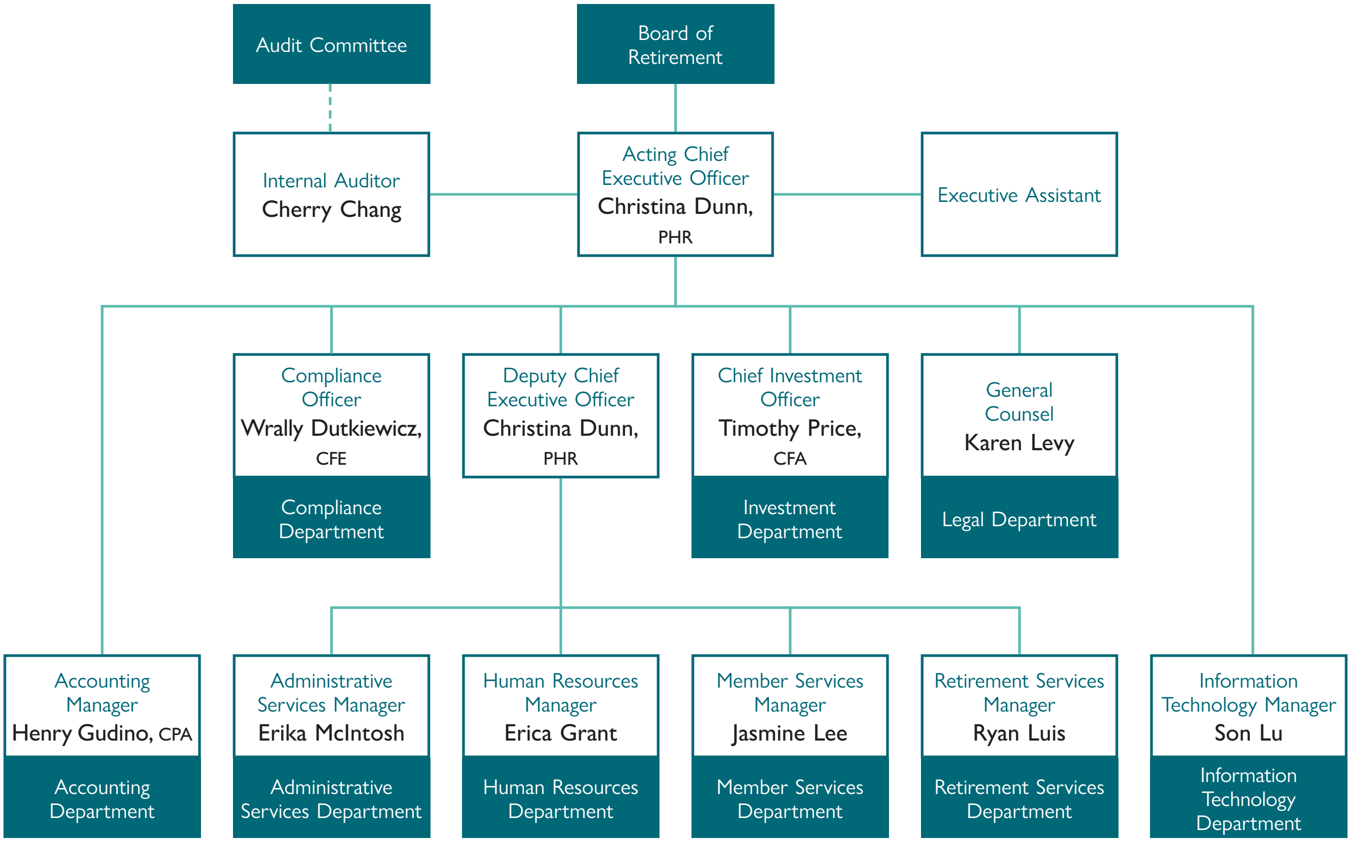
Term Expires June 30, 2026
Elected by Safety Members

DENNIS CHEBOTAREV

Term Expires June 30, 2026
Elected by General Members

Administrative Organization Chart

(As of December 31, 2023)



Professional Consultants

(As of December 31, 2023)

Actuarial Services
Segal Consulting
Milliman Inc.

Independent Auditor
Brown Armstrong Accountancy Corporation

Fiduciary & Investment Counsel
Reed Smith, LLP
Nossaman, LLP
DLA Piper, LLP
Foley & Lardner, LLP

General & Tax Counsel
Ice Miller, LLP

Disability Counsel
Law Offices of Vivian Shultz

Labor Relations Counsel
Aleshire & Wynder, LLP

Investment Consultants
Verus Investments
Stepstone Investments

Master Custodian
The Northern Trust Company

Fiscal Agent
Mechanics Bank

Pension Administration
Segal Consulting
ICON Integration and Design
Sagitec Solutions
CPAS

Note: Please refer to the Investment Section of this report for a list of *Investment Managers* located on page 76 and *Schedules of Investment Management Fees* and *Brokerage Commissions* located on pages 78 and 79. In addition, refer to *Other Supplementary Information* in this report for a *Schedule of Payments to Consultants* on page 67.

GFOA Certificate of Achievement Award

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

Contra Costa County
Employees' Retirement Association
California

For its Annual Comprehensive
Financial Report
For the Fiscal Year Ended

December 31, 2022

Christopher P. Morrill

Executive Director/CEO

PPCC Public Pension Standards Award

PPCC

Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2023

Presented to

Contra Costa County Employees' Retirement Association

In recognition of meeting professional standards for
plan funding and administration as
set forth in the Public Pension Standards.

Presented by the Public Pension Coordinating Council, a confederation of

National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

Alan H. Winkle

Alan H. Winkle
Program Administrator

FINANCIAL

Independent Auditor's Report

BROWN ARMSTRONG
CERTIFIED PUBLIC ACCOUNTANTS

www.ba.cpa
661-324-4971

INDEPENDENT AUDITOR'S REPORT

To the Board of Retirement and Audit Committee of
Contra Costa County Employees' Retirement Association
Concord, California

Report on the Audit of the Financial Statements

Opinion

We have audited the accompanying Pension Plan and Other Post-Employment Benefits Trust Statement of Fiduciary Net Position of the Contra County Employees' Retirement Association (CCCERA), a component unit of the County of Contra Costa, California, as of December 31, 2023, and the related Pension Plan and Other Post-Employment Benefits Trust Statement of Changes in Fiduciary Net Position for the year then ended, and the related notes to the financial statements, which collectively comprise CCCERA's basic financial statements as listed in the table of contents.

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Pension Plan and Other Post-Employment Benefits Trust of CCCERA as of December 31, 2023, and the changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of CCCERA and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about CCCERA's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

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Management is also responsible for maintaining a current plan instrument, including all plan amendments; administering the plan; and determining that the plan's transactions that are presented and disclosed in the financial statements are in conformity with the plan's provisions, including maintaining sufficient records with respect to each of the participants, to determine the benefits due or which may become due to such participants.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of CCCERA's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about CCCERA's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis (MD&A) and required supplementary information (RSI), as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board (GASB), who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the MD&A and RSI in accordance with GAAS, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Supplementary Information

Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise CCCERA's basic financial statements. The other supplementary information, as listed in the table of contents, is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with GAAS. In our opinion, the other supplementary information, as listed in the table of contents is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the Annual Comprehensive Financial Report. The other information comprises the introductory, investment, actuarial, and statistical sections but does not include the basic financial statements and our auditor's report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

Report on Summarized Comparative Information

We have previously audited CCCERA's December 31, 2022 financial statements, and our report dated June 14, 2023, expressed an unmodified opinion on those audited financial statements. In our opinion, the summarized comparative information presented herein as of December 31, 2022, is consistent, in all material respects, with the audited financial statements from which it has been derived.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June 12, 2024, on our consideration of CCCERA's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, agreements, and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of CCCERA's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering CCCERA's internal control over financial reporting and compliance.

BROWN ARMSTRONG
ACCOUNTANCY CORPORATION

Brown Armstrong
Accountancy Corporation

Bakersfield, California
June 12, 2024

Management's Discussion and Analysis

December 31, 2023, and 2022

As management of the Contra Costa County Employees' Retirement Association (CCCERA), we offer readers of CCCERA's financial statements this discussion and analysis of the financial position and results of operation for the years ended December 31, 2023, and 2022. The information presented here, in conjunction with the *Notes to the Financial Statements* beginning on page 34, provide a clear picture of CCCERA's overall financial status and activities.

Financial Highlights—Pension Plan

- The Net Position—Restricted for Benefits, as reported in the *Statement of Fiduciary Net Position*, totaled $10.8 billion and $10.1 billion at the close of December 31, 2023, and 2022, respectively. All of the net position is available to meet CCCERA's ongoing obligations to plan participants and their beneficiaries.
- CCCERA's total Net Position—Restricted for Benefits increased by $755.2 million, or 7.5%, and decreased $1,400.1 million, or −12.2%, as of December 31, 2023, and 2022, respectively. Although there were increases in member contributions in both years, the overall increase in 2023 over 2022 is primarily due to positive investment earnings in 2023.
- Total Additions, as reflected in the *Statement of Changes in Fiduciary Net Position*, for the years ended December 31, 2023, and 2022, was $1,389.0 million and $(797.2) million, respectively. This includes employer and plan member contributions of $505.2 million, investment income of $882.6 million, and net securities lending income of $1.2 million for 2023, along with employer and plan member contributions of $474.7 million, investment loss of $(1,272.9) million, and net securities lending income of $1.0 million for 2022. The 274.2% increase in additions to net position over the prior year is attributed to net investment earnings for the year.
- Total Deductions, as reflected in the *Statement of Changes in Fiduciary Net Position*, totaled $633.8 million for the year ended December 31, 2023, an increase of $30.9 million over the previous year ended December 31, 2022, or approximately 5.1%, are mainly attributed to the increase in retiree payroll. Benefits paid to retirees and beneficiaries increased from $563.9 million in 2022 to $594.5 million in 2023, or approximately 5.4%. This increase can be attributed to an increase in the number of new retirees and an annual cost-of-living (COLA) increase.
- CCCERA's funding objective is to meet long-term benefit obligations through contributions and investment income. As of December 31, 2022, the date of CCCERA's latest available actuarial pension plan valuation prepared by Segal Consulting, the funded status for CCCERA (the ratio of the valuation of assets to the actuarial liabilities) was 91.2%, compared to

92.4% in the previous year. The decrease in the funding ratio is due to investment earnings less than expected as well as salary increases and COLA increases in excess of the assumed rate.

- The total investment portfolio finished 2023 with a positive return, net of investment management fees, of 9.0% compared to a negative return, net of investment management fees of −10.6% in 2022.
- Based on GASB 67, CCCERA has a net pension liability of $1.60 billion and $1.70 billion as of December 31, 2023, and 2022, respectively. The plan fiduciary net position as a percentage of the total pension liability is 87.1% and 85.5% as of December 31, 2023, and 2022, respectively. The net pension liability as a percentage of covered payroll is 145.8% and 165.9% as of December 31, 2023, and 2022, respectively. Refer to *Note 6, Net Pension Liability/(Asset)* on page 46, and *Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios* in the *Required Supplementary Information* section on page 60 for more information.

Other Post-Employment Benefits (OPEB) Trust

The OPEB Trust Net Position—Restricted for Benefits, as reported in the *Statement of Fiduciary Position* and in the *Statement of Changes in Fiduciary Net Position*, was implemented in 2018 as a result of GASB Statement Nos. 74 and 75 reporting requirements. The OPEB Trust net position of $5.1 and $4.6 million as of December 31, 2023, and 2022, respectively, represents accumulated employer contributions and investments, net of OPEB Trust benefit related expenses, which are separate from CCCERA's pension plan.

The total OPEB liability, as calculated by CCCERA's OPEB Trust actuary Milliman Inc., was $4.7 million as of the December 31, 2023, biennial roll-forward valuation report. The OPEB Trust net position of $5.1 million offsets the total OPEB liability resulting in a net OPEB liability/(asset) of $(0.4) million which is reported as part of CCCERA's pension plan other liabilities. Refer to *Note 7, Other Post-Employment Benefits (OPEB) Liability/(Asset) and Section 115 Trust* on page 48 for more information.

Overview of the Financial Statements

This Management's Discussion and Analysis is intended to serve as an introduction to CCCERA's financial statements, which are comprised of these components:

1. *Statement of Fiduciary Net Position*
2. *Statement of Changes in Fiduciary Net Position*
3. *Notes to the Financial Statements*
4. *Required Supplementary Information and related Notes*
5. *Other Supplementary Information*

Please note, however, that this report also contains clarifying information to supplement the basic financial statements listed above.

The implementation of GASB 67 requires additional schedules to accompany the basic financial statements in the *Required Supplementary Information* section. These schedules provide a spectrum of financial information, including a pension liability measurement and changes to the liability, historical contributions, money-weighted investment return and additional actuarial related disclosures.

In 2018, CCCERA implemented GASB 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, and GASB 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*.

GASB 74 revises existing guidance for OPEB plans and benefits provided to employees subsequent to their retirement. GASB 74 addresses the financial report of defined benefit OPEB plans administered through trusts that meet specified criteria. The rule requires a statement of fiduciary net position, as well as a statement of changes in fiduciary net position.

GASB 75 requires plan sponsors to report a liability on the face of the financial statements for the OPEB that they provide. In addition, plan sponsors that are responsible only for OPEB liabilities related to their own employees and that provide OPEB through a defined benefit OPEB plan administered through a trust that meets specified criteria will report a net OPEB liability, the difference between the total OPEB liability and assets accumulated and held in trust restricted to making benefit payments.

Similar to GASB 67, the implementation of GASB 74 and GASB 75 also requires additional note disclosures and required supplementary information related to the measurement of the OPEB liabilities for which assets have been accumulated, changes in the liability, contributions, investment return and additional actuarial related disclosures.

The Statement of Fiduciary Net Position is a snapshot of account balances at year-end. It discloses the assets and deferred outflows of resources available for future payments to retirees and their beneficiaries and any current liabilities and deferred inflows of resources that are owed as of year-end. The net position, which is the assets and deferred outflows of resources less liabilities and deferred inflows of resources, reflects the funds available for future use. CCCERA established an irrevocable Other Post-Employment Benefit Trust in 2018. The purpose of this fund is for CCCERA, as an employer, to set aside assets to offset the OPEB retiree health care liability. The OPEB Trust is presented separately in the OPEB Trust's column on the *Statement of Fiduciary Net Position*.

The Statement of Changes in Fiduciary Net Position provides a view of all the activities that occurred during the fiscal year and shows the impact of those activities as additions to and deductions from the pension plan and the OPEB Trust.

Both financial statements and the required disclosures are in compliance with the accounting principles and reporting guidelines as set forth by GASB, using the accrual basis of accounting. CCCERA complies with all material requirements of these principles and guidelines.

The *Statement of Fiduciary Net Position* and the *Statement of Changes in Fiduciary Net Position* report information about CCCERA's activities. These statements include all assets and liabilities, deferred inflows, and deferred outflows, using the accrual basis of accounting, which is similar to the accounting used by most private-sector companies. All of the current year's revenues and expenses are recognized when they are earned and incurred, regardless of when cash is received or paid. All investment purchases and sales are reported as of the trade date, not the settlement date. Investments are reported at current fair value. Both realized and unrealized investment gains and losses are recognized. Each component of capital assets is depreciated over its useful life.

These two statements report CCCERA's net position-restricted for benefits and is one way to measure the pension plan's financial position. Over time, increases and decreases in CCCERA's net position are indicators of whether its financial position is improving or deteriorating. Other factors, such as market conditions, should be considered in measuring CCCERA's overall financial position. The increase in CCCERA's fiduciary net position for the year ended December 31, 2023, was 7.5%. This increase is due primarily to positive investment returns generated, combined with greater employer and member contributions received. CCCERA's total portfolio return was 9.0%, net of investment manager fees, for the year ending December 31, 2023. CCCERA's *Statement of Fiduciary Net Position* and *Statement of Changes in Fiduciary Net Position* appear on pages 32–33.

Notes to the Financial Statements provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes provide detailed discussion of key policies, programs, and activities that occurred during the year. Asset allocation, the long-term expected rate of return, discount rate, key actuarial assumptions, and the *Schedule of Net Pension Liability* based on GASB 67, and for OPEB based on GASB 74, are also included in this section. *Notes to the Financial Statements* appear on pages 34–59.

Required Supplementary Information follows the notes and includes several additional GASB 67 schedules. The *Net Pension Liability* in the notes section, together with the *Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios*, provides an up-to-date financial indication of the extent to which the total pension liability is covered by the fiduciary net position of the pension plan. This information will improve the financial statements users' ability to compare the total pension liability for similar types of pension plans. Please note that liabilities on these schedules are calculated solely for financial reporting purposes and are not intended to provide information about the funding of CCCERA's benefits.

Another schedule, the *Schedule of Employer Contributions*, helps the reader determine if plan sponsors are meeting the actuarially determined contributions over a period of time.

The *Schedule of Investment Returns* includes a money-weighted return performance calculation which is net of investment expenses. These schedules, as well as *Notes to the Required Supplementary Information*, appear on pages 60–64.

The *Schedule of Funding Progress* for funding purposes is presented in the Actuarial section on page 87.

Other Supplementary Information includes the *Schedule of Administrative Expenses*, *Schedule of Investment Expenses*, and *Schedule of Payments to Consultants*. It appears on pages 65–67.

Pension Plan Financial Analysis

As of December 31, 2023, CCCERA has $10.8 billion in net position-restricted for benefits, which means that assets of $11.3 billion exceed liabilities and deferred inflows of resources of $0.5 billion. As of December 31, 2022, CCCERA's net position-restricted for benefits totaled $10.1 billion. The net position-restricted for benefits is available to meet CCCERA's ongoing obligation to plan participants and their beneficiaries.

As of December 31, 2023, the net position-restricted for benefits increased by 7.5% over 2022, primarily due to an increase in the fair value of investments. Current assets and current liabilities also changed by offsetting amounts due to recording of securities lending cash collateral.

Despite market volatility domestically and abroad, coupled with sharply higher interest rate environments, and competitive retirement benefits, CCCERA remains in a good financial position to meet its obligations to plan participants and beneficiaries.

Capital Assets—Capital assets with an initial cost of more than $10,000 and an estimated useful life in excess of three years may be capitalized and depreciated/amortized. Depreciation and amortization is calculated using the straight-line method over the estimated useful lives of the assets. CCCERA's capital assets, net of accumulated depreciation and amortization, increased from $4.3 million as of December 31, 2022, to $5.2 million as of December 31, 2023. The investment in capital assets includes servers, equipment, furniture, leasehold improvements, including intangible assets under development for a pension administration system. The overall increase in CCCERA's capital assets from 2022 to 2023 was 22.0% primarily due to development-in-progress costs for a new pension administration system anticipated to implement in late fiscal year 2024, offset by normal depreciation and amortization of capitalized assets over remaining useful life.

CCCERA follows Government Code Section 31580.3, which allows expensing of software, hardware, and technology support services used in the administration of the existing pension retirement system including project oversight consulting for the new pension administration system. During 2023 and 2022, CCCERA expensed $1.57 million and $1.31 million of software, hardware, and computer technology project consulting services, respectively.

Pension Plan Fiduciary Net Position Restricted for Benefits

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022	Amount Increase/(Decrease)	Percent Increase/(Decrease)
Assets				
Current and Other Assets	$779,987	$785,559	$(5,572)	(0.7%)
Investments at Fair Value	10,519,893	9,774,736	745,157	7.6%
Capital Assets	5,195	4,258	937	22.0%
Total Assets	11,305,075	10,564,553	740,522	7.0%
Liabilities				
Current Liabilities	495,027	509,794	(14,767)	(2.9%)
Total Liabilities	495,027	509,794	(14,767)	(2.9%)
Deferred Inflows of Resources—OPEB	1,190	1,090	100	9.2%
Net Position—Restricted for Benefits	**$10,808,858**	**$10,053,669**	**$755,189**	**7.5%**

CCCERA has annual pension plan valuations completed by its independent actuary, Segal Consulting. The purpose of the valuation is to determine the future contributions by the members and employers needed to provide for the prescribed benefits. The valuation takes into account CCCERA's policy to smooth the impact of market volatility by spreading each year's investment gains or losses over five years. Despite variations in the stock market, CCCERA's management and actuary concur that CCCERA remains in a financial position that will enable the plan to meet its obligations to participants and beneficiaries. CCCERA remains focused on the long-term performance of the fund, dependent on a strong and successful investment program, risk management, and strategic planning. CCCERA's latest Actuarial Valuation is as of December 31, 2022, and the Actuarial Valuation as of December 31, 2023, is in progress, anticipated for completion by August 2024.

Reserves—Pension plans establish reserves for various anticipated liabilities. CCCERA's reserves have been established to account for the accumulation of employer and employee contributions, the amounts available to meet the obligation of retired members as well as other items. A complete listing of CCCERA's reserves and corresponding balances for December 31, 2023, are presented in *Note 10, Reserves and Designations.*

Pension Plan Activities

Additions to Fiduciary Net Position—The primary sources of funding for CCCERA member benefits are employer contributions, plan member contributions, and net investment income. Total additions and (deductions) to the pension plan fiduciary net position for the years ended December 31, 2023, and 2022, were $1,389.0 million and $(797.2) million, respectively. The increase in the current year is primarily due to positive investment gains earned compared to previous year. The net investment income or (loss), before securities lending, for the years ended December 31, 2023, and 2022, totaled $882.6 million and $(1,272.9) million, respectively. The investment section of this report reviews the results of investment activity for the year ended December 31,

Pension Plan Changes in Fiduciary Net Position Restricted for Benefits

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022	Amount Increase/(Decrease)	Percent Increase/(Decrease)
Additions				
Employer Contributions	$373,148	$352,384	$20,764	5.9%
Plan Member Contributions	132,104	122,304	9,800	8.0%
Net Investment Income (Loss)	882,547	(1,272,930)	2,155,477	169.3%
Net Securities Lending Income	1,169	1,054	115	10.9%
Total Additions	**1,388,968**	**(797,188)**	**2,186,156**	**274.2%**
Deductions				
Pension Benefits	594,474	563,881	30,593	5.4%
Contribution Prepayment Discount	15,466	10,032	5,434	54.2%
Administrative	12,840	11,538	1,302	11.3%
Refunds	10,063	13,738	(3,675)	(26.8%)
Other Expenses	936	3,720	(2,784)	(74.8%)
Total Deductions	**633,779**	**602,909**	**30,870**	**5.1%**
Increase (Decrease) in Net Position	**755,189**	**(1,400,097)**	**2,155,286**	**153.9%**
Net Position—Restricted for Benefits				
Beginning of Year	10,053,669	11,453,766	(1,400,097)	(12.2%)
End of Year	**$10,808,858**	**$10,053,669**	**$755,189**	**7.5%**

2023. Employer Contributions were $373.1 million as of December 31, 2023, an increase of $20.8 million, or 5.9%, over 2022. Plan Member Contributions were $132.1 million as of December 31, 2023, an increase of $9.8 million, or 8.0%, from prior year. The increases were due to higher contribution rates over the prior year.

Deductions From Fiduciary Net Position—CCCERA was created to provide lifetime retirement annuities, survivor benefits, and permanent disability benefits to qualified members and their beneficiaries. The cost of such programs includes recurring benefit payments as designated by the plan, refund of contributions to terminated employees, and the cost of administering the system. Total deductions from the pension plan fiduciary net position for the years ended December 31, 2023, and 2022, were $633.8 million and $602.9 million, respectively. Retirement allowances, survivor benefits, and permanent disability benefits were $594.5 million as of December 31, 2023, an increase of $30.6 million, or 5.4%, over 2022. The growth in benefit payments was due to the combined effects of the following: (1) the net increase in the number of retirees and beneficiaries for the year and (2) the increase in the average retirement allowance such as COLA, of those who were added to the retirement payroll.

Administrative expense was $12.8 million for 2023. Administrative expense covers the basic costs of operating the retirement system, including information technology systems. Operating costs include personnel, professional services, insurance, building lease, office supplies and materials, software, hardware, depreciation and amortization, and miscellaneous expenses. The system's administrative expenses increased by $1.3 million, or 11.3% over 2022. The increase was mainly due to expected annual staff wage increases combined with project oversight consulting services for the new pension administration system, along with increased expense for investment data services.

Member refunds were $10.1 million in 2023, a decrease of $3.7 million, or −26.8% compared to 2022. Member refunds were lower in the current year due to a decrease in the number of terminated members requesting withdrawals, combined with a one-time contribution correction in 2022.

Other expenses decreased by $2.8 million over last year, or −74.8%, to $0.9 million in 2023. The primary reason for the decrease was less in-house legal and IT disaster recovery expense during the year.

The Board of Retirement approves the annual budget for CCCERA. The California Government Code Section 31580.2(a) limits the annual administrative expense to not exceed the greater of either of the following: (1) twenty-one hundredths of one percent (0.21%) of the accrued actuarial liability of the retirement system; or (2) $2,000,000, as adjusted annually by the amount of the annual cost-of-living adjustment computed in accordance with Article 16.5. CCCERA has consistently met its administrative expense budget for the current year and prior years.

Deductions of $633.8 million combined with positive additions of $1,389.0 million, resulted in an increase of $755.2 million in fiduciary net position for the year ended December 31, 2023.

Change In Fiduciary Net Position—The change in fiduciary net position consists of total additions reduced by total deductions. The change in fiduciary net position, as compared to the prior year, increased by $2,155.3 million for the year ended December 31, 2023. This increase is due to the change of investment gains in 2023 compared to the previous year's investment losses.

Pension Plan Statutory Limitation for Administrative Expense

As of December 31, 2023, and 2022
(Dollars in Thousands)

		2023	2022
Actuarial Accrued Liability (AAL)	a	$11,912,229	$11,288,973
Statutory Limit For Administrative Expenses (AAL × 0.21%)		25,016	23,707
Actual Administrative Expenses Subject to Statutory Limit	b	12,840	11,538
Excess Statutory Limit Over Actual Administrative Expense		**$12,176**	**$12,169**
Actual Administrative Expenses as a Percentage of AAL	b/a	**0.11%**	**0.10%**

Net Pension Liability—CCCERA is subject to the provisions of GASB 67, *Financial Reporting for Pension Plans*, beginning with the year ended December 31, 2014, and CCCERA's participating employers are subject to the provisions of GASB 68, *Accounting and Financial Reporting for Pensions*, beginning with the fiscal year ended June 30, 2015. These standards require governments to recognize their long-term obligation for pension benefits as a liability on their balance sheets, to recognize their annual pension expense as a comprehensive measurement of the annual cost of pension benefits, and expands note disclosures and Required Supplementary Information for pension plans and their participating employers.

Pursuant to GASB 67, the funded status and unfunded actuarial accrued liability (UAAL) of the plan are no longer presented in the notes or required supplementary information. The UAAL was determined by subtracting the excess of the actuarial accrued liability (discounted at the plan's assumed rate of return) from the actuarial value of assets (determined by smoothing values over a certain number of years to reduce volatility) and represented the costs allocated to date for current plan members that are not covered by the actuarial value of assets. The UAAL has now been replaced by the net pension liability, which represents the excess of the total pension liability (using an entry age cost method, discounted at a discount rate that reflects the expected return on assets) over fiduciary net position (valued at fair value). Net pension liability is similar to UAAL but uses market assets, not smoothed assets. This is a conceptual shift by the GASB in the measurement of pension liabilities to provide a consistent, standardized methodology that allows comparability of data and increased transparency of the pension liability across all plans. CCCERA has complied with GASB 67 for the years ended December 31, 2023, and December 31, 2022.

Based on Segal Consulting's GASB 67 Actuarial Valuation as of December 31, 2023, the net pension liability of participating employers on a market basis is $1.60 billion as of December 31, 2023, and $1.70 billion as of December 31, 2022. The decrease in net pension liability is primarily a result of a favorable return on the fair value of assets (about 8.7%) during fiscal year 2023 that was greater than the assumed investment return of 6.75%. Refer to *Note 6, Net Pension Liability*, and the *Required Supplementary Information* section of this report for further information.

Changes in Net Pension Liability

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023 (a)	2022 (b)	Amount Increase/(Decrease) (c) = (a)−(b)	Percent Increase/(Decrease) (c) ⁄ (b)
Total Pension Liability	$12,403,942	$11,752,067	$651,875	5.5%
Less Plan Fiduciary Net Position	10,808,858	10,053,669	755,189	7.5%
Net Pension Liability	**$1,595,084**	**$1,698,398**	**$(103,314)**	**(6.1%)**

Total Pension Liability as calculated by Segal Consulting GASB 67 actuarial valuation as of December 31, 2023

OPEB Trust Financial Analysis

Additions and Deductions to OPEB Trust Fiduciary Net Position—The only source of funding for the OPEB Trust is from CCCERA as a separate employer to its staff, and investment income, net of fees, earned on the OPEB Trust itself. CCCERA as an employer has adopted a policy to fully fund the Actuarial Determined Contribution (ADC) which was $158 thousand in 2023 and $268 thousand in 2022. Investment income increased to a gain of $549 thousand in 2023 from $(797) thousand loss in 2022. Deductions to the OPEB Trust are for retiree health benefits to employees who retired from CCCERA after January 1, 2015. Deductions increased to $208 thousand in 2023 from $156 thousand in 2022 due to more retirees during the year.

OPEB Trust Net Liability/(Asset)—GASB 74 and 75 require CCCERA to report the total OPEB liability of $4.7 million and net OPEB liability/(asset) of $(0.4) million as of December 31, 2023, from an actuarial valuation dated within 24 months of the OPEB Trust fiscal year-end. GASB 74 and 75 also require the OPEB fiduciary net position to be presented as a percentage of the total OPEB liability which is 108.1% as of December 31, 2023.

OPEB Trust Fiduciary Net Position—Restricted for Benefits

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022	Amount Increase/(Decrease)	Percent Increase/(Decrease)
Assets				
Current and Other Assets	$21	$49	$(28)	(57.1%)
Investments at Fair Value	5,058	4,531	527	11.6%
Total Assets	5,079	4,580	499	10.9%
Liabilities				
Total Liabilities	-	-	-	-
Net Position—Restricted for Benefits	**$5,079**	**$4,580**	**$499**	**10.9%**

OPEB Trust Changes in Fiduciary Net Position—Restricted for Benefits

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022	Amount Increase/(Decrease)	Percent Increase/(Decrease)
Additions				
Employer Contributions	$158	$268	$(110)	(41.0%)
Net Investment Income (Loss)	549	(797)	1,346	168.9%
Total Additions	707	(529)	1,236	233.6%
Deductions				
Administrative Benefits	208	156	52	33.3%
Total Deductions	208	156	52	33.3%
Increase (Decrease) in Net Position	**$499**	**$(685)**	**$1,184**	**172.8%**
Net Position—Restricted for Benefits				
Beginning of Year	4,580	5,265	(685)	(13.0%)
End of Year	**$5,079**	**$4,580**	**$499**	**10.9%**

Changes in Net OPEB Liability/(Asset)

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023 (a)	2022 (b)	Amount Increase/(Decrease) (c) = (a)−(b)	Percent Increase/(Decrease) (c) / (b)
Total OPEB Liability	$4,700	$4,506	$194	4.3%
Less OPEB Trust Fiduciary Net Position	5,079	4,580	499	10.9%
Net OPEB Liability/(Asset)	**$(379)**	**$(74)**	**$305**	**412.2%**

Total OPEB Liability as calculated by Milliman Inc. GASB 74 actuarial valuation as of December 31, 2023

The OPEB liability, which is the responsibility of CCCERA as an employer, is calculated separately from the pension plan liabilities and is presented solely for financial statement purposes. More information is found in *Note 7, Other Post-Employment Benefits (OPEB) Liability/(Asset) and Section 115 Trust.*

Pension Reform

The California Public Employees' Pension Reform Act of 2013 (PEPRA) was signed by the Governor's Office to become effective January 1, 2013. While it was one of the largest pieces of pension reform legislation for CERL plans, it had minimal impact on current and retired CCCERA members hired prior to January 1, 2013. Most changes and provisions affected new public employees hired on or after January 1, 2013. Some new provisions that did impact current or retired CCCERA members were changes in what can be included in compensation for retirement purposes, new restrictions on the ability of a retiree to return to work with a CCCERA employer without reinstatement as an active member unless certain conditions are met, and elimination of employers' ability to adopt an enhanced benefit formula and apply it to past service. In addition, for new public employees, the legislation reduces benefit formulas, limits pensionable income, expands the final compensation period from one year to three years, and requires the new employee to pay a larger share of normal costs.

Overall Analysis

For the year ended December 31, 2023, CCCERA's financial position and results from operations have experienced an increase over the prior year. For 2023, CCCERA's net position increased to $10.8 billion from $10.1 billion in 2022. The overall increase in net position for December 31, 2023, is primarily attributable to positive appreciation in the fair value of the plan's broadly diversified portfolio. Despite fluctuations in the financial markets, CCCERA remains in a sound financial position to meet its obligations to plan participants and beneficiaries. The current financial position results from a continued strong and successful investment program, risk management and strategic planning meeting expectations. As a long-term investor, CCCERA can take advantage of price volatility along with a diversified exposure to domestic, global and international equities, fixed income investments, real estate, private equity, private credit, and liquidity programs. The plan has recovered well from the pandemic market downturn as well as weathered general market downturns during 2023 and CCCERA is well positioned with value-focused assets to face market fluctuations.

CCCERA's Fiduciary Responsibilities

CCCERA's Board of Retirement and management are fiduciaries of the pension trust fund. Under the California Constitution and other applicable law, the assets can only be used for the exclusive benefit of plan participants and their beneficiaries and to defray the administrative and investment expenses of the plan.

Requests for Information

The Annual Comprehensive Financial Report is designed to provide the Board of Retirement, our membership, taxpayers, investment managers, and interested parties with a general overview of CCCERA's finances and to show accountability for the funds it administers.

Questions concerning any of the information provided in this report or requests for additional financial information should be addressed to:

Contra Costa County Employees' Retirement Association
Attn: Accounting Department
1200 Concord Avenue, Suite 300
Concord, CA 94520-5728

www.cccera.org
Telephone: (925) 521-3960
Facsimile: (925) 521-3969

Respectfully submitted,

Henry J. Gudino, CPA
Accounting Manager

June 12, 2024

Basic Financial Statements

Statement of Fiduciary Net Position

As of December 31, 2023 (with Comparative Totals) (Dollars in Thousands)

	2023		2022	
	Pension Plan	OPEB Trust	Pension Plan	OPEB Trust
Assets				
Cash & Cash Equivalents				
Cash Equivalents	$504,490	$21	$466,929	$48
Cash Collateral—Securities Lending	229,840		269,030	
Total Cash & Cash Equivalents	**734,330**	**21**	**735,959**	**48**
Receivables				
Contributions	12,769		11,459	
Investment Trades	7,192		13,095	
Investment Income	23,756		20,648	1
Installment Contract (See *Note 11*)	1,346		3,887	
Other	9		41	
Total Receivables	**45,072**	**-**	**49,130**	**1**
Investments at Fair Value				
Equities	5,340,364	3,122	4,805,530	2,709
Fixed Income	2,165,939	1,936	1,994,157	1,822
Real Assets	62,754		45,734	
Real Estate	516,926		565,387	
Alternative Investments	2,433,910		2,363,928	
Total Investments at Fair Value	**10,519,893**	**5,058**	**9,774,736**	**4,531**
Other Assets				
Prepaid Expenses/Deposits	**585**		**470**	
Capital assets, net of accumulated depreciation/ amortization of $2,211 and $1,980 respectively	**5,195**		**4,258**	
Total Assets	**11,305,075**	**5,079**	**10,564,553**	**4,580**
Liabilities				
Investment Trades	12,630		16,827	
Securities Lending Collateral	229,840		269,030	
Employer Contributions Unearned	192,889		167,824	
Retirement Allowance Payable	49,306		47,206	
Accounts Payable	10,741		8,786	
Contributions Refundable	-		195	
Other Liabilities	(379)		(74)	
Total Liabilities	**495,027**	**-**	**509,794**	**-**
Deferred Inflows of Resources				
Deferred OPEB Inflows	**1,190**		**1,090**	
Total Deferred Inflows of Resources	**1,190**	**-**	**1,090**	**-**
Net Position—Restricted for Benefits	**$10,808,858**	**$5,079**	**$10,053,669**	**$4,580**

See accompanying *Notes to the Financial Statements.*

Statement of Changes in Fiduciary Net Position

For the Year Ended December 31, 2023 (with Comparative Totals) (Dollars in Thousands)

	2023		2022	
	Pension Plan	OPEB Trust	Pension Plan	OPEB Trust
Additions				
Contributions				
Employer contributions	$373,148	$158	$352,384	$268
Plan member contributions	132,104		122,304	
Total Contributions	505,252	158	474,688	268
Investment Income				
Net appreciation in fair value of investments	857,869	443	(1,388,259)	(886)
Net appreciation in fair value of real estate	(130,602)		(19,059)	
Interest	111,639	1	83,377	2
Dividends	64,222	148	58,272	120
Real estate income, net	3,315		5,368	
Alternative income	29,736		35,141	
Investment expense	(54,677)	(43)	(47,717)	(33)
Other income/(expense)	1,045		(53)	
Net Investment Income (Loss), Before Securities Lending	882,547	549	(1,272,930)	(797)
Securities Lending Income (Expense)				
Earnings	1,462		1,318	
Fees	(293)		(264)	
Net Securities Lending Income	1,169	-	1,054	-
Net Investment Income (Loss)	883,716	549	(1,271,876)	(797)
Total Additions	1,388,968	707	(797,188)	(529)
Deductions				
Benefits paid	594,474		563,881	
Contribution prepayment discount	15,466		10,032	
Administrative	12,840	208	11,538	156
Refunds of contributions	10,063		13,738	
Other	936		3,720	
Total Deductions	633,779	208	602,909	156
Net Increase (Decrease) in Net Position	755,189	499	(1,400,097)	(685)
Net Position—Restricted for Benefits				
Beginning of Year	10,053,669	4,580	11,453,766	5,265
End of Year	$10,808,858	$5,079	$10,053,669	$4,580

See accompanying *Notes to the Financial Statements*.

Notes to the Basic Financial Statements For the Year Ended December 31, 2023

Note 1. Plan Description

The Contra Costa County Employees' Retirement Association (CCCERA) is governed by the Board of Retirement (Board) under the County Employees Retirement Law of 1937 (CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA). Members should refer to CERL and PEPRA for more complete information.

General

CCCERA is a contributory defined benefit pension plan initially organized under the provisions of CERL on July 1, 1945. It provides benefits upon retirement, death or disability of members. CCCERA operates as a cost-sharing, multiple employer defined benefit pension plan that covers employees of the County of Contra Costa (the County) and 15 other participating employers.

Because of its close financial relationship with the County (the primary plan sponsor), CCCERA is classified as a blended component unit of the County and reported as a pension trust fund in the County's financial statements.

CCCERA's membership as of December 31, 2023, and 2022, is presented below.

CCCERA Membership

As of December 31, 2023, and 2022

	2023[1]	2022	Amount Increase/ (Decrease)	Percent Increase/ (Decrease)
Active members	10,349	10,082	267	2.6%
Retired members or beneficiaries	10,834	10,561	273	2.6%
Terminated members entitled to, but not yet receiving, benefits[2]	4,111	3,974	137	3.4%
Total Membership	**25,294**	**24,617**	**677**	**2.8%**

1 2023 membership counts and categories are preliminary and will be finalized upon completion of the Actuarial Valuation as of December 31, 2023, anticipated in August 2024.

2 Includes members who terminate with less than five years of service and leave accumulated contributions on deposit.

CCCERA, as an independent governmental entity with its own governing Board, is separate and distinct from the County of Contra Costa. Costs of administering the plan are financed through contributions and investment earnings. With California legislation (SB 673) signed January 1, 2015, and made part of CERL, CCCERA became an independent public agency and employer for its entire staff, subject to terms and conditions approved by the Board.

Benefit Provisions

The plan is currently divided into thirteen benefit levels in accordance with CERL and PEPRA. These levels are known as General Tier 1 (Enhanced and Non-Enhanced); General Tier 2, General Tier 3 Enhanced, General Tier 4 (2% and 3% maximum Cost-of-Living Adjustments (COLAs)), General Tier 5 (2%, 3%, and 4% maximum COLAs), Safety Tier A (Enhanced and Non-Enhanced), Safety Tier C Enhanced, Safety Tier D, and Safety Tier E.

General Tier 1 includes members not mandated to be in General Tier 2 or General Tier 3 and reciprocal members who were eligible for General Tier 1 membership.

On October 1, 2002, the Contra Costa County Board of Supervisors adopted Resolution No. 2002/608, which provides enhanced benefit changes commonly known as 3% at 50 for Safety members and 2% at 55 for General members, effective on July 1, 2002, and January 1, 2003, respectively. Each Special District that is a participant of CCCERA, and whose staff are not County employees covered by Resolution No. 2002/608, may elect to participate in the enhanced benefits. Nine (9) General member agencies and four (4) Safety member agencies have adopted enhanced benefits for their employees. Under PEPRA, which became effective January 1, 2013, districts that did not adopt enhanced benefits are no longer allowed to do so.

Legislation was signed by the Governor in 2002 which allowed the

County, effective October 1, 2002, to provide General Tier 3 to all new employees, to move those previously in General Tier 2 to General Tier 3 as of that date, and to apply all future service as General Tier 3.

Members who moved to General Tier 3 continue to have General Tier 2 benefits for service prior to that date unless the service is converted to General Tier 3. As of December 31, 2006, there are no members currently contributing towards a General Tier 2 account.

Safety Tiers include members in active law enforcement, active fire suppression work, or certain other "Safety" classifications as defined in sections of CERL made operative by the Board of Supervisors.

Effective January 1, 2007, the County and the Deputy Sheriffs' Association agreed to adopt a new Safety Tier C Enhanced for sworn employees hired by the County after December 31, 2006. A Deputy Sheriff hired on or after January 1, 2007 through November 30, 2012, entered membership into Safety Tier C Enhanced.

Effective January 1, 2012, members employed by the County and within certain bargaining units are responsible for the payment of 100% of the employees' basic retirement benefit contributions, determined annually by the Board. See *Note 9, Contributions*, for further description.

California Public Employees' Pension Reform Act (PEPRA)

In September 2012, the California Public Employees' Pension Reform Act of 2013 (PEPRA) was signed into law by the Governor of California, establishing new retirement tiers for General and Safety members entering CCCERA membership on or after January 1, 2013. These Tiers were titled General Tier 4, General Tier 5, Safety Tier D, and Safety Tier E. The benefit formula for General Tiers is 2.5% at age 67 and the benefit formula for Safety Tiers is 2.7% at age 57. Benefits under the new PEPRA tiers are based on a three-year final average salary period. Additionally, PEPRA limits the amount of compensation CCCERA can use to calculate a retirement benefit. The PEPRA annual compensation limits are adjusted each year based on changes in the Consumer Price Index.

Beginning in November 2012, the County adopted PEPRA retirement benefits that are subject to a maximum annual COLA of 2%. As a result, CCCERA created a second General Tier 5 and second General Tier 4.

Benefits are administered by the Board under the provisions of CERL and PEPRA. Service retirements are based on age, length of service, and final compensation. Members may withdraw contributions plus interest credited or leave them on deposit for a deferred retirement when they terminate or transfer to a reciprocal retirement system.

Pertinent provisions for each section follow:

General—Tier 1

Members may elect service retirement at age 70 regardless of service, at age 50 with ten years of service, or with 30 years of service regardless of age. Disability retirements may be granted as service connected with no minimum service credit required or non-service connected with five years of service credit required. The retirement benefit is based on Government Code Section 31676.11 for the Non-Enhanced tier and Section 31676.16 for the Enhanced tier. The final compensation is based on a one-year average.

General—Tier 2

Members may elect service retirement at age 70 regardless of service, at age 50 with ten years of service, or with 30 years of service regardless of age. The retirement benefit is based on Government Code Section 31752. The final compensation is based on a three-year average.

General—Tier 3

Members may elect service retirement at age 70 regardless of service, at age 50 with ten years of service, or with 30 years of service regardless of age. Disability retirements may be granted as service connected with no minimum service credit or non-service connected with ten years of service credit required. The retirement benefit is based on Government Code Section 31676.16. The final compensation is based on a one-year average.

General—Tier 4

Members may elect service retirement at age 70 regardless of service, or at age 52 with five years of service. Disability retirements may be granted as service connected with no minimum service credit or non-service connected with five years of service credit required.

The retirement benefit is based on Government Code Section 7522.20. The final compensation is based on a three-year average.

General—Tier 5

Members may elect service retirement at age 70 regardless of service, or at age 52 with five years of service. Disability retirements may be granted as service connected with no minimum service credit or non-service connected with ten years of service credit required. The retirement benefit is based on Government Code Section 7522.20. The final compensation is based on a three-year average.

Safety—Tier A and Tier C

Members may elect service retirement at age 70 regardless of service, or at age 50 with ten years of service, or with 20 years of service regardless of age. Disability retirements may be granted as service connected with no minimum service credit required or non-service connected with five years of service credit required. The retirement benefit is based on Government Code Section 31664 for the Non-Enhanced tier and Section 31664.1 for the Enhanced tier. The final compensation is based on a one-year average for Safety Tier A and a three-year average for Safety Tier C. Safety Tier A has a maximum 3% COLA and Safety Tier C has a maximum 2% COLA.

Safety—Tier D and Tier E

Members may elect service retirement at age 70 regardless of service, or at 50 with five years of service. Disability retirements may be granted as service connected with no minimum service credit required or non-service connected with five years of service credit required. The retirement benefit is based on Government Code Section 7522.25(d). The final compensation is based on a three-year average. Safety Tiers D and E differ only in the COLA provision.

Additional information regarding CCCERA's benefits is included in the *Benefit Handbook*, available at www.cccera.org.

Cost-of-Living Adjustments (COLA)

The CERL authorizes the Board to grant annual automatic and ad hoc cost-of-living increases to all eligible retired members. Article 16.5 requires the Board to apply a COLA effective April 1st of each year. This adjustment is based on the change in the San Francisco-Oakland-San Jose area Consumer Price Index and is limited based on Tier.

For General Tier 4 depending on Memoranda of Understanding (MOU), General Tier 5 depending on MOU, Safety Tier C, and Safety Tier E, there is a maximum of a two percent COLA. General Tier 1, General Tier 3, General Tier 4 depending on MOU, General Tier 5 depending on MOU, Safety Tier A, and Safety Tier D have a maximum of three percent COLA. Members granted a disability retirement in General Tier 2, General Tier 3, and General Tier 5 have a maximum of a four percent COLA.

Government Code Section 31874.3 allows the granting of a supplemental cost-of-living benefit, on a prefunded basis, to eligible retirees whose unused Consumer Price Index increase accumulations equal or exceed 20 percent. This supplemental increase is a permanent part of the retirees' monthly benefit and is known as "New Dollar Power."

Terminations

A member may elect to leave accumulated contributions on deposit in the retirement fund regardless of years of service and be granted a deferred status which is subject to the same age, service, and disability requirements that apply to other members for service or disability retirement.

Other Post-Employment Benefits (OPEB) Trust

On January 1, 2015, CCCERA became an independent employer. As a single-employer defined benefit plan, CCCERA is responsible for the cost of retiree health benefits for CCCERA employees who retire on or after January 1, 2015. CCCERA contracts with California Public Employees' Retirement System (CalPERS) and Delta Dental, as health and dental insurance providers for those retired employees. For the retiree health benefits provided to employees that retire from CCCERA on or after January 1, 2015, Milliman Inc. (Milliman), CCCERA's OPEB actuary, prepares an actuarial valuation report of OPEB liability for those benefits in accordance with GASB 74 and 75 to determine the liability, annual required contribution, and other required financial disclosures.

Staff employees who retire directly from CCCERA may receive certain retiree benefits if they meet certain eligibility requirements. CCCERA will contribute an amount toward the cost of retiree health benefits for staff retirees consistent with the bargaining agreements between CCCERA and its bargaining units.

As to the cost of retiree health benefits for County employees who worked at CCCERA and retired prior to January 1, 2015, before CCCERA became an independent employer, those liabilities are included with the County's OPEB Trust for funding purposes. CCCERA currently provides payments to the County for these pre-January 1, 2015 retirees and expenses the payments on a "pay-as-you-go" basis.

CCCERA's membership in the OPEB Trust single-employer defined benefit plan as of December 31, 2023, and 2022, is presented below:

CCCERA OPEB Plan Membership

As of December 31, 2023, and 2022

	2023	2022	Amount Increase/ (Decrease)	Percent Increase/ (Decrease)
Active members	66	60	6	10.0%
Retired members or beneficiaries	18	7	11	157.1%
Total OPEB Plan Membership	84	67	17	25.4%

Note 2. Summary of Significant Accounting Policies

Basis of Accounting

CCCERA follows the accounting principles and reporting guidelines set forth by GASB. The financial statements are prepared using the accrual basis of accounting in accordance with GAAP in the United States of America, under which revenues are recognized when earned and deductions are recorded when the liability is incurred. Plan member and employer contributions are recognized in the period in which the contributions are due, pursuant to formal commitments, as well as statutory or contractual requirements. Investment income is recognized as revenue when earned. Retirement benefits and refunds of prior contributions are recognized when due and payable in accordance with the terms of the plan. Other expenses are recognized when the corresponding liabilities are incurred. All investment purchases and sales are recorded on the trade date. The net appreciation and/or depreciation in fair value of investments held by CCCERA is recorded as an increase or decrease to investment income based on the valuation of investments on a quarterly basis.

Blended Component Unit

CCCERA was established to provide retirement benefits to employees of the County and 15 other participating employers. CCCERA provides many of its services for the benefit of the County and is reported as a Pension Trust Fund in the County's Annual Comprehensive Financial Report (ACFR). CCCERA's fiscal year is as of December 31 and reported in the County's ACFR as of their fiscal year ending June 30.

Cash and Cash Equivalents

Cash and cash equivalents include deposits in the plan's custodian bank, The Northern Trust Company, the plan's local retail bank, Mechanics Bank, investment managers, and County of Contra Costa Treasurer's commingled cash pool. Cash equivalents are highly liquid investments with maturities of three months or less when purchased. Short-term investments with the custodian bank include foreign currencies, cash held in short-term investment funds and other short-term, highly liquid investments. Short-term investments considered cash equivalents are recorded at cost, which approximates fair value. OPEB Trust cash and cash equivalents are held with U.S. Bank.

Methods Used to Value Investments

Investments are carried at fair value. Fair values for investments are derived by various methods, as indicated in the following chart:

Investment Fair Value Sources

Investments	Sources
Publicly Traded Securities, such as equities and fixed income. Fixed income include obligations of the U.S. Treasury, U.S. agencies, non-U.S. governments, and both U.S. and non-U.S. corporations. Also included are mortgage backed securities and asset backed securities.	Valuations are provided by CCCERA's custodian bank Northern Trust, based on end-of-day prices from external pricing vendors, Non-U.S. securities reflect currency exchange rates in effect at December 31, 2022, and 2021.
Private Real Estate	Fair value as provided by real estate fund managers, based on review of cash flow, exit capitalization rates, and market trends; fund managers commonly subject each property to independent third-party appraisal annually. Investments under development are carried at cumulative cost until developed.
Alternatives (Private Equity and Private Credit)	Fair value provided by investment managers as follows: Private investments—valued by the General Partner giving consideration to financial condition and operating results of the portfolio companies, nature of investment, marketability, and other factors deemed relevant. Public investments—valued based on quoted market prices, less a discount, if appropriate, for restricted securities.
Public Market Equity and Fixed Income Investments Held in Institutional Commingled Fund/Partnership	Fair value is typically provided by third-party fund administrator, who performs this service for the fund manager.

Investment Asset Allocation Policy

The allocation of investment assets within CCCERA's portfolio is approved by the Board as outlined in the investment policy. The asset allocation is an integral part of the Investment Policy and is designed to provide an optimum mix of assets classes with return expectations that reflect expected liabilities. Plan assets are managed on a total return basis with a long-term objective of achieving and maintaining a fully funded status for the benefits provided through the plan. In September 2016, the Board adopted a revised Investment Policy Statement, referred to as Functionally Focused Portfolio (FFP), that implemented long-term asset allocation targets in phases over a three year roll out period.

The FFP consists of three sub-portfolios, Liquidity, Growth, and Risk Diversifying, and is designed to accomplish CCCERA's primary function, paying for two to three years of pension benefits. CCCERA will continue to allocate the bulk of the remaining assets into a globally diversified growth sub-portfolio of stocks, real estate, and alternative asset strategies and the remaining into risk diversified investments.

The Board conducted a review of the strategic asset allocation in late 2020. The FFP structure was maintained, but the target allocation to the Liquidity sub-portfolio was reduced to three years from the prior four years. Other allocations were changed as well, most notably an increased target to private equity. A change to the Liquidity sub-portfolio was implemented in 2021 and the increased allocation to private markets will be implemented over the next several years.

As of 2023, the long-term asset allocation targets determined by the Board are as follows:

- Liquidity 17%
- Growth 76%
- Diversifying 7%

Long-Term Asset Allocation Policy

As of December 31, 2023

Asset Class	Target Allocation
Liquidity	17%
Growth	
Domestic Equity	13%
Global & International Equity	19%
Private Equity	18%
Private Credit	13%
Real Estate – Value Add	5%
Real Estate – Opportunistic & Distressed	5%
Risk Parity	3%
Total Growth	**76%**
Risk Diversifying	7%
Total	**100%**

Receivables

Receivables consist primarily of interest, dividends, installment contracts, investments in transition (i.e., traded not settled) and contributions owed by plan sponsor employers as of December 31, 2023, and 2022.

Capital Assets

Capital assets, consisting of computer hardware, software, leasehold improvements, furniture and office equipment, are presented at historical cost, less accumulated depreciation and amortization. Capital assets with an initial cost of more than $10,000 and an estimated useful life in excess of three years are capitalized and depreciated or amortized. Depreciation or amortization is calculated using the straight-line method, with estimated lives ranging from three years for software, five years for hardware and office equipment, and ten years for leasehold improvements and pension administration system assets.

Income Taxes

The Internal Revenue Service has ruled that plans such as CCCERA qualify under Section 401(a) of the Internal Revenue Code and are not subject to tax under present tax laws. In December 2014, CCCERA received a favorable letter of determination from the Internal Revenue Service (IRS). Accordingly, no provision for income taxes has been made in the accompanying basic financial statements, as the plan is exempt from federal and state income taxes under provisions of the Internal Revenue Code, Section 401, and California Revenue and Taxation Code, Section 23701, respectively.

Use of Estimates

The preparation of CCCERA's financial statements in conformity with accounting principles generally accepted in the United States of America (i.e., GAAP) requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes to the financial statements. Actual results could differ from those estimates.

Reclassifications

Comparative data for the prior year have been presented in the selected sections of the accompanying *Statement of Fiduciary Net Position* and *Statement of Changes in Fiduciary Net Position*. Also, certain accounts presented in the prior year's data may have been reclassified to be consistent with the current year's presentation.

Implementation of New GASB Pronouncements

CCCERA did not implement any new applicable GASB pronouncements in 2023.

Note 3.
Deposits and Investment Risk Disclosures

Investment Stewardship

Except as otherwise expressly restricted by the California Constitution and by law, the Board may, at its discretion, invest, or delegate CCCERA to invest the assets of CCCERA through the purchase, holding, or sale of any form or type of instrument, or financial transaction when prudent in the informed opinion of the Board. In addition, the Board has established an investment policy, which places limits on the compositional mix of cash, fixed income and equity securities, real assets, alternative investments, and real estate investments. CCCERA currently employs external investment managers to manage its assets subject to the guidelines of the investment policy.

Investment Risk

Investments are subject to certain types of risks, including interest rate risk, credit risk (including custodial credit risk and concentrations of credit risk), and foreign currency risk. The Board recognizes that the assumption of investment risk is necessary to meet the plan's objectives. The goal in managing investment risk is to ensure that an acceptable level of risk is being taken at the total plan portfolio level. CCCERA has no formal policy relating to investment risks. The following describes those risks.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The fair value of fixed maturity investments fluctuates in response to changes in market interest rates. Increases in prevailing interest rates generally translate into decreases in fair value of those investments. The fair value of interest sensitive instruments may also be affected by the creditworthiness of the issuer, prepayment options, relative values of alternative investments, and other general market conditions. Certain fixed maturity investments may have call provisions that could result in shorter maturity periods.

Holdings of Fixed Income Futures are allowed, on an unleveraged basis, such that the market notional value of long contracts shall be covered by cash, cash receivables, or cash equivalents with one year or less in duration.

The table below is a list of fixed income and short-term investments and the related maturity schedule for CCCERA as of December 31, 2023:

Investment Maturities (in Years)

As of December 31, 2023
(Dollars in Thousands)

Investment Type	Less than 1 Year	1–5 Years	6–10 Years	More than 10 Years	Maturity Not Determined	Fair Value
Asset-Backed Securities	$ -	$77,344	$9,793	$ -	$ -	$87,137
Commercial Mortgage-Backed	-	-	-	10,023	-	10,023
Commercial Paper	48,992	-	-	-	-	48,992
Corporate Bonds*	336,657	432,173	54,165	683	804,304	1,627,982
Funds—Corporate Bond	-	-	-	-	242,467	242,467
Funds—Corporate Convertible Bond	-	-	-	-	2,730	2,730
Funds—Fixed Income ETF	-	-	-	-	1,359	1,359
Funds—Government Agencies	-	-	-	-	3,968	3,968
Funds—Municipal/Provincial Bond	-	-	-	-	33,717	33,717
Funds—Other Fixed Income	-	-	-	-	6,714	6,714
Funds—Short-Term Investment	-	-	-	-	389,952	389,952
Government Agencies	487	6,819	-	-	-	7,306
Government Bonds	20,296	91,558	-	8,092	4,000	123,946
Government Mortgage-Backed Securities	3	28,940	27,835	553,762	-	610,540
Government Issued Commercial Mortgage-Backed	-	8,682	-	805	-	9,487
Hedge Multi Strategy*	-	-	-	-	211,001	211,001
Municipal/Provincial Bonds	26,977	35,321	15,824	100,783	-	178,905
Non-Government Backed CMO's	-	820	159	22,900	-	23,879
Short-Term Bills and Notes*	992	-	-	-	-	992
TOTALS:	**$434,404**	**$681,657**	**$107,776**	**$697,048**	**$1,700,212**	**$3,621,097**

* Includes securities reported in the *Statement of Fiduciary Net Position* as Alternative Investments, Equities, and Cash Equivalents.

Custodial Credit Risk

Custodial credit risk for deposits is the risk that, in the event of a financial institution's failure, CCCERA would not be able to recover its deposits. Deposits are exposed to custodial credit risk if they are not insured or not collateralized. Under the California Government Code, a financial institution is required to secure deposits in excess of $250,000 made by state or local governmental units by pledging securities held in the form of an undivided collateral pool. The fair value of the pledged securities in the collateral pool must equal at least 110% of the total amount deposited by the public agencies. California law also allows financial institutions to secure governmental deposits by pledging first deed mortgage notes having a value of 150% of the secured public deposits. Such collateral is held by the pledging financial institution's trust department or agent in CCCERA's name.

At year-end, the carrying amount of CCCERA's cash deposits in non-interest bearing accounts was $55,951,767 (which are included in cash equivalents) and the bank balance was $56,246,915. The difference between the bank balance and the carrying amount represents outstanding checks and deposits in transit. Effective January 1, 2013, funds deposited in a non-interest bearing account no longer receive unlimited deposit insurance coverage by the Federal Deposit Insurance Corporation (FDIC). Non-interest bearing bank account balances in excess of the FDIC insurance coverage of $250,000 are collateralized with qualifying securities held in pooled pledged custodial accounts earmarked as collateral against public fund deposits.

CCCERA's investment securities are not exposed to custodial credit risk because all securities held by CCCERA's custodial bank are in CCCERA's name. CCCERA has no general policy on custodial credit risk for deposits.

Money-Weighted Rate of Return

For the years ended December 31, 2023, and 2022, the annual money-weighted rate of return on the assets of the plan, net of investment expense, was 8.7% and −11.02%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the timing of cash flows and the changing amounts actually invested.

At the April 13, 2023, Board meeting, the Board adopted an investment return assumption for financial reporting purposes that is net of investment expenses and not net of administrative expenses equal to 6.75% per year. This rate was used in the preparation of the December 31, 2022, actuarial valuation report.

Investment Concentrations

The Board's investment policies and guidelines permit investments in numerous specified asset classes to take advantage of professional investment management advice and a well-diversified portfolio. At December 31, 2023, CCCERA has no individual securities that represent five percent (5%) or more of the plan's fiduciary net position. Investments issued or explicitly guaranteed by the U.S. government and pooled investments are excluded from this requirement. However, there are five portfolio positions that exceed the 5% threshold, but each of these positions represents a diversified portfolio. As of December 31, 2023, the portfolios that exceed 5% of the plan's fiduciary net position are:

- Insight Short-Duration Fixed Income 5.5%
- SIT Short-Duration Fixed Income 5.8%
- Blackrock Index Fund 11.2%
- Stepstone CC Opportunities 10.1%
- Artisan Global Opportunities 5.6%

As of December 31, 2022, CCCERA held positions in Insight Short-Duration Fixed Income, SIT Short-Duration Fixed Income, Blackrock Index, and Stepstone CC Opportunities that represented more than 5% of the plan's fiduciary net position.

Credit Risk

Credit risk is the risk that an issuer, or other counterparty to an investment, will not fulfill its obligations. CCCERA's general investment policy is to apply the prudent-person rule. Investments are made as a prudent person would be expected to act, with discretion and for the exclusive purposes of providing benefits, minimizing contributions, and defraying reasonable expenses of administering the plan. Investments should be diversified so as to minimize the risk of loss and to maximize the rate of return unless, under the circumstances, it is clearly prudent not to do so.

Nationally recognized statistical rating organizations provide ratings of debt securities' quality based on a variety of factors. For example, the financial condition of the issuer provides investors with some idea of the issuer's ability to meet its obligations. Fixed-maturity investments may consist of rated or non-rated securities. Ratings can range from AAA (highest quality) to D (default). An investment grade is a rating that indicates that a bond has a relatively low risk of default. Debt securities with ratings of BBB or higher are considered investment grade issues, and debt securities with ratings of BB or lower are non-investment grade issues. Debt securities in the non-investment grade category are more speculative and are often referred to as "high-yield." This is due to the fact that lower rated debt securities generally carry a higher interest rate to compensate the buyer for taking on additional risk.

The following is a table of the credit risk ratings of CCCERA's fixed income and short-term investments as of December 31, 2023, as rated by Standard & Poor's (S&P):

Credit Risk Ratings

As of December 31, 2023
(Dollars in Thousands)

Quality Ratings	Fair Value
AAA	$70,303
AA+	39,200
AA	28,288
AA-	36,050
A+	58,019
A	74,250
A-	184,321
BBB+	171,328
BBB	164,568
BBB-	35,581
BB+	5,950
BB	27,845
BB-	33,697
B+	42,826
B	20,184
B-	10,857
CCC+	4,313
Not Rated	1,872,863
Guaranteed	740,654
Total Securities Subject to Credit Risk	**$3,621,097**

Investment Type	Quality Rating Range
Asset-backed securities*	AAA
Convertible bonds	Not Rated
CMBS*	Not Rated
CMO*	AAA to D
Corporate bonds*	AAA to CCC-
Municipals	AAA to BBB+
Private placements	AAA to BBB+
Real estate investment trust*	A- to B+
Short-term	AA to A+
U.S. & foreign agencies*	AAA to CCC+
Mutual funds	Not Rated

* Investment type contained one or more investments that were not rated.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates may adversely affect the fair value of an investment. CCCERA has no formal policy related to foreign currency risk. CCCERA's external investment managers may invest in international securities and must follow CCCERA's investment guidelines pertaining to these types of investments.

CCCERA's exposure to foreign currency risk in U.S. dollars as of December 31, 2023, is as follows:

Foreign Currency Risk

As of December 31, 2023
(Dollars in Thousands)

Currency	Fixed Income	Equity	Total
Brazilian Real	$ -	$2,681	$2,681
British Pound Sterling	-	28,201	28,201
Canadian Dollar	-	13,768	13,768
Euro Currency	-	43,579	43,579
Hong Kong Dollar	-	6,747	6,747
Indonesian Rupiah	582	-	582
Japanese Yen	-	38,488	38,488
Mexican Peso	2,070	495	2,565
Norwegian Krone	-	1,353	1,353
Republic of Korea Won	1,304	9,222	10,526
Swedish Krona	-	5,502	5,502
Swiss Franc	-	16,629	16,629
Thailand Baht	-	2,107	2,107
Total Securities Subject to Foreign Currency Risk	**$3,956**	**$168,772**	**$172,728**

Note 4. Fair Value Measurements

CCCERA implemented GASB 72, *Fair Value Measurements and Application*, in the year ending December 31, 2016. GASB 72 was issued to address accounting and financial reporting issues related to fair value measurements and disclosures. The Plan's investments, including investments held in the OPEB Trust, are measured and reported within the fair value hierarchy established by generally accepted accounting principles. The fair value hierarchy, which has three levels, is based on the valuation inputs used to measure an asset's fair value and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are as follows:

- ***Level 1*** inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- ***Level 2*** inputs are inputs other than quoted prices included in Level 1 that are observable for an asset or liability, either directly or indirectly. Inputs to the valuation include: 1) quoted prices for similar assets or liabilities in active markets; 2) quoted prices for identical or similar assets or liabilities in markets that are not active; 3) Inputs other than quoted prices that are observable for the asset or liability; and 4) market-corroborated inputs.
- ***Level 3*** inputs are unobservable inputs for an asset or liability where there are little market activities. The inputs into the determination of fair value are based upon the best information in the circumstances and may require management judgment or estimation.

Schedule of Investments by Fair Value Hierarchy

Equity securities, real estate investment trusts, and commodities exchange traded funds classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities.

The exchange traded Options Contracts classified in Level 1 of the fair value hierarchy are valued using a daily settlement when available or as a daily mark-to-market.

Fixed income and equity securities classified in Levels 1 or 2 of the fair value hierarchy are valued using a matrix pricing technique based on the availability of the market price, the pricing source and type, and the country of incorporation of the securities. The hierarchy levels are determined based on the level of corroborative information obtained from other market sources to assert that the prices provided represent observable data.

Equity mutual funds classified in Level 2 of the fair value hierarchy are valued based on the availability of market price of the underlying assets and using either a discounted cash flow or Comparable Company Analysis with internal assumptions.

Fixed income securities classified in Level 3 relate to unlisted securities with little to no market activity and based on best information available.

Certain investments which do not have a readily determinable fair value have been valued at Net Asset Value (NAV) per share (or its equivalent) provided that the NAV is calculated and used as a practical expedient to estimate fair value in accordance with GAAP requirements. These investments are not categorized within the fair value hierarchy but disclosed in the Schedule of Investments Measured at the NAV.

CCCERA has the following recurring fair value measurements as of December 31, 2023 (in thousands) on the next page.

Pension Plan—Schedule of Investments by Fair Value Hierarchy

As of December 31, 2023
(Dollars in Thousands)

		Fair Value Measurements Using		
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Investments by Fair Value Level				
Equities				
Domestic Equity	$836,583	$836,583	$ -	$ -
Global & International Equity	432,730	432,730	-	-
Real Estate – REIT	210,531	210,531	-	-
High Yield	1	1	-	-
Risk Diversifying	44,473	44,473	-	-
Total Equity Securities	**1,524,318**	**1,524,318**	**-**	**-**
Fixed Income				
Liquidity Program	1,532,426	-	1,532,426	-
Global & International Held in Equity Portfolios	3,956	-	3,956	-
High Yield	148,529	-	148,529	-
Risk Diversifying	257,710	66,697	191,013	-
Total Fixed Income Securities	**1,942,621**	**66,697**	**1,875,924**	**-**
Real Assets				
Global & International Equity	62,714	62,714	-	-
Total Real Asset Securities	**62,714**	**62,714**	**-**	**-**
Real Estate				
Risk Diversifying	**3,107**	**-**	**3,107**	**-**
Total Real Estate Securities	**3,107**	**-**	**3,107**	**-**
Total Investments by Fair Value Level	**$3,532,760**	**$1,653,729**	**$1,879,031**	**$ -**
Investments Measured at the Net Asset Value (NAV)				
Public Market Commingled Funds	4,039,107			
Real Estate				
Value Added, Opportunistic & Distressed Funds	513,819			
Alternatives				
Private Equity & Private Credit Funds	2,433,910			
Total Investments Measured at the NAV	**6,986,836**			
Total Investments Measured at Fair Value	**$10,519,596**			
Investment Derivative Instruments				
Options Contracts	$297	$297	-	-
Total Investment Derivative Instruments	**$297**	**$297**	**$ -**	**$ -**

Investments Measured at the Net Asset Value (NAV)

As of December 31, 2023
(Dollars in Thousands)

	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Public Market Commingled Funds[1]	$4,039,107	$ -	1–90 days	1–30 days
Real Estate: Value Added, Opportunistic & Distressed Funds[2]	513,819	568,129	N/A	N/A
Alternatives: Private Equity & Private Credit Funds[3]	2,433,910	1,222,642	N/A	N/A
Total Investments Measured at the NAV	**$6,986,836**	**$1,790,771**		

1 ***Public Market Commingled Funds:*** This investment type consists of eleven public market commingled funds that primarily invest in publicly traded equities and fixed income securities. The fair value of these investments has been determined using a practical expedient based on the investments' NAV per share (or its equivalent). These investments typically have monthly liquidity with ten day notice.

2 ***Value Added, Opportunistic & Distressed Funds:*** This investment type consists of twenty-eight real estate funds that invest primarily in commercial real estate. The fair value of these investments has been determined using a practical expedient based on the investments' NAV. All of the funds are in closed-end fund vehicles and are not redeemable. It is expected that these investments will be held for the entire lives of the funds and will not be sold in the secondary market. These funds typically have a ten-year lock up period and distributions from each fund will be received as underlying assets are liquidated by the fund managers.

3 ***Private Equity & Private Credit Funds:*** This investment type consists of forty-five private equity and five private credit funds. The private equity funds invest primarily in other private equity funds, privately held U.S. companies, and privately held non-U.S. companies. The private credit funds invest primarily in other private credit funds, commercial real estate debt and other specialty/opportunistic debt instruments. The fair value of these investments has been determined using a practical expedient based on the investments' NAV. It is expected that the Private Equity and Private Credit investments will be held for the entire lives of the funds and will not be sold in the secondary market. These funds typically have a ten-year lock up period and distributions from each fund will be received as the underlying assets are liquidated by the fund managers.

OPEB Trust—Total Investments Measured at the Net Asset Value (NAV)

As of December 31, 2023
(Dollars in Thousands)

	Fair Value	Redemption Frequency	Redemption Notice Period
Public Market Commingled Funds[4]	$5,058	1–90 days	1–30 days
Total Investments Measured at the NAV	5,058		
Total Investments Measured at Fair Value	**$5,058**		

4 ***Public Market Commingled Funds:*** The OPEB Trust has the above recurring fair value measurements as of December 31, 2023 (in thousands). OPEB Trust assets are administered by Public Agency Retirement Services (PARS) with US Bank as trustee custodian, and PFM Asset Management as investment manager. OPEB Trust investments are invested in a diversified portfolio of passively managed equity funds and actively managed fixed income funds. The investments are measured at NAV.

Note 5.
Securities Lending Transactions

The Investment Policy, adopted by the Board, permits the use of a securities lending program with its principal custodian bank. Securities lending is an investment management activity that mirrors the fundamentals of a loan transaction. Securities are loaned to brokers and dealers (borrower), and in turn CCCERA receives cash as collateral and invests the collateral with the goal of earning a higher yield than the interest rate paid to the borrower. Earnings generated above and beyond the interest paid to the borrower represent the net income to CCCERA from the transaction. The custodian bank provides loss indemnification to CCCERA if the borrower fails to return the securities.

The custodian bank manages the securities lending program and receives cash and/or securities as collateral. Cash collateral is invested in a short-term investment pool. Non-cash collateral securities cannot be pledged or sold by CCCERA unless the borrower defaults. The collateral is marked-to-market daily, and if the market value of the securities rises, CCCERA receives additional collateral.

Securities on loan must be collateralized at 102 percent and 105 percent of the fair value of domestic securities and international equity securities, respectively, plus accrued interest (in the case of debt securities).

There are no restrictions on the amount of securities that can be loaned at one time. CCCERA has the right to terminate any loan in whole or in part by providing the custodian bank with written notice (referred as "Recall Notice"). Because the loans are terminable at will, the term to maturity of the security loans is generally not matched with the term to maturity of the cash collateral. At year-end, CCCERA had no credit risk exposure to borrowers, because the amount of collateral received exceeded the value of securities on loan. As of December 31, 2023, there were no violations of legal or contractual provisions. CCCERA had no losses on securities lending transactions resulting from the default of a borrower for the years ended December 31, 2023, and 2022.

The fair value of investments on loan at December 31, 2023, is $307.7 million which was collateralized by cash and securities in the amount of $317.3 million. The fair value of the cash collateral in the amount of $229.8 million has been reported both as an asset and liability in the accompanying *Statement of Fiduciary Net Position*.

Securities Lending
Securities on Loan as of December 31, 2023
(Dollars in Thousands)

	Fair Value of Securities on Loan	Cash Collateral	Non-Cash Collateral
Non-U.S. Securities			
Global Corporate Fixed	$598	$609	$ -
Global Equities	7,038	7,150	185
Total Non-U.S. Securities	7,636	7,759	185
U.S. Securities			
U.S. Corporate Fixed	$101,721	$103,000	$1,065
U.S. Equities	164,752	107,569	63,466
U.S. Government Fixed	33,572	11,512	22,769
Total U.S. Securities	300,045	222,081	87,300
Total	**$307,681**	**$229,840**	**$87,485**

Note 6.
Net Pension Liability

GASB 67 requires public pension plans to provide a net pension liability. The net pension liability is measured as the total pension liability less the amount of the pension plan's fiduciary net position. The net pension liability is an accounting measurement for financial statement reporting purposes.

The net pension liability was measured as of December 31, 2023, and December 31, 2022. The pension plan's fiduciary net position (plan assets) was valued as of the measurement dates and the total pension liability was determined based upon rolling forward the total pension liability from actuarial valuations as of December 31, 2022, and December 31, 2021, respectively. The components of CCCERA's net pension liability as of December 31, 2023, and 2022, are as follows:

Net Pension Liability

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022
Total Pension Liability (a)	$12,403,942	$11,752,067
Plan Fiduciary Net Position (b)	10,808,858	10,053,669
Net Pension Liability (a−b)	**$1,595,084**	**$1,698,398**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (b/a)	87.1%	85.5%

Actuarial Assumptions

In preparing an actuarial valuation, the actuary employs generally accepted actuarial methods and assumptions to evaluate the plan's assets, liabilities, and future contributions requirements. The actuary utilizes member data and financial information provided by the plan with economic and demographic assumptions made about the future to estimate the plan's financial status as of a specified point in time. Examples of estimates include assumptions about future employment, mortality, future investment returns, future salary increases, expected retirements and other relevant factors. Actuarially determined amounts are subject to continual review or modification. The Board reviews the economic and demographic assumptions of the plan every three years.

The actuarial assumptions used to determine the total pension liability as of December 31, 2023, were based on the results of an experience study for the three year period from January 1, 2018, through December 31, 2020, approved by the Board on April 13, 2022. The total pension liability as of December 31, 2023, that was measured by an actuarial valuation as of December 31, 2022, was re-valued as of December 31, 2022, (before roll forward) using the latest actuarial assumptions resulting from the 2018–2020 experience study. This revalued total pension liability was then rolled forward to December 31, 2023, to determine the final total pension liability as of December 31, 2023. The Board also approved the 2018–2020 experience study actuarial assumptions to be used in the preparation of the actuarial valuation as of December 31, 2023, which is anticipated to be completed by August 2024.

The final total pension liability are presented below. For key methods and assumptions used in the latest actuarial valuation, see page 88 in the Actuarial section.

Key Methods and Assumptions Used in Total Pension Liability

Valuation Date	December 31, 2023
Actuarial Experience Study	3 Year Period Ending December 31, 2020
Actuarial Cost Method	Entry Age Actuarial Cost Method
Amortization Method	Level Percent of payroll
Investment Rate of Return	6.75%, net of pension plan investment expenses, including inflation.
Inflation Rate	2.50%
Administrative Expenses for December 31, 2023	1.17% of payroll allocated to both the employer and member based on the components of the Normal Cost rates for the employer and member.
Salary Increases	General 3.50% to 14.00% Safety 4.00% to 15.00% varying by service, including inflation
Cost-of-Living Adjustments	2.75% of retirement income for Tiers with 3% or 4% maximum COLA. 2.00% of retirement income for Tiers with 2% maximum COLA.
Other Assumptions	Same as those used in analysis of actuarial experience during the period January 1, 2018, through December 31, 2020.

Long-Term Expected Real Rate of Return

The long-term expected rate of return on plan investments was determined in 2023 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. This information is 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, adding expected inflation, and subtracting expected investment expenses and a risk margin. The Board approved target allocations and projected arithmetic real rates of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption for each major asset class, which are summarized in the table below.

Long-Term Expected Real Rate of Return

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return (Arithmetic)
Large Cap Equity	10.00%	5.40%
Small Cap Equity	3.00%	6.17%
Developed International Equity	10.00%	6.13%
Emerging Market Equity	9.00%	8.17%
Core Fixed	4.00%	0.39%
Short-Term Credit	14.00%	−0.14%
Cash & Equivalents	3.00%	−0.73%
Private Equity	15.00%	10.83%
Private Credit	13.00%	5.93%
Infrastructure	3.00%	6.30%
Value Add Real Estate	5.00%	7.20%
Opportunistic Real Estate	5.00%	8.50%
Risk Parity	3.00%	3.80%
Hedge Funds	3.00%	2.40%
Total	**100.00%**	**5.60%**

Discount Rate

The discount rate used to measure the total pension liability as of December 31, 2023, and December 31, 2022, was 6.75%. 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 plan member and employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the plan's 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 of 6.75% was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2023, and December 31, 2022.

The following table presents the net pension liability of participating employers calculated using the discount rate of 6.75% as of December 31, 2023, as well as what the 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.

Sensitivity of Net Pension Liability to Changes in the Discount Rate

As of December 31, 2023
(Dollars in Thousands)

	1% Decrease (5.75%)	Current Discount Rate (6.75%)	1% Increase (7.75%)
Net Pension Liability	$3,258,235	$1,595,084	$231,902

Note 7.
Other Post-Employment Benefits (OPEB) Liability/(Asset) and Section 115 Trust

GASB 74 and GASB 75 require CCCERA to report the total OPEB liability and net OPEB liability as calculated by its actuary, Milliman, Inc. GASB 74 and GASB 75 allows a biennial actuarial valuation referred to as a full valuation, and a roll-forward valuation for the subsequent fiscal years using the same census and demographic assumptions as of the last previous full valuation. A full valuation as of December 31, 2022, was adopted by the Board in March 2023 and a roll-forward valuation as of December 31, 2023, was adopted on March 27, 2024.

For the current year, the OPEB fiduciary net position as a percentage of the total OPEB liability was 108.1% as of December 31, 2023. The total OPEB liability, which is the responsibility of CCCERA as a single-employer defined benefit plan, is calculated apart from the pension plan liabilities and is presented solely for financial statement purposes.

In the 2018 year of inception, the Board adopted the OPEB actuarial valuation by Milliman and authorized the Chief Executive Officer (CEO) to establish an Irrevocable Trust agreement per IRS Code section 115 for the purpose of pre-funding OPEB obligations. The Board authorized the CEO to execute a contract with Public

Agency Retirement Services (PARS) for OPEB Trust fund management services, appointed the CEO as CCCERA plan administrator whose authority includes selection of an appropriate investment option offered by PARS.

In 2019, the Board adopted a funding policy to contribute to the OPEB Trust equal to the actuarial determined contribution (ADC) each year and changed the amortization period of the net OPEB liability from 30 years to ten years. For the current year's valuation, the ADC is defined as the annual service cost, plus an amount to amortize the net OPEB liability over ten years beginning 2018 (year of inception) on a level dollar basis, plus interest to account for the timing of contributions during the year.

Net OPEB Liability and Changes to Net OPEB Liability

The net OPEB liability is measured as the total OPEB liability less the amount of the OPEB Trust fiduciary net position. The net OPEB liability and schedule of changes in net OPEB liability and related ratios displays the components in conformity with GASB 74/75 for financial statement reporting purposes as of December 31, 2023, as follows:

Total OPEB Liability and Schedule of Changes in Net OPEB Liability and Related Ratios

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023	2022
Total OPEB Liability		
Service cost	$158	$211
Interest	295	368
Changes in benefit terms	-	-
Differences between actual and expected experience with regard to economic or demographic factors	-	(1,245)
Changes of assumptions	-	(169)
Benefit payments	(259)	(194)
Net Change in Total OPEB Liability	194	(1,029)
Total OPEB Liability—Beginning	4,506	5,535
Total OPEB Liability—Ending (a)	**$4,700**	**$4,506**
OPEB Trust Fiduciary Net Position		
Contributions from employer	$158	$268
Net Investment income (loss)	549	(797)
Administrative expenses	(208)	(156)
Net Change in OPEB Trust Fiduciary Net Position	499	(685)
OPEB Trust Fiduciary Net Position—Beginning	4,580	5,265
OPEB Trust Fiduciary Net Position—Ending (b)	**$5,079**	**$4,580**
Net OPEB Liability/(Asset) (a)−(b) = (c)	**$(379)**	**$(74)**
OPEB Trust Fiduciary Net Position as a Percentage of the Total OPEB Liability (b)/(a)	108.1%	101.6%
Covered Employer Payroll (d)	$7,239	$6,155
Net OPEB Liability/(Asset) as a Percentage of Covered Payroll (c)/(d)	−5.2%	−1.2%

Deferred (Inflows)/Outflows of Resources

Investment (gains)/losses are recognized in OPEB expense over a period of five years. Economic/demographic (gains)/losses and assumption changes or inputs are recognized over the average remaining service life for all active and inactive members.

OPEB Schedule of Deferred (Inflows)/Outflows of Resources

As of December 31, 2023
(Dollars in Thousands)

Asset Class	Deferred Inflows of Resources	Deferred Outflows of Resources
Differences between expected and actual experience	$(1,242)	$ -
Changes of assumptions	(311)	-
Net difference between projected and actual earnings	-	363
Contributions made subsequent to measurement date	-	-
Total	**$(1,553)**	**$363**

Fiscal Year Ending December 31	Recognized Deferred (Inflows) and Outflows of Resources
2024	$(168)
2025	(106)
2026	(85)
2027	(310)
2028	(220)
Thereafter	(301)

Key Methods and Assumptions Used In Actuarial Valuation of Total OPEB Liability

Valuation Date	January 1, 2023
Measurement Date	December 31, 2023
Valuation Type	Roll-Forward
Actuarial Cost Method	Entry Age Normal Cost
Amortization Method	Level dollar basis
Amortization Period	Ten years (Five years remaining as of December 31, 2023)
Asset Valuation Method	Fair value of assets
Investment Rate of Return	6.50%
Investment Rate	2.75%
Assumed Salary Increases	3.53% to 14.34% varying by years of service
Other Assumptions	Consistent with those used in the December 31, 2022, actual valuation for CCCERA pension plan

Contributions

As a single-employer defined benefit plan, CCCERA has adopted a policy to fully fund the ADC to the OPEB Trust each year as employer contribution which are not based on covered payroll to employees.

Schedule of Employer Contributions

For Years Ended December 31, 2018, through 2023
(Dollars in Thousands)

Fiscal Year	Actuarially Determined Contributions (a)	Contributions in Relation to the Actuarially Determined Contributions (b)	Contribution Deficiency/(Excess) (b)−(a)	Employer-Covered Payroll[1] (c)	Contributions as a Percentage of Covered Payroll (b) / (c)
2018	$536	$2,542	N/A	$4,997	50.9%
2019	536	828	N/A	5,385	15.4%
2020	268	536	N/A	5,910	9.1%
2021	257	268	N/A	6,329	4.2%
2022	158	268	N/A	6,155	4.4%
2023	168	158	N/A	7,239	2.2%

1 Employer-Covered payroll is informational only due to contributions are all funded by employer.

Investment Rate of Return

The assumed investment rate of return used was 6.50%, net of expenses. This is based on the investment policy set by CCCERA for the OPEB Trust managed by PARS, annual funding equal to the ADC, and assumes a 2.75% long-term inflation. The actual total portfolio performance rate of returns, net of investment expenses, since inception date of the OPEB Trust in 2018 is shown in the following table.

Schedule of Investment Returns

For Years Ended December 31, 2018, through 2023
(Dollars in Thousands)

	2023	2022	2021	2020	2019	2018
Total portfolio performance returns, net of investment expenses	12.50%	–14.82%	9.27%	13.12%	15.38%	0.01%

Discount Rate

Under GASB 74/75, the discount rate should be the single rate that reflects the long-term rate of return on OPEB plan investments that are expected to be used to finance the payment of benefits. To the extent that OPEB plan assets, along with expected future investment returns and expected future contributions are sufficient to finance all OPEB benefits, the discount rate should be based on the assumed investment on assets. CCCERA's current policy is to fund the Actuarial Determined Contribution each year. Based on CCCERA's funding policy, plan assets are projected to be sufficient to fund OPEB liabilities. Therefore, a discount rate of 6.50% and a 2.75% rate of long-term inflation was assumed. Based on the OPEB Trust portfolio's target allocation table below, the expected annual return of Trust assets over the next 30 years is expected to be 6.47%.

OPEB Trust Long-Term Expected Real Rate of Return

Asset Class	Expected Nominal Return	Current Asset Allocation
Cash	2.48%	1.0%
Core Fixed Income	4.06%	18.0%
Short-Term Fixed Income	3.20%	10.0%
U.S. Treasuries	2.96%	5.0%
Domestic Equity Large Cap	6.29%	23.0%
Domestic Equity Small Cap	7.02%	7.0%
International Developed Equity	7.38%	21.0%
International Emerging Market Equity	8.18%	12.0%
Real Estate	6.31%	3.0%
Total		**100%**
Expected annual return of Trust assets over next 30 years	6.47%	

Demographic Assumptions

A summary of the assumed rates for mortality, retirement, disability, and withdrawal, which are consistent with assumptions used in the December 31, 2022, CCCERA actuarial valuation is included in the *OPEB Key Methods and Assumptions* table in the Actuarial Section of this report on page 104.

Sensitivity of Net OPEB Liabilities

GASB 74/75 requires disclosure of the sensitivity of the Net OPEB Liability (NOL) to changes in the discount rate and health care cost trend rates. The liabilities shown below are based as of December 31, 2023. The following tables show what CCCERA's Net OPEB Liability would be if it were calculated using a rate that is one percentage point lower or one percentage point higher than the current discount rate and the current healthcare cost trend rate.

Sensitivity of Net OPEB Liability to Changes in the Discount Rate

As of December 31, 2023
(Dollars in Thousands)

	1% Decrease (5.50%)	Current Discount Rate (6.50%)	1% Increase (7.50%)
Net OPEB Liability/ (Asset)	$225	$(379)	$(882)

Sensitivity of Net OPEB Liability to Changes in the Healthcare Costs Trend Rate

As of December 31, 2023
(Dollars in Thousands)

	1% Decrease	Current Trend Rate	1% Increase
Net OPEB Liability/ (Asset)	$(981)	$(379)	$365

Note 8. Derivative Financial Instruments

A derivative is a security with a price that is dependent upon or derived from one or more underlying assets. As of December 31, 2023, the derivative instruments held by CCCERA are considered investments and not hedges for accounting purposes. The term hedging, as it is used elsewhere in the notes to these financial statements, denotes an economic activity and not an accounting method. The gains and losses from this activity are recognized as incurred in the *Statement of Changes in Fiduciary Net Position*.

CCCERA currently employs external investment managers to manage its assets as permitted by the California Government Code and CCCERA's investment policy and specific managers hold investments in swaps, options, futures, forward settlement contracts, and warrants and enter into forward foreign currency exchange security contracts within fixed income financial instruments. The fair value of options, futures, and warrants is determined based upon quoted market prices. The fair value of derivative investments that are not exchange traded, such as swaps, and TBAs (To Be Announced) is determined by an external pricing service using various proprietary methods, based upon the type of derivative instrument. Futures contracts are marked to market at the end of each trading day, and the settlement of gains or losses occur on the following business day through variation margins. The fair value of international currency forwards represents the unrealized gain or loss on the related contracts, which is calculated as the difference between the specified contract exchange rate and the exchange rate at the end of the reporting period.

Forward foreign currency exchange contracts are used primarily to hedge against changes in exchange rates related to foreign securities. Due to the level of risk associated with certain derivative investment securities, it is conceivable that changes in the values of investment securities will occur in the near term, and such changes could affect the amounts reported in the financial statements.

CCCERA could be exposed to risk if the counterparties to contracts are unable to meet the terms of the contracts. CCCERA's investment managers seek to control this risk through counterparty credit evaluations and approvals, counterparty credit limits, and exposure monitoring procedures. CCCERA anticipates that the counterparties will be able to satisfy their obligations under the contracts. The table below is a summary of derivative instruments as of December 31, 2023, with the net appreciation/(depreciation) that has occurred during the year.

Valuation methods are more fully described in *Note 2, Summary of Significant Accounting Policies*, to the basic financial statements. CCCERA's derivative instruments that are not exchange traded, including any swaps, are valued using methods employed for debt securities. CCCERA's investment policy does not require collateral to be held for derivative investments.

Futures contracts are instruments that derive their value from underlying indices or reference rates and are

Investment Derivatives

As of December 31, 2023
(Dollars in Thousands)

Investment Derivatives by Type	Net Appreciation/ (Depreciation) in Fair Value	Classifications	Fair Value	Notional Amount
Interest Rate Contracts—Futures	$(25)	Futures	$ -	4,343
Interest Rate Contracts—Options	(200)	Options	82	
Forward Foreign Exchange Contracts	59	Forwards	(448)	
Equity Contracts—Futures	13,427	Futures	-	69,657
Equity Contracts—Options	(3,178)	Options	215	
Equity Contracts—Rights/Warrants	45	Rights/Warrants	-	
TOTAL	**$10,128**		**$(151)**	

marked to market daily. Settlement of gains or losses occur the following business day. As a result, those instruments and other similar instruments do not have a fair value at December 31, 2023, or any other trading day. Daily settlement of gains and losses enhances internal controls as it limits counterparty credit risk. Futures variation margin accounts are also settled daily and recognized in the financial statements under net appreciation/(depreciation) in fair value as they are incurred.

Foreign currency contracts are obligations to buy or sell a currency at a contractual exchange rate and quantity on a specific date in the future. The fair value of the foreign currency forwards is the unrealized gain or loss calculated as the difference between the contractual exchange rate and the closing exchange rate as of December 31, 2023.

Counterparty Credit Risk

Credit risk of cash securities containing derivative features is based upon the creditworthiness of the issuers of such securities. It includes the risk that counterparties to contracts will not perform and/or the public exchange will not meet its obligation to assume the counterparty risk. Exchange traded derivatives are generally considered to be of lower credit risk than over-the-counter derivatives due to the exchange's margin requirements.

The following Credit Risk Analysis table discloses the counterparty credit ratings of CCCERA's derivative investments as of December 31, 2023:

Credit Risk Analysis

As of December 31, 2023
(Dollars in Thousands)

	S&P Credit Rating		
Derivative Type	Not Available or Not Rated	Exchange Traded	Total Fair Value
Assets			
Options—Equity Contracts	$ -	$215	$215
Options—Interest Rate Contracts	-	82	82
Liabilities			
Forwards—Foreign Exchange Contracts	(448)	-	(448)
TOTAL	**$(448)**	**$297**	**$(151)**

Custodial Credit Risk

The custodial credit risk for exchange traded derivative instruments is made in accordance with custodial credit risk disclosure requirements outlined in Generally Accepted Accounting Principles (GAAP). As of December 31, 2023, all of CCCERA's investments are held in CCCERA's name and are not subject to custodial credit risk.

Interest Rate Risk-Derivatives

CCCERA's investment in interest rate contracts are highly sensitive to changes in interest rates. CCCERA measures interest rate risk using duration with varying maturities of less than three months to more than ten years. The investment maturity of $(108) thousands of investments in derivatives is three to six months, and the investment maturity of $(43) thousands of investments in derivatives is three months or less.

Foreign Currency Risk-Derivatives

CCCERA is exposed to foreign currency risk on its various investments denominated in foreign currencies. Currency forward contracts are derivatives and generally serve to hedge or offset the impact of foreign currency exchange rate fluctuations. CCCERA does not have a formal policy on foreign currency risk.

Note 9. Contributions

Participating employers and active plan members are required to contribute a percentage of covered salary to the plan. This requirement is pursuant to Government Code Sections 31453.5, 31454 and 7522.52, for participating employers, and Government Code Sections 31621.6, 31639.25 and 7522.30 for active plan members. The contribution requirements are established and may be amended by the Board pursuant to Article 1 of CERL, which is consistent with the plan's actuarial funding policy. The contribution rates are adopted yearly, based on an annual actuarial valuation, conducted by an independent actuary, that considers the mortality, service (including age at entry into the plan, if applicable, and tier), and compensation experience of the members and beneficiaries, and also includes an evaluation of the plan's assets and liabilities. Participating employers may pay a portion of the active plan members' contributions through negotiations and bargaining agreements subject to restrictions in CERL and PEPRA.

Employers are required to contribute at an actuarially determined rate calculated on the alternate funding method permitted by Government Code Section 31453.5. Pursuant to provisions of CERL, the Retirement Board recommends annual contribution rates for approval by the Board of Supervisors. These contribution rates are determined in accordance with the plan's actuarial funding policy, which has the following goals:

1. To determine future contributions that, together with current plan assets, are expected to be sufficient to provide for all benefits provided by CCCERA;
2. To seek reasonable and equitable allocation of the cost of benefits over time including the goal that annual contributions should, to the extent reasonably possible, maintain a close relationship to both the expected cost of each year of service and to variations around that expected cost;
3. To manage and control future contribution volatility to the extent reasonably possible, consistent with other policy goals; and,
4. To support the general public policy goals of accountability and transparency by being clear as to both intent and effect, allowing for an assessment of whether, how and when the plan sponsors will meet the funding requirements of the plan.

The "Entry Age" method is used to determine the normal cost and the Actuarial Accrued Liability (AAL). Under this method, the employer contribution rate provides for current cost (normal cost) plus a level percentage of payroll to amortize the Unfunded Actuarial Accrued Liability (UAAL). Normal cost under the Entry Age method is 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 benefit if all underlying assumptions are met. The UAAL is the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets.

The rates for Legacy members (those subject to a benefit formula in CERL) are set to provide a retirement benefit equal to a fractional portion of the highest year(s) salary, based on membership and tier. The rates for PEPRA members (new members on or after January 1, 2013) are equal to one-half the normal cost of their defined benefit plan.

The recommended average member contribution rate for CCCERA members is 12.18% of annual covered salary, based on the most recent valuation. Certain Safety members contribute an additional percent of base pay towards the employer's increase in cost of the enhanced (3% at 50) safety benefit. Certain Safety members at Moraga-Orinda Fire District contribute 9% of base pay pursuant to a Memorandum of Understanding. Certain San Ramon Valley Fire Protection District Safety members contribute 8% of base pay. Member contributions are refundable upon termination of employment.

As of December 31, 2023, the County of Contra Costa and six other CCCERA participating employers subsidize some portion of the employee basic retirement contribution for at least some employees.

During the year ended December 31, 2023, contributions totaled approximately $505.3 million which included $373.2 million in employer contributions and $132.1 million in plan member contributions. The contribution figures also include plan member and employer purchase, redeposit, and conversion amounts.

Government Code Section 31582(b) allows the Board of Supervisors to authorize the County auditor to make an advance payment of all or part of the County's estimated annual contribution to the retirement fund, provided that the payment is made no later than 30 days after the beginning of the County's fiscal year. If the advance is only a partial payment of the County's estimated annual contribution, remaining transfers will be done monthly or at the end of each pay period until the total amount required for the year is contributed.

Government Code Section 31582(b) was amended in July 17, 2017, with Senate Bill 671 approved by the Governor, to also allow the Board of Supervisors to authorize the County auditor to make a second advance payment for an additional year or partial year of contributions, provided that the payment is made no later than 30 days after the beginning of the County's fiscal year.

Government Code Section 31585(c) allows governing bodies of employer districts authorization for the same appropriations and transfers for all, part, or second additional annual advance payments. The County of Contra Costa and nine other participating employer districts "prepay" or make advance payments of all of the employer's estimated annual contributions discounted by the assumed interest rate in effect on July 1. At the end of the fiscal year, a "true-up" is completed and employers are either billed for an underpayment or apply their overpayment towards the following year contributions.

Ten-year historical trend information, designed to provide information about CCCERA's progress in accumulating sufficient assets to pay benefits when due, is presented in the Actuarial Section of this report on page 87.

Methods and Assumptions Used to Establish Actuarially Determined Contribution Rates

Actuarial Funding Policy	
Valuation Date	Actuarially determined contribution rates are calculated as of December 31, two and a half years prior to the end of the fiscal year in which contributions are reported.
Actuarial Cost Method	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. 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.
Amortization Policy	The UAAL (i.e., the difference between the AAL and the Valuation Value of Assets) as of December 31, 2014 will continue to be amortized over separate amortization layers based on the valuations during which each separate layer was previously established. • Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years. • Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years. Unless the Board adopts an alternative amortization period after receiving an actuarial analysis: The increase in UAAL due to plan amendments (with the exception of a change due to temporary retirement incentives) will be amortized over a period of ten years. The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive.
Actuarial Value of Assets	Fair value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the fair value, and are recognized semi-annually over a five-year period.
Valuation Value of Assets	The Actuarial Value of Assets reduced by the value of non-valuation reserves and designations.
Actuarial Assumptions	
Investment Rate of Return	6.75%, net of pension plan investment expenses, including inflation
Administrative Expenses for December 31, 2022, Valuation	1.13% of payroll allocated to both the employer and plan member based on normal cost (before expenses) for the employer and plan member.
Payroll Growth	Inflation of 2.50% per year plus "across the board" real salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Inflation Rate	Increases of 2.50% per year.
Cost-of-Living Adjustments (COLA)	Increases of 2.75% per year. Benefits for General Tier 1, Tier 3 (non-disability), Tier 4 and Tier 5 (non-disability) and Safety Tier A and Tier D are subject to a 3.00% maximum COLA increase due to CPI per year (valued as a 2.75% increase). Benefits for General Tier 2, Tier 3 (disability) and Tier 5 (disability) are subject to a 4.00% maximum change per year (valued as a 2.75% increase). Benefits for General Tier 4 and Tier 5 members covered under certain memoranda of understanding and Safety Tier C and Tier E are subject to a 2.00% maximum change per year (valued as a 2.00% increase). For members that have COLA banks, they are reflected in projected future COLAs. The actual COLA granted by CCCERA on April 1, 2023, has been reflected for non-active members in the December 31, 2022, valuation.
Other Assumptions	Same as those used in the December 31, 2022, funding actuarial valuation.

CERL requires an actuarial valuation be performed at least every three years for the purpose of measuring the plan's funding progress and setting contribution rates. CCCERA exceeds this requirement by engaging an independent actuarial consulting firm to perform an actuarial valuation for the pension plan annually. The purpose of the valuation is to evaluate the assets and liabilities of the plan and determine necessary changes in employer and plan member contribution rates. The actuarial assumptions and methods have been selected in order to help ensure the systematic funding of future benefit payments for CCCERA members, and to maintain equity among generations of participants and taxpayers.

Actuarial standards guide the frequency to which an experience study is performed. CCCERA engages an independent actuarial consulting firm to perform the experience study at least every three years. The economic and demographic assumptions are reviewed and updated as required each time an experience study is performed. If assumptions are modified as a result of the experience study, employer and plan member contribution requirements are adjusted to take into account the change in the projected experience of the plan.

The actuarial assumptions used to determine the latest actuarial valuation as of December 31, 2022, are based on the results of the three-year actuarial experience study for the three-year period January 1, 2018, through December 31, 2020, which was adopted by CCCERA's Board on April 13, 2022.

The latest actuarial valuation as of December 31, 2022, discloses the actuarial value of assets at $10.8 billion with an actuarial accrued liability of $11.9 billion for a funded ratio of 91.2%. The UAAL is $1.0 billion, which is 97.8% of the $1.1 billion projected covered payroll. A schedule of CCCERA's funding progress may be found in the Actuarial Section on page 87. The schedule of funding progress presents multi-year trend information about whether the actuarial value of plan assets is increasing or decreasing relative to the actuarial accrued liability for benefits over time. Additional information regarding the actuarial policies, methods and assumptions used as of the latest actuarial valuation of plan assets and liabilities is shown on the previous page.

OPEB Contributions

On January 23, 2019, the Board adopted a funding policy for CCCERA, as a single-employer defined benefit plan, to contribute to the OPEB Trust equal to the actuarially determined contribution (ADC) each year. The latest OPEB valuation as of December 31, 2023, defined the ADC as the annual service cost, plus an amount to amortize the net OPEB liability over ten years from 2018 year of inception, on a level dollar basis, plus interest to account for the timing of contributions during the year. The table below details the ADC used as of December 31, 2023:

OPEB Actuarially Determined Contribution (ADC)

As of December 31, 2023
(Dollars in Thousands)

	2023
Service Cost as of January 1, 2023	$158
Amortization of net OPEB liability as of December 31, 2023	-
Interest to January 1, 2024	10
ADC as of January 1, 2024	**$168**

Note 10. Reserves and Designations

All employer and plan member contributions are allocated to various reserve accounts based on the recommendation of the plan's actuary, as approved by the Board and, where applicable, as required by CERL. CCCERA currently does not set aside a separate reserve for purposes of benefit increases or reduced employer contributions. Reserves are established from employer and plan member contributions and the accumulations of investment income after satisfying investment and administrative expenses. The reserves do not represent the present value of assets needed, as determined by actuarial valuation, to satisfy retirements and other benefits as they become due. Following are brief explanations of the major classes of reserves and designations used by CCCERA:

Member Deposits Reserve represents the balance of members' accumulated contributions. Additions include member contributions and credited interest; deductions include refunds of member contributions and transfers to Retired Member Reserve upon retirement.

Employer Advance Reserve represents the balance of employer contributions for future retirement payments to current active members. Additions include contributions from the employer and related earnings; deductions include transfers to Retired Member Reserve, lump sum death benefits, and supplemental disability payments under legislated rehabilitation programs.

Retired Member Reserve represents transfers of accumulated contributions of members who have retired, employer contributions needed to fund retired member benefits as determined by the actuary, and credited interest less payments to retired members.

Contra Tracking Account represents the amount of interest credited to the reserve accounts that has not been paid for out of current or excess earnings. A balance in this account is the result of applying the full interest crediting policy of the Board and will be reduced to zero before replenishing the Contingency Reserve or allocating earnings to any discretionary uses.

Post Retirement Death Benefit Reserve represents the balance of transfers from excess earnings and related earnings, less lump sum death benefit payments to the beneficiaries of retirees.

Reserves and Designated Fiduciary Net Position

As of December 31, 2023, and 2022
(Dollars in Thousands)

	2023		2022	
	Pension Plan	OPEB Trust	Pension Plan	OPEB Trust
Valuation Reserves				
Member Deposits Reserve				
Basic	$1,144,000	$ -	$1,077,188	$ -
Cost-of-Living	559,479	-	537,733	-
Member Deposits—Contra Tracking Account	(326,524)	-	(290,624)	-
Employer Advance Reserve				
Basic	3,523,102	-	2,957,524	-
Cost-of-Living	1,765,729	-	705,911	-
Employer Advance—Contra Tracking Account	(1,337,067)	-	(1,225,995)	-
Retired Member Reserve				
Basic	4,266,600	-	4,396,244	-
Cost-of-Living	3,159,993	-	3,939,921	-
Retired Member Cost-of-Living Supplement	(2,335)	-	(1,796)	-
Retired Member—Contra Tracking Account	(1,423,476)	-	(1,228,665)	-
Total Valuation Reserves	**11,329,501**	**-**	**10,867,441**	**-**
Supplemental Reserves				
Post Retirement Death Benefit Reserve	17,349	-	16,996	-
Post Retirement Death—Contra Tracking Account	(6,025)	-	(5,619)	-
Other Reserves/Designations				
Contingency Reserve (one percent)	-	-	-	-
Total Allocated Reserves/Designations	**11,340,825**	**-**	**10,878,818**	**-**
Total Deferred Return	**(531,967)**	**-**	**(825,149)**	**-**
OPEB Trust	**-**	**5,079**	**-**	**4,580**
Net Position—Restricted for Pensions	**$10,808,858**	**$5,079**	**$10,053,669**	**$4,580**

Contingency Reserve represents reserves accumulated for future earnings deficiencies, investment losses and other contingencies. Additions include investment income and other revenues. Deductions include investment expenses, administrative expenses, interest allocated to other reserves, funding of Supplemental COLA, and transfers of excess earnings to other Reserves and other Designations. The Contingency Reserve is used to satisfy the California Government Code requirement that CCCERA reserve one percent of its assets against deficiencies in interest earnings in other years, losses on investments, and other contingencies. As of December 31, 2003, the Contingency Reserve was completely used to pay interest to the reserve accounts. This account will be replenished in subsequent periods when there are sufficient earnings according to the interest crediting policy for CCCERA.

Total Deferred Return represents the unrecognized return after smoothing of investment gains and losses based on a five-year smoothing method. This method smooths only the semi-annual deviation of total market return (net of expenses) from the actuarial assumption, currently 6.75 percent per annum.

Reserves and designated fiduciary net position as of December 31, 2023, and 2022, are shown on the previous page.

Note 11. Paulson Lawsuit Settlement

During the year ended December 31, 1999, CCCERA settled its litigation, entitled *Vernon D. Paulson, et al. vs. Board of Retirement of the Contra Costa County Employees' Retirement Association, et a*l. The lawsuit was brought on behalf of a class of retired members of CCCERA regarding the inclusions and the exclusions from "final" compensation that are used in calculating members' retirement benefits. A settlement agreement was entered into with all parties and each employer invoiced for their share of the $34.2 million additional liability plus interest up to the date of the payment. All employers except the County of Contra Costa have paid off their liability. The County of Contra Costa chose to pay its share of the liability due over 19.5 years and entered into an agreement with CCCERA. The following summary lists the pertinent details of the County's agreement plus the amounts due at December 31, 2023.

Installment Payments Due from Paulson Final Liability

(Dollars in Thousands)

Agreement Details	County of Contra Costa
Effective Date of Agreement	December 16, 2003
First Payment Due	August 1, 2004
Last Payment Due	February 1, 2024
Rate of Interest	8%
Annual Principal and Interest Payment	$2,760
Original Principal	$28,065
Receivable at December 31, 2023	
Future Principal Payments	$1,302
Interest Accrued for 2023	44
	$1,346

Note 12. Litigation, Commitments, and Contingencies

CCCERA is subject to legal proceedings and claims arising in the ordinary course of its operations. No new lawsuits were filed in 2023. CCCERA's management and legal counsel estimate that the ultimate outcome of such litigation will not have a material effect on CCCERA's financial statements.

As of December 31, 2023, CCCERA was committed to funding future investments in real estate of $568.1 million and $1,222.6 million in alternative investments.

Note 13. Administrative Expenses

The Board of Retirement annually adopts at the end of the preceding fiscal year, the current year operating budget for the administration of CCCERA. The administrative expenses are charged against the earnings of the Plan.

California Government Code Section 31580.2(a) states that the annual budget for administrative expenses of a CERL retirement system may not exceed the greater of either of the following:

1. Twenty-one hundredths of one percent (0.21 percent) of the actuarial accrued liability (AAL) of the retirement system or,
2. $2,000,000 as adjusted annually by the amount of the annual cost-of-living adjustment computed in accordance with Article 16.5 (commencing with Section 31870).

CCCERA has adopted the provisions of CERL which allows CCCERA to exclude actuarial, investment, legal, and disaster recovery costs from administrative expenses subject to the budget limits described above. Therefore, actuarial and investment costs are offset against investment income, and legal and disaster recovery costs are all reported on the *Statement of Changes in Fiduciary Net Position* as other expense.

The Board approved the administrative budget for fiscal year 2023 in December 2022, and a budget amendment in January 2023, which was prepared based upon the twenty-one hundredths of one percent (0.21 percent) of the AAL of CCCERA.

The following budget-to-actual analysis of administrative expenses as of December 31, 2023, and December 31, 2022, is based upon the budgets as approved by the CCCERA Board in comparison to actual administrative expenses:

Note 14. Subsequent Events

In compliance with governmental accounting standards generally accepted in the United States of America, management has evaluated subsequent events through June 12, 2024, which is the date the financial statements were available to be issued. The purpose of the evaluation is to determine if these events are required to be disclosed in these financial statements.

CCCERA did not have any other events requiring recording or disclosure in the financial statements for the year ended December 31, 2023.

Budget-to-Actual Analysis of Pension Plan Administrative Expense

As of December 31, 2023, and 2022

(Dollars in Thousands)

	2023	2022
Basis for Budget Limitation, Actuarial Accrued Liability (AAL)[1]	$11,912,229	$11,288,973
Maximum Allowable for Administrative Expenses (AAL × 0.21%)	25,016	23,707
Approved Administrative Budget	$14,304	$13,128
Actual Administrative Expenses	(12,840)	(11,538)
Actual Expenses (over) under Administrative Budget	**$1,464**	**$1,590**
Actual Administrative Expenses	$12,840	$11,538
Actuarial Accrued Liability (AAL)	11,912,229	11,288,973
Actual Administrative Expenses as a Percentage of AAL	**0.11%**	**0.10%**
Statutory Limit Allowable For Administrative Expenses per CERL		0.21%

1 The most recent AAL, as determined by CCCERA's actuary in each year's valuation, is used to calculate the statutory limit for administrative expenses. For example, the AAL as of December 31, 2022, valuation was approved by the Board in August 2023, and is used to establish the statutory limit for budgeted administrative expenses for the year ended December 31, 2023.

Required Supplementary Information

The schedule of changes in net pension liability/(asset) and related ratios displays the components of the total pension liability and plan fiduciary net position for the pension plan, calculated in conformity with the requirements of GASB 67. Covered payroll represents payroll on which contributions to the pension plan are based.

Schedule of Changes in the Net Pension Liability/(Asset) and Related Ratios

For the Years Ended December 31, 2014, through 2023
(Dollars in Thousands)

	2023	2022	2021	2020	2019
Total Pension Liability					
Service cost	$275,825	$262,621	$251,753	$238,569	$231,469
Interest	791,479	754,962	735,972	707,427	678,035
Changes of benefit terms	-	-	-	-	-
Differences between expected and actual experience	189,108	101,291	6,602	(10,633)	119,869
Changes of assumptions or other inputs	-	-	223,911	(17,638)	-
Benefit payments, including refunds of member contributions	(604,537)	(577,619)	(539,112)	(507,135)	(486,305)
Net Change in Total Pension Liability	**651,875**	**541,255**	**679,126**	**410,590**	**543,068**
Total Pension Liability—Beginning	11,752,067	11,210,812	10,531,688	10,121,098	9,578,030
Total Pension Liability—Ending (a)	**$12,403,942**	**$11,752,067**	**$11,210,814**	**$10,531,688**	**$10,121,098**
Plan Fiduciary Net Position					
Contributions—employer[1]	$373,148	$352,384	$410,760	$336,357	$327,983
Contributions—plan members[1]	132,104	122,304	117,017	113,494	108,488
Net investment income (loss), including prepayment discount	868,251	(1,281,908)	1,407,344	882,394	1,168,171
Benefit payments, including refunds of member contributions	(604,538)	(577,619)	(539,113)	(507,135)	(486,305)
Administrative expense	(12,840)	(11,538)	(11,237)	(10,750)	(10,200)
Other expenses	(936)	(3,720)	(1,243)	(1,135)	(1,110)
Net Change in Plan Fiduciary Net Position	755,189	(1,400,097)	1,383,528	813,225	1,107,027
Plan Fiduciary Net Position—Beginning	10,053,669	11,453,766	10,070,238	9,257,013	8,149,986
Plan Fiduciary Net Position—Ending (b)	**$10,808,858**	**$10,053,669**	**$11,453,766**	**$10,070,238**	**$9,257,013**
Net Pension Liability/(Asset) (a)−(b) = (c)	**$1,595,084**	**$1,698,398**	**$(242,952)**	**$461,450**	**$864,085**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (b)/(a)	87.1%	85.5%	102.2%	95.6%	91.5%
Covered Payroll (d)	$1,093,973	$1,023,663	$976,332	$943,422	$892,379
Net Pension Liability/(Asset) as a Percentage of Covered Payroll (c)/(d)	145.8%	165.9%	−24.9%	48.9%	96.8%

1 In accordance with GASB Statement No. 82, starting with the year ended December 31, 2016, employer-paid member contributions (employer subvention) are classified as plan member contributions. Vice versa, plan member-paid employer contributions (reverse subvention) are classified as employer contributions.

(continues)

Schedule of Changes in the Net Pension Liability/(Asset) and Related Ratios *(continued)*

For the Years Ended December 31, 2014, through 2023
(Dollars in Thousands)

	2018	2017	2016	2015	2014
Total Pension Liability					
Service cost	$229,098	$212,257	$202,697	$192,923	$192,257
Interest	647,734	616,273	591,972	582,343	561,216
Changes of benefit terms	-	-	-	-	-
Differences between expected and actual experience	52,853	(29,192)	(19,957)	(62,118)	(183,605)
Changes of assumptions or other inputs	(92,419)	-	-	72,186	(76)
Benefit payments, including refunds of member contributions	(461,254)	(436,295)	(419,446)	(406,236)	(394,948)
Net Change in Total Pension Liability	376,012	363,043	355,266	379,098	174,844
Total Pension Liability—Beginning	9,202,018	8,838,975	8,483,709	8,104,611	7,929,767
Total Pension Liability—Ending (a)	$9,578,030	$9,202,018	$8,838,975	$8,483,709	$8,104,611
Plan Fiduciary Net Position					
Contributions—employer[1]	$325,117	$314,836	$307,909	$323,720	$293,760
Contributions—plan members[1]	103,541	96,467	88,788	85,360	78,258
Net investment income (loss), including prepayment discount	(195,031)	987,416	493,874	73,611	480,502
Benefit payments, including refunds of member contributions	(461,254)	(436,295)	(419,446)	(406,236)	(394,948)
Administrative expense	(9,337)	(9,146)	(8,486)	(8,115)	(6,980)
Other expenses	(3,631)	(1,217)	(701)	(668)	-
Net Change in Plan Fiduciary Net Position	(240,595)	952,061	461,938	67,672	450,592
Plan Fiduciary Net Position—Beginning	8,390,581	7,438,520	6,976,582	6,908,910	6,458,318
Plan Fiduciary Net Position—Ending (b)	$8,149,986	$8,390,581	$7,438,520	$6,976,582	$6,908,910
Net Pension Liability/(Asset) (a)−(b) = (c)	$1,428,044	$811,437	$1,400,455	$1,507,127	$1,195,701
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (b)/(a)	85.1%	91.2%	84.2%	82.2%	85.3%
Covered Payroll (d)	$850,929	$809,960	$755,139	$709,819	$671,486
Net Pension Liability/(Asset) as a Percentage of Covered Payroll (c)/(d)	167.8%	100.2%	185.5%	212.3%	178.1%

1 In accordance with GASB Statement No. 82, starting with the year ended December 31, 2016, employer-paid member contributions (employer subvention) are classified as plan member contributions. Vice versa, plan member-paid employer contributions (reverse subvention) are classified as employer contributions.

Schedule of Employer Contributions

For Years Ended December 31, 2014, through 2023
(Dollars in Thousands)

	Actuarially Determined Contributions (a)	Contributions in Relation to the Actuarially Determined Contributions (b)[1]	Contribution Deficiency/(Excess) (b)−(a)	Covered Payroll[2] (c)	Contributions as a Percentage of Covered Payroll (b) / (c)
2014	$288,760	$288,760 [3]	$ -	$671,486	43.00%
2015	321,220	321,220 [4]	-	709,819	45.25%
2016	307,909	307,909	-	755,139	40.78%
2017	314,512	314,512 [5]	-	809,960	38.83%
2018	324,863	324,863 [6]	-	850,929	38.18%
2019	326,717	326,717 [7]	-	892,379	36.61%
2020	336,067	336,067 [8]	-	943,422	35.62%
2021	339,703	339,703 [9]	-	976,332	34.79%
2022	348,760	348,760 [10]	-	1,023,663	34.07%
2023	372,770	372,770 [11]	-	1,093,973	34.07%

1 Starting with the year ended December 31, 2016, includes “member subvention of employer contributions” and excludes “employer subvention of member contributions”. Prior to that year, the contributions excluded “member subvention of employer contributions” and included “employer subvention of member contributions”.

2 Covered payroll represents payroll on which contributions to the pension plan are based.

3 Excludes additional contributions towards UAAL of $5,000,000.

4 Excludes additional contributions towards UAAL of $2,500,000.

5 Excludes additional contributions towards UAAL of $324,000.

6 Excludes additional contributions towards UAAL of $254,000.

7 Excludes additional contributions towards UAAL of $1,266,000.

8 Excludes additional contributions towards UAAL of $290,000.

9 Excludes additional contributions towards UAAL of $71,056,669.

10 Excludes additional contributions towards UAAL of $3,623,437.

11 Excludes additional contributions towards UAAL of $378,015.

Schedule of Investment Returns

For Years Ended December 31, 2014, through 2023

The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the timing of cash flows and the changing amounts actually invested.

	Annual Money-Weighted Rate of Return, Net of Investment Expense
2014	7.51%
2015	1.19%
2016	7.10%
2017	13.23%
2018	−2.18%
2019	14.26%
2020	9.50%
2021	13.90%
2022	−11.02%
2023	8.70%

Notes to the Required Supplementary Information

Note 1.
Schedule of Changes in Net Pension Liability/(Asset) and Related Ratios

The total pension liability contained in this schedule was provided by the plan's actuary, Segal Consulting. The net pension liability/(asset) is measured as the total pension liability less the amount of the fiduciary net position of the plan.

Note 2.
Schedule of Employer Contributions

The required employer contributions and percent of those contributions actually made are presented in this schedule. Actuarial assumptions used for this schedule are presented in the following table.

Additional Actuarial Information for 2023

	Methods and Assumptions Used to Establish Actuarially Determined Contribution Rates
Valuation Date	Actuarially determined contribution rates are calculated as of December 31, two and a half years prior to the end of the fiscal year in which contributions are reported.
Actuarial Cost Method	Entry Age Actuarial Cost Method
Amortization Method	Level Percent of Payroll
Remaining Amortization Period	Remaining balance of December 31, 2007, UAAL is amortized over a fixed (decreasing or closed) period with two years remaining as of December 31, 2020, and one year remaining as of December 31, 2021. Any changes in UAAL after December 31, 2007, will be separately amortized over a fixed 18-year period effective with that valuation. Effective December 31, 2013, any changes in UAAL due to plan amendments (with the exception of a change due to retirement incentives) will be amortized over a ten-year fixed period effective with that valuation. The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive.
Asset Valuation Method	Fair value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the valuation value of assets, and is recognized semi-annually over a five-year period. The valuation value of assets is the actuarial value of assets reduced by the value of the non-valuation reserves and designations.

	Actuarial Assumptions	
Valuation Date[1]	December 31, 2021, Valuation Date	December 31, 2020, Valuation Date
Investment Rate of Return	6.75%, net of pension plan investment expenses, including inflation	7.00%, net of pension plan investment expenses, including inflation
Inflation Rate	2.50%	2.75%
Administrative Expenses	1.15% of payroll allocated to both the employer and member based on the components of the Normal Cost rates for the employer and member	1.14% of payroll allocated to both the employer and member based on the components of the Normal Cost rates for the employer and member
Real Across-the-Board Salary Increases	0.50%	0.50%
Projected Salary Increases[2]	General 3.50% to 14.00% Safety 4.00% to 15.00%	General 3.75% to 15.25% Safety 4.25% to 16.25%
Cost-of-Living Adjustments (COLA)	2.75% for Tiers with 3% or 4% maximum COLA. 2.00% for Tiers with 2% maximum COLA.	2.75% for Tiers with 3% or 4% maximum COLA. 2.00% for Tiers with 2% maximum COLA.
Other Assumptions	Same as those that will be used in the December 31, 2021, funding actuarial valuation.	Same as those that will be used in the December 31, 2020, funding actuarial valuation.

1 Actuarially determined contribution rates for the first six months of calendar year 2023 (or the second half of fiscal year 2022–2023) are calculated based on the December 31, 2020, valuation. Actuarially determined contribution rates for the last six months of calendar year 2023 (or the first half of fiscal year 2023–2024) are calculated based on the December 31, 2021, valuation.

2 For December 31, 2021, and December 31, 2020, valuation dates, includes inflation of 2.75% plus real across-the-board salary increases of 0.50% plus merit and promotion increases that vary by service.

The information presented in the required supplementary schedules was determined from the GASB 67 actuarial valuation as of December 31, 2023, provided by the plan's actuary. The GASB 67 actuarial valuation, which is separate from the actuarial funding valuation, contains information necessary for CCCERA to properly report pension plan results in the ACFR. Additional information relating to the actuarial funding valuation as of December 31, 2022, is in the Actuarial Section.

CCCERA implemented GASB Statement No. 82, *Pension Issues, an Amendment of GASB Statements No. 67, No. 68, and No. 73*, during the fiscal year ended December 31, 2017. GASB 82 was issued to address the definition of payroll-related measures such as using covered payroll instead of covered-employee payroll; the selection of assumptions used to determine total pension liability and related measures; and classification of payments made by employers to satisfy employee contribution requirements.

Other Supplementary Information

Schedule of Administrative Expenses

For the Years Ended December 31, 2023, and 2022 (with Comparative Totals)
(Dollars in Thousands)

	2023		2022	
	Pension Plan	OPEB Trust	Pension Plan	OPEB Trust
Personnel Services				
Salaries and Wages	$6,034	$ -	$5,259	$ -
Employee Benefits and Retirement	3,820	208	3,352	156
Total Personnel Services	9,854	208	8,611	156
Operational Expenses				
Professional Services				
Audit Services	52	-	66	-
Actuary—Benefit Statements	81	-	88	-
Disability Hearing/Medical Reviews	36	-	51	-
Other Professional Services	73	-	90	-
Total Professional Services	242	-	295	-
Office Expenses				
Office Lease	541	-	504	-
Telephone & Internet Services	103	-	81	-
Equipment Lease & Maintenance	18	-	20	-
Furniture & Equipment	-	-	-	-
Office Supplies & Maintenance	70	-	66	-
Printing & Postage	207	-	205	-
Training & Education	96	-	85	-
Travel & Transportation	82	-	51	-
Insurance	340	-	323	-
Total Office Expenses	1,457	-	1,335	-
Information Technology (IT) Systems				
Support Service & Software Contracts	481	-	466	-
Hardware & Equipment Maintenance	48	-	28	-
Project Consulting	564	-	593	-
Total IT Systems	1,093	-	1,087	-
Assets Depreciation/Amortization	194	-	210	-
Total Administrative Expenses	**$12,840**	**$208**	**$11,538**	**$156**

Schedule of Investment Expenses

For the Years Ended December 31, 2023, and 2022 (with Comparative Totals)
(Dollars in Thousands)

	2023		2022	
	Pension Plan	OPEB Trust	Pension Plan	OPEB Trust
Investment Management Fees				
Equities Managers				
Domestic Equity	$4,032	$ -	$4,206	$ -
Global & International Equity	3,444	-	3,239	-
Real Estate – REIT	503	-	667	-
Risk Diversifying	167	-	168	-
Public Market Commingled Funds	7,961	18	8,374	17
Total Equities Managers	**16,107**	**18**	**16,654**	**17**
Fixed Income Managers				
Liquidity Program	1,595	-	1,795	-
Held in Equity Portfolios	31	-	43	-
High Yield	619	-	648	-
Risk Diversifying	962	-	661	-
Public Market Commingled Funds	724	11	761	11
Total Fixed Income Managers	**3,931**	**11**	**3,908**	**11**
Real Asset Managers				
Global & International Equity	499	-	390	-
Public Market Commingled Funds	-	-	-	-
Total Real Asset Managers	**499**	**-**	**390**	**-**
Real Estate Managers				
Risk Diversifying	**12**		**-**	
Value Added, Opportunistic & Distressed Funds	**10,177**	**-**	**7,405**	**-**
Total Real Estate Managers	**10,189**	**-**	**7,405**	**-**
Alternative Investment Managers				
Private Equity & Private Credit Funds	**19,279**	**-**	**15,302**	**-**
Total Investment Management Fees	**50,005**	**29**	**43,659**	**28**
Investment Consulting Fees				
Consulting Services	1,031	-	1,001	-
Legal Services	170	-	113	-
Actuarial Services	232	14	298	5
Total Investment Consulting Fees	**1,433**	**14**	**1,412**	**5**
Master Custodian & Fiscal Agent Services	**549**	**-**	**553**	**-**
Other Investment Related Expenses	**2,690**	**-**	**2,093**	**-**
Total Investment Expenses	**$54,677**	**$43**	**$47,717**	**$33**

Schedule of Payments to Consultants

For the Years Ended December 31, 2023, and 2022 (with Comparative Totals)
(Dollars in Thousands)

	2023		2022	
Type of Service	**Pension Plan**	**OPEB Trust**	**Pension Plan**	**OPEB Trust**
Actuarial Services & Consulting	$232	$14	$298	$5
Benefit Statement Services	81	-	88	-
Information Technology Consulting	564	-	593	-
Audit & Pension System Services	52	-	66	-
Other Professional Services	73	-	90	-
Legal Services				
Outside Legal—General, Fiduciary & Tax	76	-	225	-
Investments	170	-	113	-
Disabilities	11	-	18	-
Other Legal Services	70	-	17	-
Total Legal Services	327	-	373	-
Investment Consultant Services	999	29	971	28
Investment Custodian & Fiscal Agent Fees	549	-	553	-
Proxy Guideline Voting Agent Service	33	-	30	-
Total Payments to Consultants	**$2,910**	**$43**	**$3,062**	**$33**

INVESTMENT

Chief Investment Officer's Report

April 3, 2024

Trustees, Board of Retirement
Contra Costa County Employees' Retirement Association
Re: Chief Investment Officer Review of 2023 Investment Activity

Members of the Board:

After a steep decline in 2022, equity markets rallied in 2023. This was lead by U.S. mega-cap tech stocks, but most markets saw a strong recovery, particularly in the fourth quarter. Interest rates were widely seen to have peaked in developed markets traders began to price in multiple rate cuts over the course of 2024, though that view has been tempered in the early part of 2024 by inflation measures that continue to be higher than the Fed's preferred 2% and a strong U.S. labor market.

Given this background, the equity markets staged a sharp recovery in 2023. The Russell 3000 Index of domestic stocks returned 26.0% for the year while the MSCI ACWI returned 22.2%. Emerging market securities had a more muted return of 9.8%. The higher interest rates and possibility of rate cuts in the near future helped the debt markets, with the Bloomberg Aggregate returning 5.5% and the 1–3 Year Government/Credit Index returning 4.6%. Real estate struggled under the headwinds of higher rates and a halting recovery in office utilization. The NCREIF Property Index returned −7.9%. All return figures in this review are presented net of fees and time-weighted, and are calculated by CCCERA's investment consultant, Verus Investments.

Total Fund Performance

CCCERA's Total Fund returned 9.0% (net of investment management fees) for the year ending December 31, 2023. This return was lower than the policy index return of 9.9%. Relative to the peer universe, CCCERA ranked in the 89th percentile of public funds. Over the past ten years ending December 31, 2023, CCCERA has returned 6.1% and ranked in the 58th percentile.

Importantly, CCCERA has achieved these returns while assuming a lower risk posture than our peers, resulting in superior risk adjusted returns as measured by our Sharpe ratio. Over the trailing ten years ending December 31, 2023, the fund achieved a Sharpe Ratio of 0.8, ranking in the 17th percentile of public funds.

Strategic Review of Asset Allocation and Portfolio Construction

CCCERA's primary function is to deliver timely and accurate pension benefits to Association members. Pension benefits represent the total of employer and member contributions, and market returns on the investment of those contributions over time. Pension fund trustees have a fiduciary responsibility to carefully invest plan assets to generate market returns while being mindful of the safety of the hard-earned contributions. Pension funds typically accomplish that balance between investment returns and safety by allocating plan assets among several different types of investments, each with its own prospects for growth and safety.

Most pension funds, including CCCERA, have historically attempted to strike the right balance by allocating plan investments into three broad areas:

1. Bonds issued by governments and corporations, intended to provide income and reduce overall portfolio volatility
2. Equities (stocks) intended to provide long-term growth
3. Diversified alternative investments including real estate and private equity

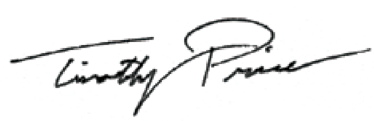
In 2016, the CCCERA Board of Trustees approved a significant change to CCCERA's investment allocation. The new allocation was dubbed a Functionally Focused Portfolio (FFP). The strategic asset allocation was reviewed in late 2020 and the Board opted to lower the allocation to short-term, highly liquid fixed income instruments. This allocation is used to accomplish CCCERA's primary function, paying for the next two to three years of pension benefits. CCCERA will continue to allocate the bulk of the remaining assets into a globally diversified growth sub-portfolio of stocks, real estate and alternative asset strategies and the remaining into risk diversified investments.

The Board believes that in addition to focusing more investable resources into short-term instruments intended to achieve the plan's primary function of paying near-term pension benefits, the new Functionally Focused Portfolio allocation strategy will reduce the inherently higher volatility of the returns generated by our historical allocation. The Trustees recognize that by reducing the volatility of investment returns, some higher returns may not necessarily be achieved during the up markets. Conversely, CCCERA returns will be less likely to be as negatively impacted during the inevitable down years. The Board realizes that with this new strategy, CCCERA may not necessarily capture all the market highs, nor have to endure all the market lows either. This pattern was observed in 2023 when the fund lagged when markets were rebounding.

Asset Allocation

As of December 31, 2023, CCCERA's market value of investment assets including cash and cash equivalents was $11.0 billion, an increase of approximately $0.8 billion from the December 31, 2022, market value of $10.2 billion. This was the result of investment gains of $910 million and net cash flow of −$107 million. All asset classes as of December 31, 2023, were within their respective target allocations.

Sincerely,



Timothy Price, CFA
Chief Investment Officer

General Information

CCCERA's funding objective is to meet long-term benefit obligations through contributions and investment income. This is accomplished by the implementation of a carefully planned and executed long-term investment program.

The California Constitution and Government Code Sections 31594 and 31595 authorize the Board of Retirement (Board) to invest in any investment deemed prudent in the Board's opinion. Investment decisions are to be made in the sole interest and for the exclusive purpose of providing benefits, minimizing employer contributions, and defraying reasonable expenses for administering the system. Investments are to be diversified to minimize the risk of loss and to maximize the rate of return, unless under the circumstances it is clearly prudent to not do so. The Board has adopted an Investment Policy, which provides the framework for the management of CCCERA's investments. This policy establishes CCCERA's investment policies and objectives and defines the principal duties of the Board and staff, the Custodian bank and investment managers. For the year ended December 31, 2023, the total fund returned 9.0% net of fees; less than the policy index return of 9.9%.

Summary of Proxy Voting Guidelines and Procedures

Voting of proxy ballots shall be in accordance with Voting of proxy ballots shall be in accordance with CCCERA's Proxy Voting Guidelines. CCCERA utilizes the services of Institutional Shareholder Services to research and vote CCCERA's U.S. proxy ballots in order to protect and enhance returns.

Asset Allocation

The asset allocation is an integral part of the Investment Policy. When a new asset class is implemented or a current asset class is expanded, the plan's policy is modified to reflect the change or revision. The Board implements the asset allocation plan by hiring investment managers to invest assets on CCCERA's behalf, subject to specific guidelines incorporated into each firm's contract.

The Board adopted an Investment Policy Statement in September 2016, and updated in May 2021, in which the Board is to periodically set, review, and revise its asset allocation targets. In July 2023, the long-term asset allocation targets were determined by the Board to be as follows:

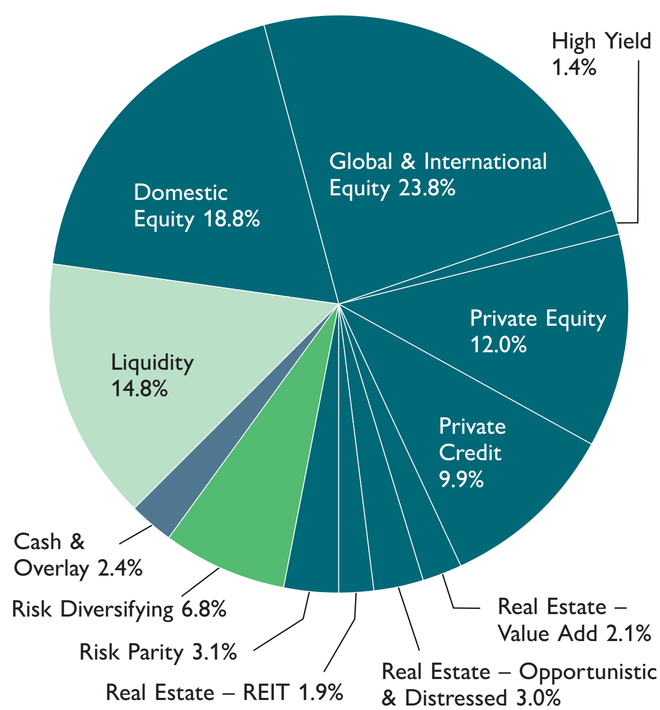
	Long-Term	Current Target
Liquidity	17.0%	17.0%
Growth	76.0%	76.0%
Risk Diversifying	7.0%	7.0%

The Board conducted a review of the strategic asset allocation in late 2020. The Functionally Focused Portfolio (FFP) methodology was maintained, but the target allocation to the Liquidity sub-portfolio was reduced to three years from the prior four years to fund benefit payments. Other allocations were changed as well, most notably an increased target to private equity. The change to the Liquidity sub-portfolio was implemented in 2021 and the increased allocation to private markets will be implemented over the next several years.

CCCERA's Chief Investment Officer and the outside investment consultant (Verus) assist the Board with the design and implementation of the new asset allocation as depicted in the following charts:

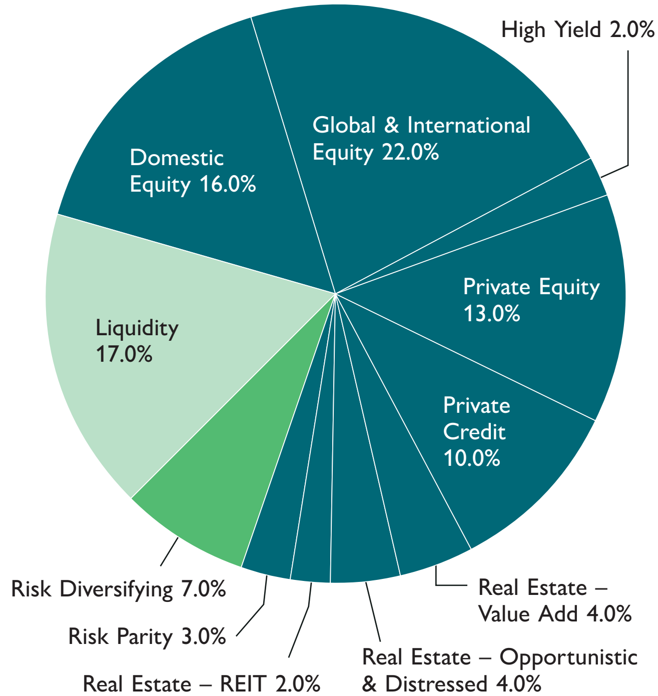
Percentage of Total Fund

Asset Class	Actual % Allocation
Liquidity	14.8%
Growth	
Domestic Equity	18.8%
Global & International Equity	23.8%
High Yield	1.4%
Private Equity	12.0%
Private Credit	9.9%
Real Estate – Value Add	2.1%
Real Estate – Opportunistic & Distressed	3.0%
Real Estate – REIT	1.9%
Risk Parity	3.1%
Total Growth	76.0%
Risk Diversifying	6.8%
Cash & Overlay	2.4%
Total	**100.0%**



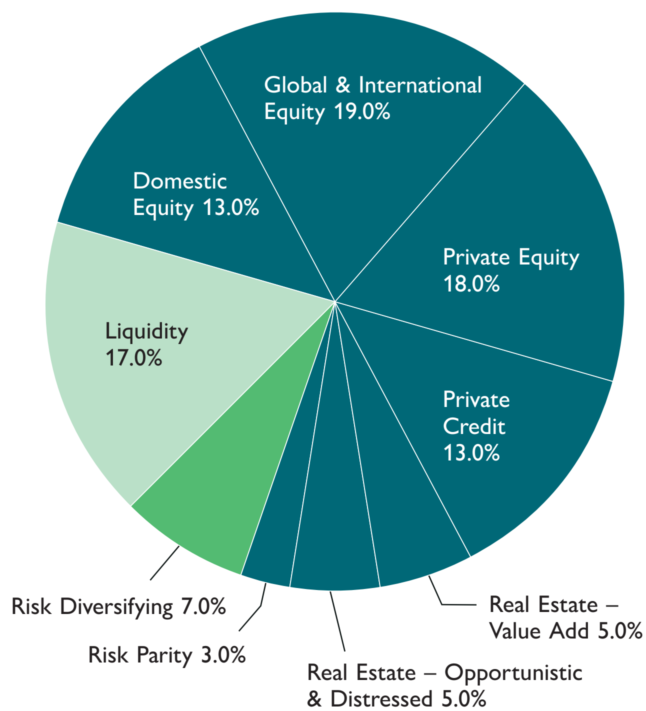
Current

Asset Class	Actual % Allocation
Liquidity	17.0%
Growth	
Domestic Equity	16.0%
Global & International Equity	22.0%
High Yield	2.0%
Private Equity	13.0%
Private Credit	10.0%
Real Estate – Value Add	4.0%
Real Estate – Opportunistic & Distressed	4.0%
Real Estate – REIT	2.0%
Risk Parity	3.0%
Total Growth	76.0%
Risk Diversifying	7.0%
Total	**100.0%**



Long-Term

Asset Class	Actual % Allocation
Liquidity	17.0%
Growth	
Domestic Equity	13.0%
Global & International Equity	19.0%
Private Equity	18.0%
Private Credit	13.0%
Real Estate – Value Add	5.0%
Real Estate – Opportunistic & Distressed	5.0%
Real Estate – REIT	0.0%
Risk Parity	3.0%
Total Growth	76.0%
Risk Diversifying	7.0%
Total	**100.0%**



Investment Results Based on Fair Value*

As of December 31, 2023

	Annualized (Net of Fees)			
	Current Year	3 Year	5 Year	10 Year
Liquidity	5.4%	0.5%	1.9%	-
Benchmark: Bloomberg US Govt/Credit 1–3 Yr. TR	4.6%	0.1%	1.5%	-
Total Domestic Equity	21.4%	6.0%	12.8%	10.0%
Benchmark: Russell 3000	26.0%	8.5%	15.2%	11.5%
Total Global Equity	18.2%	2.5%	11.4%	8.1%
Benchmark: MSCI ACWI	22.2%	5.7%	11.7%	7.9%
Total International Equity	15.1%	0.3%	7.5%	4.2%
Benchmark: MSCI ACWI ex-USA Gross	16.2%	2.0%	7.6%	4.3%
Benchmark: MSCI EAFE Gross	18.9%	4.5%	8.7%	4.8%
Total High Yield	12.0%	1.5%	4.7%	3.6%
Benchmark: ICE BofA ML High Yield Master II	13.5%	2.0%	5.2%	4.5%
Private Equity	−1.0%	16.5%	13.3%	12.4%
Private Credit	9.1%	9.9%	8.2%	9.1%
Total Real Estate	−10.2%	0.4%	0.6%	5.6%
Benchmark: Real Estate Benchmark	−11.0%	0.5%	1.9%	5.6%
Benchmark: NCREIF—ODCE Index	−12.0%	4.9%	4.2%	7.3%
Benchmark: NCREIF Property Index	−7.9%	4.6%	4.3%	6.8%
Risk Parity	4.7%	-3.6%	2.90	-
Diversifying	2.2%	-0.7%	0.6%	0.4%
Benchmark: Custom Diversifying Benchmark	7.4%	1.0%	2.7%	3.2%
Total Cash	2.5%	1.7%	1.9%	1.0%
Benchmark: 91 Day T-Bills	5.0%	2.2%	1.9%	1.2%
Total Fund	9.0%	3.5%	6.8%	6.1%
Benchmark: Policy Index	9.9%	5.1%	8.1%	7.1%
Total Fund excl. Overlay & Cash	9.0%	3.8%	7.0%	6.2%
Benchmark: Policy Index	9.9%	5.1%	8.1%	7.1%

* Using time-weighted rate of return based on the market rate of return.

Investment Managers

(As of December 31, 2023)

Liquidity

Dimensional Fund Advisors
Insight Investment
Sit Investments

Risk Diversifying

Acadian Asset Management
AFL-CIO Housing Investment Trust
Sit Investments

Cash Overlay

The Northern Trust Company

Securities Lending Program

The Northern Trust Company

Growth

Domestic Equity

BlackRock Institutional Trust
Ceredex Value Advisors
Emerald Advisors
Robeco Boston Partners

Global & International Equity

Artisan Global Opportunities
First Eagle Investment Management
Pimco/RAE
Pyrford International
TT Emerging Markets
William Blair & Company

High Yield Fixed Income

Voya Investment Management

Private Equity

Adams Street Partners
Aether Investment Partners
AE Industrial Partners
Altaris Health Partners
Ares Energy Investors Funds
Commonfund
DBL Investors (Bay Area Equity)
Equilibrium Capital (Wastewater)
EQT Partners
Genstar Capital
GTCR
Hellman & Friedman Capital Partners
Leonard Green & Partners
Oaktree Capital
Ocean Avenue Capital Partners
Paladin Capital Management
Pathway Capital Management
Siguler Guff
Siris Capital Group
Symphony Technology Group
Stone Point Capital (Trident)
TPG Healthcare Partners
TA Associates

Private Credit

Angelo Gordon Energy
Torchlight Investors
StepStone Group

Real Estate

Angelo Gordon
Blackstone
Cross Lake Partners
DLJ Real Estate Capital Partners LP
EQT Partners
Invesco Real Estate
KSL Capital Partners
LaSalle Investment Management
Long Wharf Real Estate Partners
Oaktree Capital
PCCP, LLC
Siguler Guff

Real Estate Investment Trust (REIT)

Adelante Capital Management
Invesco

Risk Parity

AQR GRP EL Fund
PanAgora Asset Management

Investment Summary

For the Year Ended December 31, 2023
(Dollars in Thousands)

Type of Investment	Pension Plan Fair Value	Pension Plan Percent of Total Fair Value	OPEB Trust Fair Value	OPEB Trust Percent of Total Fair Value
Short-Term				
Cash Equivalents	$504,490	4.6%	$21	0.4%
Total Short-Term Investments	504,490	4.6%	21	0.4%
Long-Term Investments by Fair Value Level				
Equities				
Domestic Equity	836,583	7.6%	-	-
Global & International Equity	432,730	3.9%	-	-
Real Estate – REIT	210,531	1.9%	-	-
Risk Diversifying	44,689	0.4%	-	-
Public Market Commingled Funds	3,815,831	34.6%	3,122	61.5%
Total Equity Securities	**5,340,364**	**48.4%**	**3,122**	**61.5%**
Fixed Income				
Liquidity Program	1,532,426	14.0%	-	-
Held In Equity Portfolios	3,956	-	-	-
High Yield	148,529	1.3%	-	-
Risk Diversifying	257,792	2.3%	-	-
Public Market Commingled Funds	223,236	2.0%	1,936	38.1%
Total Fixed Income Securities	**2,165,939**	**19.6%**	**1,936**	**38.1%**
Real Assets				
Global & International Equity	62,714	0.6%	-	-
Public Market Commingled Funds	40	-	-	-
Total Real Assets	**62,754**	**0.6%**	-	-
Real Estate				
Risk Diversifying	3,107	-	-	-
Value Added, Opportunistic & Distressed Funds	513,819	4.7%	-	-
Total Real Estate	**516,926**	**4.7%**	-	-
Alternatives				
Private Equity & Private Credit Funds	2,433,910	22.1%	-	-
Total Long-Term Investments at Fair Value	10,519,893	95.4%	5,058	99.6%
Total Short and Long-Term Investments	**$11,024,383**	**100.0%**	**$5,079**	**100.0%**

Investments and Management Fees

For the Year Ended December 31, 2023
(Dollars in Thousands)

	Pension Plan		OPEB Trust	
	Assets Managed	Fees	Assets Managed	Fees
Investment Activity				
Equities Managers				
Domestic Equity	$836,583	$4,032	$ -	$ -
Global & International Equity	432,730	3,444	-	-
Real Estate – REIT	210,531	503	-	-
Risk Diversifying	44,689	167	-	-
Public Market Commingled Funds	3,815,831	7,961	3,122	18
Total Equities Managers	**5,340,364**	**16,107**	**3,122**	**18**
Fixed Income Managers			-	
Liquidity Program	1,532,426	1,595	-	-
Held in Equity Portfolios	3,956	31	-	-
High Yield	148,529	619	-	-
Risk Diversifying	257,792	962	-	-
Public Market Commingled Funds	223,236	724	1,936	11
Total Fixed Income Managers	**2,165,939**	**3,931**	**1,936**	**11**
Real Asset Managers			-	
Global & International Equity	62,714	499	-	-
Public Market Commingled Funds	40	-	-	-
Total Real Asset Managers	**62,754**	**499**	**-**	**-**
Real Estate Managers				
Risk Diversifying	3,107	12	-	-
Value Added, Opportunistic & Distressed Funds	513,819	10,177	-	-
Total Real Estate Managers	**516,926**	**10,189**	**-**	**-**
Alternative Investment Managers				
Private Equity & Private Credit Funds	2,433,910	19,279		-
Total Fees from Investment Activity	**10,519,893**	**50,005**	**5,058**	**29**
Custodian Cash and Cash Equivalents	504,490	549	21	-
Securities Lending Activity				
Securities Lending Fees	-	292	-	-
Total Fees from Securities Lending Activity	N/A	292	N/A	-
Total Investments and Management Fees	**$11,024,383**	**$50,846**	**$5,079**	**$29**

Schedule of Brokerage Commissions

For the Year Ended December 31, 2023
(Dollars and Shares in Thousands)

	Commissions	Shares/Par Value Traded	Commission Per Share
Top 20 Brokerage Firms			
CLEAR STREET LLC	$206	9,892	$0.021
J.P. MORGAN SECURITIES LLC	92	89,152	0.001
CAPITAL INSTITUTIONAL SERV NEW YORK	92	5,285	0.017
MISCHLER FINANCIAL GROUP, INC.	68	3,385	0.020
RBC CAPITAL MARKETS, LLC	57	70,489	0.001
PIPER JAFFRAY & CO.	57	9,993	0.006
JEFFERIES LLC.	46	13,024	0.004
GOLDMAN, SACHS AND CO.	44	176,069	0.000
COWEN AND COMPANY LLC	39	1,319	0.030
MORGAN STANLEY AND CO., LLC	30	87,580	0.000
SANFORD C. BERNSTEIN AND CO., LLC	29	2,022	0.014
LOOP CAPITAL MARKETS LLC	29	58,368	0.000
ISI GROUP INC.	28	1,386	0.020
BANK OF AMERICA CORPORATION	24	8,220	0.003
STIFEL NICOLAUS & CO,INCORORATED	21	22,529	0.001
CITIGROUP GLOBAL MARKETS INC	20	51,355	0.000
DERIVATIVES	17	50	0.340
BANK OF AMERICA MERRILL LYNCH SECS	16	1,442	0.011
PERSHING LLC	15	107,838	0.000
LIQUIDNET INC	12	607	0.020
Top 20 Firms by Commission Dollars	942	720,005	0.001
All Other Brokerage Firms	163	14,527,719	0.000
Total Brokerage Commissions	**$1,105**	**15,247,724**	**$0.000**

Schedule of Top Ten Equity Securities

As of December 31, 2023

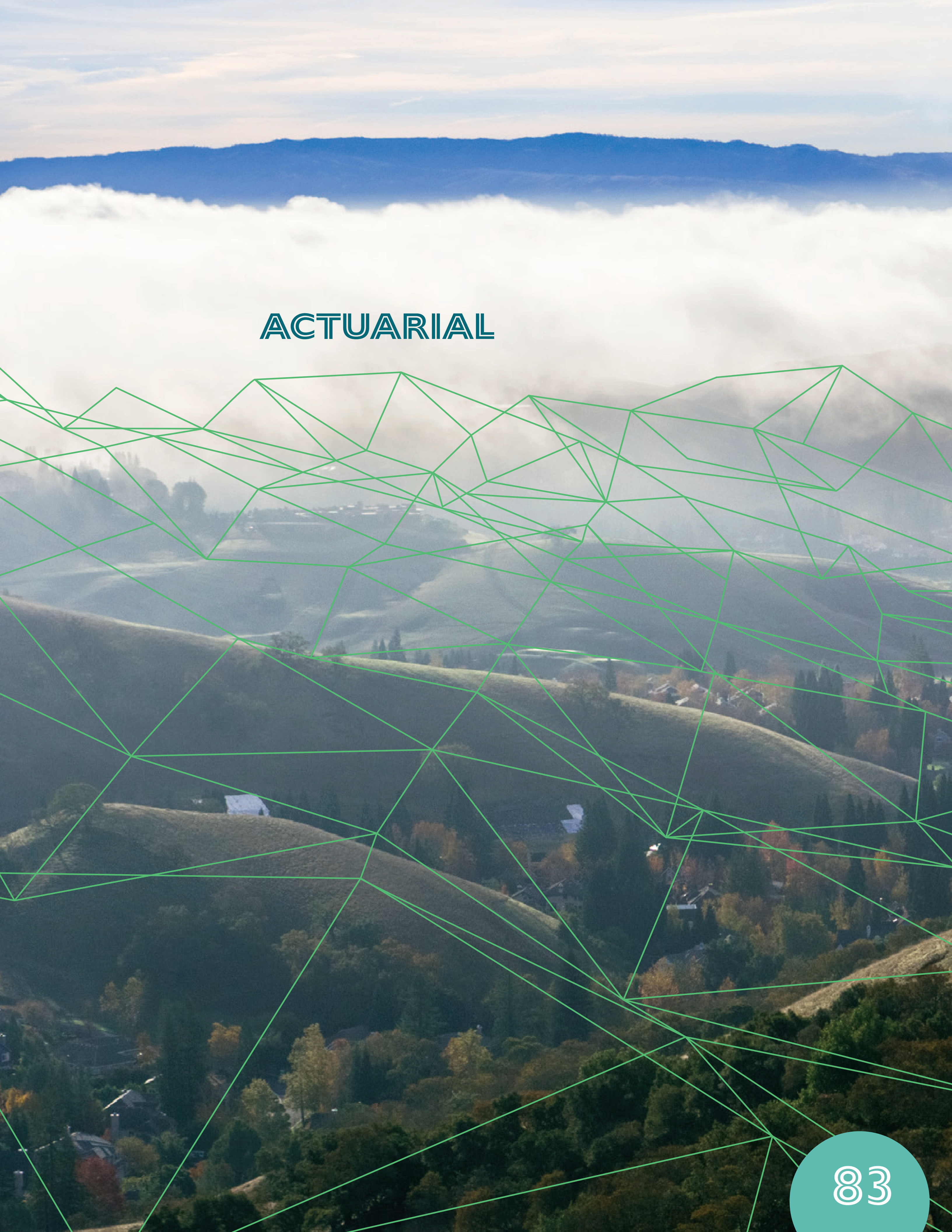
(Dollars and Shares in Thousands)

CUSIP	Shares	Security Name	Fair Value
C527995MI2	15,625	CF RUSSELL 1000 INDEX NON-LENDABLE FUND	$1,209,333
C282999S44	16,436	CF ARTISAN GLOBAL OPPORTUNITIES TRUST FD	600,554
C96999CX25	32,026	CF INTERNATIONAL STOCK FUND LLC	502,372
C785998915	16,741	CF WILLIAM BLAIR INTERNATIONAL GROWTH COLLECTIVE FUND	472,659
C2D9999SE4	2,235	CF TT EMERGING MARKETS OPPORTUNITIES FUND II LIMITED CLASS B SHARES	231,656
SBTLJSX7	3,018	MFC CORNERSTONE STRATEGIC VALUE FD INC COM PAR $0.001 COM PAR $0.001	21,700
S2661568	199	ORACLE CORP COM	20,968
S2190385	99	JPMORGAN CHASE & CO COM	16,810
S2779201	307	SCHLUMBERGER LTD COM COM	15,976
SB7TL820	44	META PLATFORMS INC COM USD0.000006 CL 'A'	15,425
		TOTAL LARGEST EQUITY HOLDINGS	**$3,107,453**

Schedule of Top Ten Fixed Income Securities

As of December 31, 2023
(Dollars in Thousands)

CUSIP	Security Name	Cost	Fair Value
C9934FC991	STEPSTONE CC OPPORTUNITIES FUND, LLC—SERIES B	$248,397	$390,133
C060993201	CF AFL CIO HOUSING INVESTMENT TRUST	249,877	223,236
C9934FB993	STEPSTONE CC OPPORTUNITIES FUND, LLC—SERIES A	224,779	219,040
C9934FD999	STEPSTONE CC OPPORTUNITIES FUND, LLC—SERIES C	122,817	195,131
SBMWPXV8	UNITED STATES OF AMER TREAS NOTES FLTG RT 10-31-2025	24,493	24,466
C999599GH0	FUT MAR 24 10 YR T-NOTES	20,123	20,659
C05578QAB9	PVTPL BPCE SUB NTS BOOK ENTRY 5.15 DUE 07-21-2024 BEO	23,089	20,321
C68323AFC3	ONTARIO PROV CDA BD 3.05% DUE 01-29-2024REG	18,380	16,869
C380881FP2	PVTPL GOLDEN CREDIT CARD TRUST SER 22-4A CL A 4.31% DUE 09-15-2027 BEO	14,653	14,824
SBKFV9K0	PVTPL DAIMLER FIN NORTH AMER LLC 2.7% 06-14-2024	15,245	14,211
	TOTAL LARGEST FIXED INCOME HOLDINGS		**$1,138,890**



ACTUARIAL

Actuary Certification Letter

Segal

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San Francisco, CA 94105-6147
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segalco.com

Via Email

May 15, 2024

Board of Retirement
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

**Re: Contra Costa County Employees' Retirement Association (CCCERA)
December 31, 2022 Actuarial Valuation for Funding Purposes**

Dear Members of the Board:

Segal prepared the December 31, 2022 annual actuarial valuation of the CCCERA. We certify that the valuation was performed in accordance with generally accepted actuarial principles and practices and CCCERA's funding policy that was last reviewed with the Board in 2020. In particular, it is our understanding that the assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice (ASOPs).

As part of the December 31, 2022 actuarial valuation, Segal conducted an examination of all participant data for reasonableness. However, the scope of this examination does not qualify as an audit. Summaries of the employee data used in performing the actuarial valuations over the past several years are provided in our valuation report. We did not audit the Association's financial statements, however, the Association's auditor attested to the Association's financial statements. For actuarial valuation purposes, retirement plan assets are valued at Actuarial Value. Under this method, the assets used to determine employer contribution rates take into account market value by recognizing the semi-annual differences between the total return at market value and the expected investment return over a five-year period.

One of the general goals of an actuarial valuation is to establish contribution rates, which, over time, will remain level as a percentage of payroll for each generation of active members. Actuarial funding is based on the Entry Age Cost Method. Under this method, the employer contribution rate provides for current cost (normal cost) plus a level percentage of payroll to amortize any unfunded actuarial accrued liability (UAAL).

In 2008, the Board of Retirement elected to amortize the remaining balance of the Association's UAAL as of December 31, 2007 over a declining (or closed) period and it is fully amortized as of December 31, 2022. Any change in UAAL that arises due to actuarial gains or losses or due to changes in actuarial assumptions or methods at each valuation after December 31, 2007 is amortized over its own declining (or closed) 18-year period. Effective with the December 31, 2013 valuation, any change in UAAL that arises due to plan amendments is amortized over its

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Contra Costa County Employees' Retirement Association
May 15, 2024
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own declining (or closed) 10-year period (with the exception of a change due to retirement incentives, which is funded in full upon adoption of the incentive). The progress being made towards meeting the funding objective through December 31, 2022 is illustrated in the Schedule of Funding Progress.

Certain information found in the Notes to Basic Financial Statements and the Required Supplementary Information (RSI) included in the Financial Section was prepared by the Association based on the results of the Governmental Accounting Standards Board (GASB) Statement No. 67 actuarial valuation as of December 31, 2023 prepared by Segal. For the Financial Section of the Annual Comprehensive Financial Report ("Annual Report" or ACFR), Segal provided the Schedule of Changes in Net Pension Liability of Participating Employers and Schedule of Employer Contributions as shown in the RSI. A listing of the other supporting schedules prepared by the Association based on additional information provided by Segal and the results of the actuarial valuation as of December 31, 2022 for funding purposes is listed below.

- Schedule of Funding Progress
- Schedule of Employer Contributions
- Latest Actuarial Valuation Methods and Assumptions
- Summary of Valuation Results
- Summary of Significant Results
- Schedule of Active Member Valuation Data
- Retirants and Beneficiaries Added to and Removed from Retiree Payroll
- Schedule of Funded Liabilities by Type
- Actuarial Analysis of Financial Experience
- Summary of Statistical Data
- Schedule of Benefits Expenses by Type
- Schedule of Retired Members by Type of Benefit
- Schedule of Average Benefit Payment Amounts
- Participating Employers and Active Members

The valuation assumptions included in the Actuarial Section were adopted by the Retirement Board based on the December 31, 2020 Experience Study (for both the economic and non-economic assumptions). It is our opinion that the assumptions used in the December 31, 2022 valuation produce results, which in the aggregate, reflect the future experience of the retirement plan. Actuarial valuations are performed on an annual basis. An experience analysis is performed every three years and the next experience analysis is due to be performed after the December 31, 2023 valuation.

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Segal

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Contra Costa County Employees' Retirement Association
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In the December 31, 2022 valuation, the ratio of the valuation value of assets to actuarial accrued liabilities (funded percentage) decreased from 92.4% to 91.2% while the funded percentage on a market value of assets basis decreased from 101.3% to 84.3%. The average employer contribution rate has decreased from 35.55% of payroll to 30.01% of payroll, while the average member contribution rate has increased from 12.17% of payroll to 12.18% of payroll.

Under the asset smoothing method, the total unrecognized net investment losses are $825 million as of December 31, 2022. These net investment losses will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years. The net deferred losses of $825 million represent about 8.2% of the market value of assets as of December 31, 2022. Unless offset by future investment gains or other favorable experience, the recognition of the $825 million market losses is expected to have an impact on the Association's future funded percentage and contribution rate requirements. This potential impact may be illustrated as follows:

- If the net deferred losses were recognized immediately in the valuation value of assets, the funded percentage would decrease from 91.2% to 84.3%.
- If the net deferred losses were recognized immediately in the valuation value of assets, the average employer rate would increase from 30.01% to about 35.87% of payroll.

This document has been prepared for the exclusive use and benefit of CCCERA, based upon information provided by CCCERA or otherwise made available to Segal at the time this document was created. Segal makes no representation or warranty as to the accuracy of any forward-looking statements and does not guarantee any particular outcome or result. Except as may be required by law, this document should not be shared, copied or quoted, in whole or in part, without the consent of Segal. This document does not constitute legal, tax or investment advice or create or imply a fiduciary relationship. You are encouraged to discuss any issues raised with your legal, tax and other advisors before taking, or refraining from taking, any action.

The undersigned are Members of the American Academy of Actuaries and meet the qualification requirements to render the actuarial opinion contained herein.

Sincerely,

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary

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

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Segal

Schedule of Funding Progress

Funded Ratio is a measurement of the funded status of the plan. The Funded Ratio is calculated by dividing the Valuation Assets by the Actuarial Accrued Liability. In the following table, CCCERA's Funded Ratio indicates assets are approximately 9% less than liabilities. The most significant reasons for the increase in the funded ratio have been the market appreciation of investments and contributions by the employer and plan members.

Schedule of Funding Progress

For Years 2013 through 2022

Actuarial Valuation Date	Valuation Value of Assets[1] (a)	Actuarial Accrued Liability (AAL)[2] (b)	Unfunded AAL (UAAL) (b)−(a)	Funded Ratio (a) / (b)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll [(b)−(a)] / (c)
12/31/2013	$5,907,416	$7,731,097	$1,823,681	76.4%	$679,429	268.4%
12/31/2014	6,557,496	8,027,438	1,469,942	81.7%	697,832	210.6%
12/31/2015	7,136,801	8,448,624	1,311,823	84.5%	746,353	175.8%
12/31/2016	7,606,997	8,794,434	1,187,437	86.5%	784,412	151.4%
12/31/2017	8,179,891	9,239,247	1,059,356	88.5%	860,625	123.1%
12/31/2018	8,650,178	9,682,144	1,031,966	89.3%	896,391	115.1%
12/31/2019	9,128,669	10,075,722	947,053	90.6%	937,531	101.0%
12/31/2020	9,662,283	10,521,628	859,345	91.8%	990,042	86.8%
12/31/2021	10,434,412	11,288,973	854,561	92.4%	1,015,755	84.1%
12/31/2022	10,861,822	11,912,229	1,050,407	91.2%	1,073,887	97.8%

1 Excludes assets for non-valuation reserves.

2 Excludes liabilities for non-valuation reserves.

Latest Actuarial Valuation Methods and Assumptions

The entry age actuarial cost method was used in conjunction with the following actuarial assumptions. The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of CCCERA and of CCCERA itself in areas that affect the projected benefit flow and anticipated investment earnings.

The actuarial assumptions used to determine the liabilities for the December 31, 2022, valuation are based on the results of the actuarial experience study for the period January 1, 2018, through December 31, 2020. The study was prepared using updated economic and demographic assumptions, and mortality rates adopted by the Board of Retirement in April 2022. An actuarial valuation is performed annually.

The actuarial assumptions and methods listed below were recommended by the plan's independent actuary, Segal Consulting, and were approved by the Board.

Latest Actuarial Valuation Methods and Assumptions of Plan Assets and Liabilities

Valuation Date	December 31, 2022
Actuarial Funding Policy	
Actuarial Cost Method	Entry Age Actuarial Cost Method
Amortization Method	Level Percent of payroll for total unfunded liability (3.00% payroll growth assumed)
Actuarial Value of Assets	Fair value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the fair value, and is recognized semi-annually over a five-year period.
Valuation Value of Assets	The Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
Amortization Policy	The UAAL (i.e., the difference between the AAL and the Valuation Value of Assets) as of December 31, 2014, will continue to be amortized over separate amortization layers based on the valuations during which each separate layer was previously established. • Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years. • Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.
Economic Assumptions	
Investment Rate of Return	6.75%, net of pension plan investment expenses
Inflation Rate	Increases of 2.50% per year.
Administrative Expenses	1.13% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member.
Real Across-the-Board Salary Increases	0.50%
Payroll Growth	Inflation of 2.50% per year plus "across the board" real salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Salary Increases	The average total assumed salary increase for active members in the December 31, 2022, actuarial valuation is 4.8%.
Other Assumptions	Same as those used in the December 31, 2022, funding actuarial valuation.

Demographic Assumptions—Changed Actuarial Assumptions

Post Retirement Mortality Rates	
Healthy	
General Members	Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.
Safety Members	Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and decreased by 5% for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.
Disabled	
General Members	Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) increased by 5% for males and unadjusted for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.
Safety Members	Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) increased by 5% for males and unadjusted for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.
Beneficiary	
Beneficiaries not currently in Pay Status	Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two dimensional mortality improvement scale MP-2021.
Beneficiaries in Pay Status	Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2021.

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.

Mortality Rates for Member Contributions	
General Members	Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 30% male and 70% female.
Safety Members	Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and decreased by 5% for females, projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 85% male and 15% female.
Pre-Retirement Mortality Rates	
General Members	Pub-2010 General Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.
Safety Members	Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.
Disability Rates	65% of General Tier 1 and Tier 4 disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected disabilities. 25% of General Tier 3 and Tier 5 disabilities are assumed to be service connected disabilities. The other 75% are assumed to be non-service connected disabilities. 100% of Safety disabilities are assumed to be service connected disabilities.
Withdrawal Rates	The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No termination is assumed after a member is first assumed to retire.
Service Retirement Rates	Based upon the Experience Analysis as of 12/31/20
Salary Scales	The average total assumed salary increase for active members of 4.9% per year reflecting approximately 2.50% for inflation, 0.50% for additional real "across-the-board" salary increases and approximately 1.90% for merit and longevity.
Value of Assets for Contribution Rate Purposes	Actuarial Value as described in Actuarial Valuation Basis of Valuation Report.

Service Retirement Rates (%)

	General						Safety			
	Tier 1 (Enhanced)		Tier 3 (Enhanced)		Tier 1 (Non-Enhanced)	Tiers 4 and 5 (PEPRA)	Tier A (Enhanced)		Tier C (Enhanced)	Tier A (Non-Enhanced) Tiers D and E (PEPRA)
Age	Less than 30 Years of Service	Over 30 Years of Service	Less than 30 Years of Service	Over 30 Years of Service			Less than 30 Years of Service	Over 30 Years of Service		
45	-	-	-	-	-	-	7.00	7.00	2.00	-
50	4.00	10.00	4.00	10.00	3.00	-	22.00	30.00	20.00	5.00
55	15.00	24.00	8.00	15.00	10.00	4.00	16.00	30.00	18.00	15.00
60	20.00	20.00	12.00	15.00	25.00	8.00	20.00	35.00	25.00	20.00
65	35.00	35.00	30.00	32.00	40.00	25.00	100.00	100.00	100.00	100.00
70	40.00	40.00	35.00	35.00	40.00	35.00				
75+	100.00	100.00	100.00	100.00	100.00	100.00				

Termination Rates (%) Before Retirement—Mortality

	Rate (%)			
	General[1]		Safety[1]	
Age	Male	Female	Male	Female
20	0.04	0.01	0.04	0.02
25	0.02	0.01	0.03	0.02
30	0.03	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.14
65	0.41	0.27	0.35	0.20
70	0.61	0.44	0.66	0.39

All pre-retirement deaths are assumed to be non-service connected.

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

Termination Rates (%) Before Retirement—Disability

Age	General Tier 1 and Tier 4[2]	General Tier 3 and Tier 5[3]	Safety[4]
20	0.01	0.01	0.02
25	0.02	0.02	0.16
30	0.04	0.03	0.32
35	0.08	0.05	0.46
40	0.22	0.07	0.56
45	0.36	0.09	0.96
50	0.52	0.12	2.88
55	0.60	0.16	4.00
60	0.60	0.18	4.30
65	0.60	0.18	4.50
70	0.60	0.18	4.50

2 65% of General Tier 1 and Tier 4 disabilities are assumed to be service-connected disabilities. The other 35% are assumed to be ordinary disabilities.

3 25% of General Tier 3 and Tier 5 disabilities are assumed to be service-connected disabilities. The other 75% are assumed to be ordinary disabilities.

4 100% of Safety disabilities are assumed to be service-connected disabilities.

Termination Rates (%) Before Retirement—Termination[5]

Years of Service	General	Safety
Less than 1	14.00	11.00
1–2	9.50	9.00
2–3	9.00	7.00
3–4	6.25	5.00
4–5	6.25	4.00
5–6	5.00	3.50
6–7	4.50	3.00
7–8	4.00	2.50
8–9	3.75	2.50
9–10	3.75	2.00
10–11	3.50	2.00
11–12	3.25	2.00
12–13	2.75	2.00
13–14	2.50	1.80
14–15	2.50	1.60
15–16	2.25	1.50
16–17	2.25	1.40
17–18	2.00	1.30
18–19	2.00	1.20
19–20	1.50	1.00
20+	1.50	0.50

5 The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No termination is assumed after a member is first assumed to retire.

Summary of Valuation Results

As of December 31, 2022
(Dollars in Thousands)

	Total Rate	Estimated Annual Amount
Average Employer Contribution Rates[1]		
General		
Cost Group #1—County and Small Districts (Tiers 1 and 4)	24.96%	$5,878
Cost Group #2—County and Small Districts (Tiers 3 and 5)	22.35%	174,791
Cost Group #3—Central Contra Costa Sanitary District	16.56%	6,713
Cost Group #4—Housing Authority of County of Contra Costa	28.28%	1,938
Cost Group #5—Contra Costa County Fire Protection District	38.80%	3,080
Cost Group #6—Small Districts (Non-Enhanced Tiers 1 and 4)	15.78%	175
Safety		
Cost Group #7—County (Tiers A and D)	63.54%	31,326
Cost Group #8—Contra Costa County Fire Protection District	66.96%	40,575
Cost Group #9—County (Tiers C and E)	53.35%	34,822
Cost Group #10—Moraga-Orinda Fire Protection District	88.64%	7,982
Cost Group #11—San Ramon Valley Fire Protection District	50.96%	12,851
Cost Group #12—Rodeo-Hercules Fire Protection District	89.35%	2,096
All Employers Combined	**30.01%**	**$322,227**

	Total Rate	Estimated Annual Amount
Average Member Contribution Rates[1]		
General		
Cost Group #1—County and Small Districts (Tiers 1 and 4)	11.44%	$2,695
Cost Group #2—County and Small Districts (Tiers 3 and 5)	10.76%	84,158
Cost Group #3—Central Contra Costa Sanitary District	11.57%	4,691
Cost Group #4—Housing Authority of County of Contra Costa	11.78%	807
Cost Group #5—Contra Costa County Fire Protection District	11.91%	946
Cost Group #6—Small Districts (Non-Enhanced Tiers 1 and 4)	13.75%	153
Safety		
Cost Group #7—County (Tiers A and D)	18.83%	9,283
Cost Group #8—Contra Costa County Fire Protection District	17.58%	10,652
Cost Group #9—County (Tiers C and E)	17.03%	11,116
Cost Group #10—Moraga-Orinda Fire Protection District	18.41%	1,658
Cost Group #11—San Ramon Valley Fire Protection District	16.88%	4,257
Cost Group #12—Rodeo-Hercules Fire Protection District	14.83%	348
All Categories Combined	**12.18%**	**$130,764**

Key Actuarial Assumptions	**2022**
Annual Interest Rate	6.75%
Annual Inflation Rate	2.50%
Across-the-Board Real Salary Increase	0.50%
Average Total Assumed Salary Increase for Active Members	4.80%

1 Based on projected payroll as of each valuation date shown. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions. The rates shown are averages based on all members regardless of their membership date.

Summary of Significant Results

As of December 31, 2022

Association Membership	
Active Members	
Number of Members	10,082
Average Age	46.1
Average Service	10.1
Projected Total Payroll (Compensation)	$1,073,886,785
Average Projected Compensation	$106,515
Retired Members and Beneficiaries	
Number of Members	
Service Retirement	8,197
Disability Retirement	874
Beneficiaries	1,490
Average Age of Retired Members	71.1
Actual Retired Payroll	$561,802,909
Average Monthly Benefit	$4,466
Vested Terminated Members	
Number of Terminated Vested Members[1]	3,974
Average Age	46.5
Summary of Financial Data	
Market Value of Assets	$10,053,668,812
Return on Market Value of Assets	(11.25%)
Actuarial Value of Assets	$10,878,817,667
Return on Actuarial Value of Assets	5.25%
Valuation Value of Assets	$10,861,822,062
Return on Valuation Value of Assets (VVA)	5.25%
Funded Status	
Actuarial Accrued Liability (AAL)	$11,912,228,880
Unfunded Actuarial Accrued Liability (UAAL) on VVA basis	$1,050,406,818
Funded Ratio	
GASB Statement No. 25	91.2%

1 Includes 2,183 inactive non-vested members with member contributions on deposit as of December 31, 2022.

Schedule of Active Member Valuation Data

Valuation Date	Plan Type	Number	Projected Compensation	Average Projected Compensation	% Increase/(Decrease) in Average Compensation
12/31/2013	General	7,682	$540,431,355	$70,350	(0.84%)
	Safety	1,442	$138,997,556	96,392	(2.77%)
	Total	**9,124**	**$679,428,911**	**74,466**	**(1.37%)**
12/31/2014	General	7,774	$561,430,096	72,219	2.66%
	Safety	1,385	$136,401,741	98,485	2.17%
	Total	**9,159**	**$697,831,837**	**76,191**	**2.32%**
12/31/2015	General	8,213	$602,047,448	73,304	1.50%
	Safety	1,429	$144,305,217	100,983	2.54%
	Total	**9,642**	**$746,352,665**	**77,406**	**1.60%**
12/31/2016	General	8,378	$634,246,734	75,704	3.27%
	Safety	1,470	$150,165,527	102,153	1.16%
	Total	**9,848**	**$784,412,261**	**79,652**	**2.90%**
12/31/2017	General	8,565	$697,418,709	81,427	7.56%
	Safety	1,473	$163,205,904	110,798	8.46%
	Total	**10,038**	**$860,624,613**	**85,737**	**7.64%**
12/31/2018	General	8,562	$724,903,207	84,665	3.98%
	Safety	1,459	$171,487,561	117,538	6.08%
	Total	**10,021**	**$896,390,768**	**89,451**	**4.33%**
12/31/2019	General	8,599	$756,790,042	88,009	3.95%
	Safety	1,476	$180,741,222	122,453	4.18%
	Total	**10,075**	**$937,531,264**	**93,055**	**4.03%**
12/31/2020	General	8,612	$799,204,378	92,801	5.45%
	Safety	1,487	$190,837,321	128,337	4.80%
	Total	**10,099**	**$990,041,699**	**98,034**	**5.35%**
12/31/2021	General	8,536	$817,910,429	95,819	3.25%
	Safety	1,469	$197,844,958	134,680	4.94%
	Total	**10,005**	**$1,015,755,387**	**101,525**	**3.56%**
12/31/2022	General	8,590	$862,152,619	100,367	4.75%
	Safety	1,492	$211,734,166	141,913	5.37%
	Total	**10,082**	**1,073,886,785**	**106,515**	**4.92%**

Schedule of Funded Liabilities by Type

For Years Ended December 31, 2013, through 2022
(Dollars in Thousands)

Valuation Date	Aggregate Accrued Liabilities For 1 Active Member Contributions*	2 Retirants and Beneficiaries	3 Active Members Employer Portion	Valuation Value of Assets (VVA)	Portion of Accrued Liabilities Covered by Valuation Value of Assets 1	2	3
12/31/2013	$844,668	$5,086,529	$1,799,900	$5,907,416	100%	100%	0%
12/31/2014	899,220	5,328,622	1,799,596	6,557,496	100%	100%	18%
12/31/2015	1,011,434	5,525,212	1,911,978	7,136,801	100%	100%	31%
12/31/2016	1,116,824	5,670,811	2,006,799	7,606,998	100%	100%	41%
12/31/2017	1,216,116	5,873,018	2,150,113	8,179,891	100%	100%	51%
12/31/2018	1,301,626	6,186,519	2,193,999	8,650,178	100%	100%	53%
12/31/2019	1,372,772	6,459,417	2,243,533	9,128,669	100%	100%	58%
12/31/2020	1,476,735	6,719,971	2,324,922	9,662,283	100%	100%	63%
12/31/2021	1,552,812	7,301,323	2,434,838	10,434,412	100%	100%	65%
12/31/2022	1,614,921	7,745,002	2,552,306	10,861,822	100%	100%	59%

* Beginning 12/31/2013, Active Member Contributions are set equal to the reserve account maintained for member contributions.

Retirants and Beneficiaries Added to and Removed from Retiree Payroll

For Years Ended December 31, 2013, through 2022

Year	At Beginning of Year	Added During Year	Allowances Added	Removed During Year	Allowances Removed	At End of Year	Retiree Payroll*	% Increase in Retiree Payroll	Average Annual Allowance	% Increase in Annual Allowance
2013	8,517	379	$30,637,741	(271)	$(8,397,382)	8,625	$369,809,403	6.40%	$42,876	5.07%
2014	8,625	494	25,732,590	(248)	(8,515,665)	8,871	387,026,328	4.66%	43,628	1.75%
2015	8,871	391	19,997,703	(194)	(7,180,211)	9,068	399,843,820	3.31%	44,094	1.07%
2016	9,068	418	25,627,155	(386)	(13,691,575)	9,100	411,779,400	2.99%	45,250	2.62%
2017	9,100	396	26,242,182	(229)	(8,447,387)	9,267	429,574,195	4.32%	46,355	2.44%
2018	9,267	551	31,870,441	(271)	(10,072,991)	9,547	451,371,645	5.07%	47,279	1.99%
2019	9,547	487	36,835,136	(297)	(10,795,943)	9,737	477,410,838	5.77%	49,031	3.71%
2020	9,737	548	33,345,624	(267)	(11,455,388)	10,018	499,301,074	4.59%	49,840	1.65%
2021	10,018	562	43,585,233	(302)	(12,682,866)	10,278	530,203,441	6.19%	51,586	3.50%
2022	10,278	583	45,303,030	(300)	(13,703,562)	10,561	561,802,909	5.96%	53,196	3.12%

* Beginning 12/31/2015, Retiree Payroll excludes death benefits.

Actuarial Analysis of Financial Experience

Changes in the Unfunded Actuarial Accrued Liability (UAAL) During the Years Ended December 31, 2013, through 2022
(Dollars in Thousands)

				Actuarial (Gain) or Loss Due to All Changes				
	Expected UAAL	Change in Plan Provisions	Change in Assumptions/ Methods	Investment Return	Salary Increases (Decreases)	Other*	Total Changes	UAAL
2013	$2,238,120	$ -	$(205,332)	$(96,259)	$(114,771)	$1,923	$(209,107)	$1,823,681
2014	1,773,291	-	(52)	(244,463)	(42,976)	(15,858)	(303,297)	1,469,942
2015	1,409,789	-	115,137	(100,727)	(9,036)	(103,340)	(213,103)	1,311,823
2016	1,234,411	-	-	(2,853)	11,445	(55,566)	(46,974)	1,187,437
2017	1,099,936	-	-	(76,209)	59,574	(23,945)	(40,580)	1,059,356
2018	960,617	-	(89,872)	55,253	20,984	84,984	161,221	1,031,966
2019	918,865	-	(19,522)	65,571	38,641	(56,501)	47,711	947,054
2020	820,981	-	-	34,593	60,050	(56,279)	38,364	859,345
2021	717,852	-	234,858	(119,692)	25,657	(4,114)	(98,149)	854,561
2022	700,431	-	-	155,590	99,918	94,468	349,976	1,050,407

* Other experience includes employer and employee contributions, COLA increases, mortality, disability, withdrawal, retirement, and leave cash out other than expected. For 2022, also includes gains from additional UAAL contributions from East Contra Costa Fire Protection District and San Ramon Valley Fire Protection District.

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	January 1 through December 31
Membership Eligibility	
General Tier 1	General members hired before July 1, 1980, and electing not to transfer to Tier 2 Plan. Certain General members with membership dates before January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 1.
General Tier 2	Most General members hired on or after August 1, 1980, and all General members hired before July 1, 1980, electing to transfer to the Tier 2 Plan. Effective October 1, 2002, for the County, Tier 2 was eliminated and all County employees (excluding CNA employees) in Tier 2 were placed in Tier 3. Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3.
General Tier 3	General members with membership dates before January 1, 2013, who are not placed in Tier 1 are placed in Tier 3.
General PEPRA Tier 4	General members with membership dates on or after January 1, 2013, hired by specific employers who did not adopt Tier 2 are placed in Tier 4.
General PEPRA Tier 5	General members with membership dates on or after January 1, 2013, who are not placed in Tier 4 are placed in Tier 5.
Safety Tier A and Tier C	Safety members with membership dates before January 1, 2013. County Sheriff's Department Safety members hired on or after January 1, 2007, but before January 1, 2013, are placed in Safety Tier C Enhanced.
Safety PEPRA Tier D and Tier E	Safety members with membership dates on or after January 1, 2013. Safety members from certain bargaining units are placed in Safety Tier E.
Final Compensation for Benefit Determination	
General Tier 1 and Tier 3 (nondisability), Safety Tier A	Highest consecutive 12 months of compensation earnable. (§31462.1) (FAS1)
General Tier 2 and Tier 3 (disability), Safety Tier C	Highest consecutive 36 months of compensation earnable. (§31462) (FAS3)
General Tier 4 and Tier 5, Safety Tier D and Tier E	Highest consecutive 36 months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)
Compensation Limit	
General Tier 1, Tier 2 and Tier 3, Safety Tier A and Tier C	For members with membership dates on or after January 1, 1996, Compensation Earnable is limited to Internal Revenue Code Section 401(a)(17). The limit is $330,000 for calendar year 2023. The limit is indexed for inflation on an annual basis.
General Tier 4 and Tier 5, Safety Tier D and Tier E	Pensionable Compensation is limited to $146,042 for 2023 ($175,250, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.
Social Security Primary Insurance Amount	
General Tier 2	Estimated Social Security award at age 62 assuming level future earnings. (PIA) Service:
All Tiers	Years of service (Yrs) are generally based on a member's employment during a period of time for which deductions are made from their compensation. Includes accumulated sick leave as of the date of retirement. (§31641.01)
General Tier 2	Maximum of 30 years (Yrs30).
Service Retirement Eligibility	
General Tier 1, Tier 2, and Tier 3	Age 50 with ten years of service, or age 70 regardless of service, or after 30 years of service regardless of age. (§31672)
General Tier 4 and Tier 5	Age 52 with five years of service or age 70 regardless of service. (§7522.20(a) and §31672.3)
Safety Tier A and Tier C	Age 50 with ten years of service, or age 70 regardless of service, or after 20 years of service regardless of age. (§31663.25)
Safety Tier D and Tier E	Age 50 with five years of service or age 70 regardless of service. (§7522.25(a)) and §31672.3)

Benefit Formula

The offsets shown in all benefit formulas only apply to members integrated with Social Security.

	Retirement Age	Benefit Formula
General Tier 1 and Tier 3 (Non-Enhanced) (§31676.11)	50	1.24% × (FAS1 − $1,400) × Yrs
	55	1.67% × (FAS1 − $1,400) × Yrs
	60	2.18% × (FAS1 − $1,400) × Yrs
	62	2.35% × (FAS1 − $1,400) × Yrs
	65 & Over	2.61% × (FAS1 − $1,400) × Yrs
General Tier 1 and Tier 3 (Enhanced) (§31676.16)	50	1.43% × (FAS1 − $1,400) × Yrs
	55	2.00% × (FAS1 − $1,400) × Yrs
	60	2.26% × (FAS1 − $1,400) × Yrs
	62	2.37% × (FAS1 − $1,400) × Yrs
	65 & Over	2.42% × (FAS1 − $1,400) × Yrs
	For members previously covered under the non-enhanced §31676.11 formula, they are entitled to at least the benefits they could have received under §31676.11.	
General Tier 2 (§31752)	50	0.83% × FAS3 × Yrs − 0.57% × Yrs30 × PIA
	55	1.13% × FAS3 × Yrs − 0.87% × Yrs30 × PIA
	60	1.43% × FAS3 × Yrs − 1.37% × Yrs30 × PIA
	62	1.55% × FAS3 × Yrs − 1.67% × Yrs30 × PIA
	65 & Over	1.73% × FAS3 × Yrs − 1.67% × Yrs30 × PIA
General Tier 4 and Tier 5 (§7522.20(a))	52	1.00% × FAS3 × Yrs
	55	1.30% × FAS3 × Yrs
	60	1.80% × FAS3 × Yrs
	62	2.00% × FAS3 × Yrs
	65	2.30% × FAS3 × Yrs
	67 & Over	2.50% × FAS3 × Yrs
Safety Tier A (Non-Enhanced) (§31664)	50	2.00% × FAS1 × Yrs
	55 & Over	2.62% × FAS1 × Yrs
Safety Tier A (Enhanced) (§31664.1)	50 & Over	3.00% × FAS1 × Yrs
Safety Tier C (Enhanced) (§31664.1)	50 & Over	3.00% × FAS3 × Yrs
Safety Tier D and Tier E (§7522.25(d))	50	2.00% × FAS3 × Yrs
	55	2.50% × FAS3 × Yrs
	57 & Over	2.70% × FAS3 × Yrs

Maximum Benefit

General Tier 1 and Tier 3, Safety Tier 1 and Tier C	100% of Final Compensation. (§31676.11, §31676.16, §31664, §31664.1)
General Tier 2, Tier 4 and Tier 5, Safety Tier D and Tier E	None.

Non-Service Connected Disability		
General Tier 1 and Tier 4	Eligibility	Five years of service. (§31720)
	Benefit Formula	1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to age 65, but the total projected benefit cannot be more than one-third of Final Compensation. (§31727)
General Tier 2, Tier 3 and Tier 5	Eligibility	Ten years of service. (§31720.1)
	Benefit Formula	40% of Final Compensation plus 10% of Final Compensation used in the benefit determination for each minor child (maximum of three). (§31727.01)
	Offset	Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.
Safety	Eligibility	Five years of service (§31720).
	Benefit Formula	1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to age 55, but the total projected benefit cannot be more than one-third of Final Compensation. (§31727.2)
Service Connected Disability		
General Tier 1 and Tier 4, Safety		No age or service requirements. (§31720)
	Benefit Formula	50% of the Final Compensation. (§31727.4)
General Tier 2, Tier 3, and Tier 5	Eligibility	No age or service requirements. (§31720)
	Benefit Formula	40% of Final Compensation plus 10% of Final Compensation for each minor child (maximum of three). (§31727.01)
	Offset	Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.
Pre-Retirement Death		
General Tier 1, Tier 3, Tier 4, and Tier 5, Safety	Eligibility—A	None.
	Benefit—A	Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six month's compensation (§31781).
	Eligibility—B	Five years of service (Ten years for General Tier 3 and Tier 5).
	Benefit—B	Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.
	Death in line of duty	50% of Final Compensation payable to spouse. (§31787)
General Tier 2	Eligibility—A	None.
	Benefit—A	Refund of employee contributions with interest, plus $2,000 lump sum benefit offset by any Social Security payment. (§31781.01);
	Eligibility—B	Ten years of service.
	Benefit—B	Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.
	Death in line of duty	60% of Service or Disability Retirement Benefit (minimum benefit is 24% of Final Compensation) plus, for each minor child, 10% of the allowance otherwise paid to the member. Minimum family benefit is 60% of the member's allowance. Maximum family benefit is 100% of member's allowance.

Death After Retirement		
General Tier 1, Tier 3, Tier 4, and Tier 5, Safety	Service Retirement or Non-Service Connected Disability Retirement	Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse. An eligible spouse is a surviving spouse who was married to the member at least one year prior to the member's retirement or at least two years prior to the date of death and has attained age 55 on or prior to the date of death. (§31760.2) An additional lump sum benefit of $5,000 is payable to the member's beneficiary. (§31789.5)
	Service Connected Disability	Unless another option was selected at retirement, 100% of member's allowance continued to eligible spouse. (§31786) An additional lump sum benefit of $5,000 is payable to the member's beneficiary. (§31789.5)
General Tier 2	Service Retirement or Non-Service Connected Disability Retirement	Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse plus 20% of allowance to each minor child. (§31789.11) Maximum benefit is 100% of allowance. An additional lump sum benefit of $5,000 (§31789.5) plus $2,000 less any Social Security lump sum payment (§31789.01) are payable to the member's beneficiary.
Withdrawal Benefits		
Less than Five Years of Service		Refund of accumulated employee contributions with interest, or earned benefit at age 70. (§31628)
Five or More Years of Service		If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire. (§31700)
Post-Retirement Cost-of-Living Benefits		
General Tier 1, Tier 3 (nondisability), Tier 4, and Tier 5, Safety Tier A and Tier D		Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked."
General Tier 2, Tier 3 (disability) and Tier 5 (disability)		Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked."
General Tier 4 and Tier 5 (under certain MOUs), Safety Tier C and Tier E		Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked."

Member Contributions

Please refer to CCCERA website at: www.cccera.org/contribution-rates for specific rates.

Tiers	Type	Contribution
General Tier 1 and Tier 3 (Non-Enhanced)	Basic	Entry-age based rates that provide for one-half of the §31676.11 benefit payable at age 55.
	Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
General Tier 1 and Tier 3 (Enhanced)	Basic	Entry-age based rates that provide for an annuity at age 60 equal to 1/120 of FAS1.
	Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
General Tier 4 and Tier 5		50% of the total Normal Cost rate.
Safety Tier A (Non-Enhanced)	Basic	Entry-age based rates that provide for one-half of the §31664 benefit payable at age 50.
	Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Safety Tier A (Enhanced)	Basic	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS1.
	Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Safety Tier C (Enhanced)	Basic	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS3.
	Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Safety Tier D and Tier E		50% of the total Normal Cost rate.
Other Information	Transfers from Tier 1 to Tier 2 were made on an individual voluntary irrevocable basis. Credit is given under Tier 2 for future service only. The Cost-of-Living maximum is 4% only for the credit under Tier 2. Transferred Tier 2 members keep the five-year requirement for nonservice-connected disability. Those who were members on or before March 7, 1973, and Safety members with membership dates on or before January 1, 2013, will be exempt from paying member contributions after 30 years of service.	

OPEB Certification Letter

Milliman

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March 19, 2024

Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

"Roll-Forward" Actuarial Valuation of Other Post Employment Benefits for Staff Employees and Retirees as of January 1, 2023 and GASB 74/75 Disclosures as of December 31, 2023

At the request of the Contra Costa County Employees' Retirement Association ("CCCERA"), we have prepared a "roll-forward" actuarial valuation of Other Post Employment Benefits as of January 1, 2023 for CCCERA's staff employees and retirees, and GASB 74 and 75 disclosures for the fiscal year ending December 31, 2023. Our findings are set forth in this actuary's report.

Purpose of the Valuation

- to provide the Actuarially Determined Contribution for the fiscal year ending December 31, 2023;
- to assess the funded position of the plan; and
- to provide the necessary schedules and other information for financial reporting requirements under GASB Statement No. 74 and GASB Statement No. 75 as of December 31, 2023

Actuarial computations presented in this report are for the purposes of determining the recommended funding amounts for CCCERA. Actuarial computations presented in this report under GASB Statements No. 74 and 75 are for purposes of assisting the CCCERA in fulfilling their financial accounting requirements. The computations prepared for these two purposes may differ as disclosed in our report. The calculations in the enclosed report have been made on a basis consistent with our understanding of the CCCERA's funding policy. The calculations in this report have been made on a basis consistent with our understanding of the plan provisions briefly described in Appendix A of this report, and of GASB Statements No. 74 and 75. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

Actuarial Assumptions

Actuarial assumptions, including discount rates, mortality tables, and others identified in this report, and actuarial cost methods are adopted by CCCERA. CCCERA is responsible for selecting the plan's funding policy, actuarial valuation methods, asset valuation methods, and assumptions. The policies, methods, and assumptions used in this valuation are those that have been so adopted and are described in this report. CCCERA is solely responsible for communicating to Milliman any changes required thereto. All costs, liabilities, rates of interest, and other factors for CCCERA have been determined on the basis of actuarial assumptions and methods which, in our professional opinion, are individually reasonable, and which, in combination, offer a reasonable estimate of anticipated future experience affecting the CCCERA and are expected to have no significant bias.

Contra Costa County Employees' Retirement Association
March 19, 2024
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Variability of Results

This valuation report is only an estimate of the Plan's financial condition as of a single date. It can neither predict the Plan's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of Plan benefits, only the timing of CCCERA's contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

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 (such as the end of an amortization period); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. CCCERA has the final decision regarding the appropriateness of the assumptions and actuarial cost methods.

Reliance

In preparing this report, we relied, without audit, on information supplied by CCCERA's staff. This information includes, but is not limited to, benefit provisions, member census data, and financial information. We found this information to be reasonably consistent and comparable with information used for other purposes. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete our results may be different, and our calculations may need to be revised.

Limited Distribution

Milliman's work is prepared solely for the use and benefit of the Contra Costa County Employees' Retirement Association ("CCCERA"). To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

a) CCCERA may provide a copy of Milliman's work, in its entirety, to CCCERA's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit CCCERA.

b) CCCERA may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

Contra Costa County Employees' Retirement Association
March 19, 2024
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Models

The valuation results were developed using models employing standard actuarial techniques. The intent of the models was to estimate retiree claim costs and trend used in this analysis. We have reviewed the models, including their inputs, calculations, and outputs, for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice (ASOPs). The models, including all input, calculations, and output may not be appropriate for any other purpose.

Qualifications and Certification

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuary is independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, I hereby certify that, to the best of my knowledge and belief, the report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the *Actuarial Standards Board and the Code of Professional Conduct and Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States*, published by the American Academy of Actuaries. The undersigned is a member of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Conclusion
We respectfully submit this report, and we look forward to discussing it with you.

Sincerely,

Reid Earnhardt, ASA, EA, MAAA
Consulting Actuary

OPEB Schedule of Funding Progress

Funded Ratio is a measurement of the funded status of the OPEB liabilities. The Funded Ratio is calculated by dividing the Fiduciary Net Position plan assets of the OPEB Trust by the Total OPEB Liability. In the table below, CCCERA's OPEB Trust indicates plan assets are approximately 2% more than the Total OPEB Liability.

The reason for the increase in the funded ratio is plan experience gains; actual health premiums being less than projected; fewer retirees electing benefits at retirement than assumed; and combined with employer contributions from CCCERA.

OPEB Schedule of Funding Progress

For Years 2018 through 2023*
(Dollars in Thousands)

Actuarial Valuation Date	Fiduciary Net Position (a)	Total OPEB Liability (TOL) (b)	Net OPEB Liability (NOL) (Asset) (b−a)	Funded Ratio (a) / (b)	Projected Employer-Covered Payroll (c)	NOL (Asset) as a Percentage of Employer-Covered Payroll [(b)−(a)] / (c)
12/31/2018	$2,542	$4,710	$2,168	54.0%	$4,997	43.4%
12/31/2019	3,630	5,139	1,509	70.6%	5,385	28.0%
12/31/2020	4,666	5,092	426	91.6%	5,910	7.2%
12/31/2021	5,265	5,535	270	95.1%	6,329	4.3%
12/31/2022	4,580	4,506	(74)	101.6%	6,155	(1.2%)
12/31/2023	5,079	4,700	(379)	108.1%	7,239	(5.2%)

* 10-year OPEB Schedule of Funding Progress only available since inception date 2018.

OPEB Key Methods and Assumptions

Key Methods and Assumptions Used in Biennial Actuarial Valuation of Total OPEB Liability

Valuation Date	January 1, 2023
Measurement Date	December 31, 2023
Valuation Type	Roll-Forward
Actuarial Cost Method	Entry Age Normal Cost
Amortization Method	Level Dollar Basis
Amortization Period	Ten years (Five years remaining as of December 31, 2023)
Asset Valuation Method	Fair value of assets
Investment Rate of Return	6.50%
Inflation Rate	2.75%
Assumed Salary Increases	3.53% to 14.34% varying by years of service
Other Assumptions	Consistent with those used in the December 31, 2022, Actuarial Valuation for CCCERA Pension Plan

Demographic Assumptions

Below is a summary of the assumed rates for mortality, retirement, disability, and withdrawal, which are consistent with the assumptions used in the December 31, 2023, actuarial valuation for the CCCERA Pension Plan.

Pre/Post Retirement Mortality

Healthy	Pub-2010 General Healthy Retiree Head Count Weighted Mortality Tables for males and females, projected generationally with the two-dimensional MP-2021 projection scale.
Disabled	Pub-2010 General Disabled Retiree Head Counted Weighted Mortality Tables for males and females, projected generationally with the two-dimensional MP-2021 projection scale.
Beneficiaries	Pub-2010 Contingent Survivor Head Count Weighted Mortality Tables for males and females, projected generationally with the two-dimensional MP-2021 projection scale.
Withdrawal	Sample probabilities of terminating employment from CCCERA are shown below for selected years of CCCERA service.

Years of Service	General
Less than 1	14.00%
1	9.50%
2	9.00%
3	6.25%
4	6.25%
5	5.00%
10	3.50%
15	2.25%
20 or more	1.50%

Summary of OPEB Benefits

Eligibility

Eligible for the Premium Subsidy

- Unrepresented CCCERA staff employees who are hired prior to January 1, 2009, with completion of five years of CCCERA service and retire with a CCCERA pension benefit.
- AFSCME CCCERA staff employees who are hired prior to January 1, 2010, with completion of five years of CCCERA service and retire with a CCCERA pension benefit.

PEMHCA Minimum Contribution

- Unrepresented CCCERA staff employees who are hired on or after January 1, 2009, with completion of five years of CCCERA service and retire with a CCCERA pension benefit.
- AFSCME CCCERA staff employees who are hired on or after January 1, 2010, with completion of five years of CCCERA service and retire with a CCCERA pension benefit.

Health Benefits (Retirement Date on or after January 1, 2015)

Eligible CCCERA staff retirees and their dependents may elect coverage under the health plans sponsored by CalPERS. For retirees who meet the eligibility requirements to receive the premium subsidy, CCCERA will pay the monthly premium subject to maximum subsidies shown in the table below by rate tier for plan 2019 as listed in the Memorandum of Understandings between CCCERA and its bargaining units.

2019 Employer Monthly Maximum Premium Subsidy

CalPers Health Plans	Employee Only	Employee & 1 Dependent	Employee & 2 Dependents
Anthem HMO Select	$782.95	$1,565.89	$2,035.66
Anthem HMO Traditional	746.47	1,492.94	1,940.82
BSC Access+	746.47	1,492.94	1,940.82
HealthNet Smartcare	804.97	1,609.95	2,092.93
Kaiser Permanente	763.16	1,526.33	1,984.23
PERS Choice	746.47	1,492.94	1,940.82
PERS Select	543.19	1,086.38	1,412.29
PERSCare	746.47	1,492.94	1,940.82
Western Health Advantage	746.47	1,492.94	1,940.82

For 2019 and beyond, if there is an increase in the monthly premium charged by a medical plan,

CCCERA and the employee will each pay fifty percent (50%) of the monthly increase that is above the amount of the 2019 plan premium. The fifty percent (50%) share of the monthly medical plan increase paid by CCCERA is in addition to the amount paid by CCCERA for the 2019 plan year.

For dental coverage, CCCERA's monthly premium subsidy is a set dollar amount as shown in the table below. For 2020 and beyond, if there is an increase in the monthly dental premium charged by the dental carrier, CCCERA and the employee will each pay fifty percent (50%) of the monthly increase that is above the amount of the 2020 plan premium. The fifty percent (50%) share of the monthly dental plan increase paid by CCCERA is in addition to the amount paid by CCCERA for the 2020 plan year.

2020 Dental Coverage Subsidy

Employee Only	$46.21
Employee and Spouse	103.72
Employee and Child	103.41
Family	169.38

For employees who meet the eligibility to receive the PEMHCA minimum contribution the benefit is $149 per month for 2022 and $151 for 2023, subject to an annual increase based on the medical Consumer Price Index.

STATISTICAL

Summary of Statistical Data

The objective of the Statistical Section is to provide users with additional detailed information in order to promote a more comprehensive understanding of CCCERA's financial statements, note disclosures and supplemental information. In addition, the multi-year trend information for the financial and operating segments of CCCERA provided in this section is intended to facilitate understanding of how the financial activities and positions have changed over time. The information is presented in two major categories: Financial Trends Information and Operating Information.

Financial Trends Information is intended to assist readers in understanding how CCCERA's financial activities and positions have changed over time. The *Changes in Fiduciary Net Position for Years 2014–2023* presents additions by source, deductions by type, and the total change in fiduciary net position for each year. The *Schedule of Benefit Expenses by Type* for the last ten years presents benefit deductions by type of benefit, such as by Service Retirement and Disability Retirement, as well as by General and Safety benefits.

Operating Information is intended to provide contextual information about CCCERA's operations and membership to assist readers in using financial statement information to comprehend and evaluate CCCERA's fiscal condition. This section includes the *Schedule of Retired Members by Type of Benefit*, which presents information as of the current valuation period. The *Schedule of Average*

Changes in Fiduciary Net Position

For Years Ended December 31, 2014, through 2023
(Dollars in Thousands)

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Additions										
Employer Contributions	$373,148	$352,384	$410,760	$336,357	$327,983	$325,117	$314,836	$307,909	$323,720	$293,760
Plan Member Contributions	132,104	122,304	117,017	113,494	108,488	103,542	96,467	88,788	85,361	78,258
Net Investment Income (Loss)	882,547	(1,272,930)	1,416,366	890,943	1,176,419	(187,339)	995,678	501,733	82,429	488,873
Securities Lending Income	1,169	1,054	732	1,069	1,120	1,582	878	1,630	1,165	1,167
Total Additions	**1,388,968**	**(797,188)**	**1,944,875**	**1,341,863**	**1,614,010**	**242,902**	**1,407,859**	**900,060**	**492,675**	**862,058**
Deductions										
Benefits Paid	594,474	563,881	533,229	501,210	478,688	453,162	430,777	412,291	401,802	387,355
Contribution Prepayment Discount	15,466	10,032	9,755	9,618	9,368	9,274	9,140	9,489	9,983	9,538
Administrative Expense	12,840	11,538	11,237	10,750	10,200	9,337	9,146	8,486	8,115	6,980
Refunds of Contributions	10,063	13,738	5,884	5,925	7,617	8,093	5,518	7,154	4,434	6,798
Other Expenses	936	3,720	1,242	1,135	1,110	3,631	1,217	702	669	795
Total Deductions	**633,779**	**602,909**	**561,347**	**528,638**	**506,983**	**483,497**	**455,798**	**438,122**	**425,003**	**411,466**
Change in Fiduciary Net Position	**$755,189**	**$(1,400,097)**	**$1,383,528**	**$813,225**	**$1,107,027**	**$(240,595)**	**$952,061**	**$461,938**	**$67,672**	**$450,592**

Benefit Payment Amounts for the last ten years shows the average monthly benefit, and number of retirees and beneficiaries, organized by five-year increments. *Participating Employers and Active Members for Years 2014–2023* presents the employers and number of their corresponding covered employees.

CCCERA reports current year statistical information for 2023 on a one-year lag basis in the *Schedule of Benefits Expenses by Type*, *Schedule of Retired Members by Type of Benefit*, and *Schedule of Average Benefit Payment Amounts*. Due to current year 2023 statistical information not available until calculated by outside actuary as part of the 2023 actuarial valuation—which is after publication of the ACFR—the current year 2023 statistical information is reported in next year's ACFR.

The Statistical Section includes brief information on Other Post-Employment Benefits Plan (OPEB) which is a single-employer defined benefit plan for CCCERA employees separate from CCCERA Pension Plan.

Schedule of Benefit Expenses by Type

For Years Ended December 31, 2013, through 2022
(Dollars in Thousands)

	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Service Retirement Payroll										
General	$298,142	$278,566	$260,375	$247,225	$234,128	$223,019	$213,394	$205,761	$198,783	$188,945
Safety	150,267	143,393	134,736	128,711	121,563	115,069	110,178	107,643	107,104	102,791
Total	**448,409**	**421,959**	**395,111**	**375,936**	**355,691**	**338,088**	**323,572**	**313,404**	**305,887**	**291,736**
Disability Retirement Payroll										
General	12,415	12,545	12,550	12,514	12,286	12,315	12,432	12,531	12,215	12,371
Safety	46,460	44,325	42,529	41,869	39,726	37,111	35,664	35,168	33,631	32,346
Total	**58,875**	**56,870**	**55,079**	**54,383**	**52,012**	**49,426**	**48,096**	**47,699**	**45,846**	**44,717**
Beneficiary Payroll										
General	29,484	28,652	27,139	25,798	24,849	23,971	22,877	22,938	20,249	19,511
Safety	26,062	24,636	22,905	21,643	19,960	18,552	17,528	16,718	15,044	13,845
Total	**55,546**	**53,288**	**50,044**	**47,441**	**44,809**	**42,523**	**40,405**	**39,656**	**35,293**	**33,356**
Total Benefit Expense										
General	340,041	319,763	300,064	285,537	271,263	259,305	248,703	241,230	231,248	220,827
Safety	222,789	212,354	200,170	192,223	181,249	170,732	163,370	159,529	155,778	148,982
Total	**$562,830**	**$532,117**	**$500,234**	**$477,760**	**$452,512**	**$430,037**	**$412,073**	**$400,759**	**$387,026**	**$369,809**

Schedule of Years of Retired Members by Type of Benefit

Summary of Monthly Allowances Being Paid as of December 31, 2022

Amount of Monthly Benefit	Number of Retirees & Beneficiaries	Service	Disability	Beneficiary
General Members				
$0 to $999	1,312	1,029	2	281
$1,000 to $1,999	1,738	1,423	35	280
$2,000 to $2,999	1,484	1,161	138	185
$3,000 to $3,999	1,017	847	69	101
$4,000 to $4,999	726	623	54	49
$5,000 to $5,999	494	436	16	42
$6,000 to $6,999	344	304	5	35
$7,000 to $7,999	255	237	4	14
$8,000 to $8,999	213	198	1	14
$9,000 to $9,999	126	118	-	8
$10,000 & Over	369	358	-	11
Totals	**8,078**	**6,734**	**324**	**1,020**
Safety Members				
$0 to $999	108	66	5	37
$1,000 to $1,999	141	74	2	65
$2,000 to $2,999	144	66	23	55
$3,000 to $3,999	179	81	45	53
$4,000 to $4,999	297	82	131	84
$5,000 to $5,999	266	104	108	54
$6,000 to $6,999	206	122	45	39
$7,000 to $7,999	155	105	26	24
$8,000 to $8,999	131	95	23	13
$9,000 to $9,999	144	113	19	12
$10,000 & Over	712	555	123	34
Totals	**2,483**	**1,463**	**550**	**470**

Schedule of Average Benefit Payment Amounts

General and Safety Combined

Estimates Based on Years of Credited Service

	Years of Credited Service							
Retirement Effective Date	**0–5**	**5–10**	**10–15**	**15–20**	**20–25**	**25–30**	**30+**	**Totals**
1/1/2022 – 12/31/2022								
Average Monthly Benefit	$732	$1,511	$2,433	$4,054	$5,347	$6,746	$8,096	$3,973
Average Final Compensation	$8,973	$8,266	$9,287	$9,137	$10,135	$11,071	$10,919	$9,516
Number of Retired members	31	120	74	74	106	40	60	505
1/1/2021 – 12/31/2021								
Average Monthly Benefit	$526	$1,472	$2,415	$4,020	$5,321	$7,090	$7,790	$4,276
Average Final Compensation	$8,407	$8,025	$7,928	$9,747	$9,928	$11,255	$10,854	$9,476
Number of Retired members	27	63	81	92	89	59	55	466
1/1/2020 – 12/31/2020								
Average Monthly Benefit	$1,042	$1,646	$2,319	$3,302	$5,231	$6,397	$6,728	$3,803
Average Final Compensation	$8,010	$8,661	$8,170	$8,273	$9,675	$9,871	$9,615	$8,884
Number of Retired members	30	73	77	86	74	55	51	446
1/1/2019 – 12/31/2019								
Average Monthly Benefit	$1,180	$1,528	$2,060	$3,848	$4,728	$6,469	$7,273	$3,859
Average Final Compensation	$10,816	$8,003	$6,958	$8,633	$8,991	$9,554	$10,725	$8,712
Number of Retired members	21	47	76	103	67	47	36	397
1/1/2018 – 12/31/2018								
Average Monthly Benefit	$664	$1,309	$2,247	$3,360	$4,991	$6,367	$5,524	$3,384
Average Final Compensation	$8,021	$7,448	$7,452	$7,829	$9,144	$9,653	$7,984	$8,165
Number of Retired members	41	64	87	101	65	60	29	447
1/1/2017 – 12/31/2017								
Average Monthly Benefit	$929	$1,290	$1,982	$2,943	$3,697	$5,907	$5,253	$3,196
Average Final Compensation	$9,131	$6,537	$6,669	$7,566	$7,477	$9,326	$8,101	$7,605
Number of Retired members	12	52	59	72	32	48	34	309
1/1/2016 – 12/31/2016								
Average Monthly Benefit	$988	$1,445	$1,887	$2,611	$3,569	$4,158	$4,590	$2,719
Average Final Compensation	$8,064	$7,085	$6,616	$6,783	$7,368	$7,953	$7,674	$7,208
Number of Retired members	19	48	59	67	51	47	21	312
1/1/2015 – 12/31/2015								
Average Monthly Benefit	$1,344	$1,151	$1,990	$2,478	$3,351	$4,409	$3,619	$2,257
Average Final Compensation	$8,753	$6,379	$6,536	$6,418	$7,670	$8,065	$7,706	$6,867
Number of Retired members	13	55	83	53	34	17	7	262
1/1/2014 – 12/31/2014								
Average Monthly Benefit	$1,292	$1,139	$1,976	$3,048	$4,431	$6,048	$5,318	$3,408
Average Final Compensation	$7,236	$6,426	$6,959	$7,834	$8,740	$9,941	$8,260	$7,959
Number of Retired members	11	51	98	77	68	66	33	404
1/1/2013 – 12/31/2013								
Average Monthly Benefit	$533	$1,150	$1,824	$3,215	$4,454	$5,020	$4,991	$2,739
Average Final Compensation	$7,171	$6,454	$6,399	$8,744	$8,625	$8,993	$9,138	$7,537
Number of Retired members	12	52	87	41	43	27	15	277

Schedule of Average Benefit Payment Amounts

Estimates Based on Annualized Benefit Amounts at December 31 of Each Year

	Years of Retirement								
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40+
General Tier 1									
2022 Average Monthly Benefit	$4,159	$3,412	$5,738	$5,501	$4,956	$3,930	$3,366	$2,629	$2,389
Number Retirees & Beneficiaries	214	228	506	530	529	366	278	200	144
2021 Average Monthly Benefit	$3,869	$3,520	$5,801	$5,297	$4,613	$3,519	$3,233	$2,520	$2,393
Number Retirees & Beneficiaries	197	253	520	598	516	372	264	197	142
2020 Average Monthly Benefit	$3,449	$4,727	$5,353	$5,099	$4,072	$3,430	$3,007	$2,277	$2,161
Number Retirees & Beneficiaries	228	388	488	613	478	369	259	205	127
2019 Average Monthly Benefit	$2,999	$5,070	$5,028	$4,844	$3,863	$3,291	$2,598	$2,218	$2,284
Number Retirees & Beneficiaries	212	479	507	587	469	374	276	191	111
2018 Average Monthly Benefit	$3,151	$5,041	$4,999	$4,441	$3,580	$3,099	$2,432	$2,142	$2,306
Number Retirees & Beneficiaries	219	511	544	576	467	388	304	184	100
2017 Average Monthly Benefit	$2,978	$5,246	$4,753	$4,236	$3,127	$2,917	$2,198	$2,333	$2,066
Number Retirees & Beneficiaries	227	538	616	563	447	414	301	182	90
2016 Average Monthly Benefit	$3,364	$5,011	$4,649	$3,853	$3,116	$2,694	$2,188	$2,117	$2,011
Number Retirees & Beneficiaries	282	534	622	586	478	377	303	187	81
2015 Average Monthly Benefit	$4,178	$4,674	$4,452	$3,570	$3,025	$2,519	$2,006	$2,081	$1,627
Number Retirees & Beneficiaries	387	503	650	550	489	395	341	194	78
2014 Average Monthly Benefit	$4,505	$4,453	$4,203	$3,336	$2,952	$2,325	$1,927	$2,069	$1,543
Number Retirees & Beneficiaries	471	515	612	543	482	405	322	169	59
2013 Average Monthly Benefit	$4,531	$4,417	$3,861	$3,123	$2,784	$2,240	$1,868	$1,999	$1,465
Number Retirees & Beneficiaries	500	559	602	528	487	435	317	158	47
General Tier 2									
2022 Average Monthly Benefit	$614	$560	$701	$852	$1,233	$1,230	$1,431	$1,207	$474
Number Retirees & Beneficiaries	35	43	46	76	142	139	42	4	1
2021 Average Monthly Benefit	$626	$477	$849	$1,001	$1,199	$1,167	$1,328	$855	-
Number Retirees & Beneficiaries	35	40	55	86	169	122	30	6	-
2020 Average Monthly Benefit	$632	$354	$894	$1,077	$1,266	$1,042	$1,395	$705	-
Number Retirees & Beneficiaries	44	36	67	117	167	94	14	5	-
2019 Average Monthly Benefit	$528	$439	$822	$1,046	$1,248	$1,071	$1,307	$851	-
Number Retirees & Beneficiaries	43	42	68	131	180	71	12	4	-
2018 Average Monthly Benefit	$486	$492	$762	$1,169	$1,093	$1,230	$942	$506	
Number Retirees & Beneficiaries	47	45	76	150	174	63	9	2	
2017 Average Monthly Benefit	$456	$715	$734	$1,118	$1,098	$1,137	$947	$405	
Number Retirees & Beneficiaries	38	55	80	174	154	54	8	1	
2016 Average Monthly Benefit	$303	$698	$905	$1,115	$945	$1,356	$1,030		
Number Retirees & Beneficiaries	34	66	94	197	129	42	8		
2015 Average Monthly Benefit	$366	$731	$940	$1,091	$929	$1,643	$681		
Number Retirees & Beneficiaries	37	72	122	193	120	25	6		
2014 Average Monthly Benefit	$413	$671	$762	$1,109	$1,005	$1,365	$732		
Number Retirees & Beneficiaries	39	73	114	206	100	21	4		
2013 Average Monthly Benefit	$440	$654	$919	$1,003	$1,140	$922	$524		
Number Retirees & Beneficiaries	45	77	136	202	85	15	3		

(continues)

Schedule of Average Benefit Payment Amounts *(continued)*

Estimates Based on Annualized Benefit Amounts at December 31 of Each Year

	Years of Retirement								
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40+
General Tier 3									
2022 Average Monthly Benefit	$3,593	$2,843	$3,629	$3,041	$1,993	$1,694	$1,761	-	$ -
Number Retirees & Beneficiaries	1268	1101	1218	655	189	2	1	-	-
2021 Average Monthly Benefit	$3,351	$2,885	$3,462	$2,902	$1,728	$1,629	$1,703	$ -	$ -
Number Retirees & Beneficiaries	1197	1142	1094	588	143	2	1	-	-
2020 Average Monthly Benefit	$2,972	$3,131	$3,240	$2,399	$1,687	$2,336	$1,660	$ -	$3,518
Number Retirees & Beneficiaries	1232	1349	803	444	69	1	1	-	1
2019 Average Monthly Benefit	$2,699	$3,169	$3,045	$2,073	$1,791	$1,940	$ -	$ -	$145
Number Retirees & Beneficiaries	1140	1345	786	333	36	2	-	-	1
2018 Average Monthly Benefit	$2,566	$3,172	$2,730	$1,740	$1,491	$1,558			
Number Retirees & Beneficiaries	1148	1285	731	259	2	1			
2017 Average Monthly Benefit	$2,388	$3,182	$2,529	$1,581	$1,447	$1,513			
Number Retirees & Beneficiaries	1043	1261	683	175	2	1			
2016 Average Monthly Benefit	$2,549	$3,043	$2,307	$1,494	$1,398	$1,466			
Number Retirees & Beneficiaries	1150	1105	568	140	2	1			
2015 Average Monthly Benefit	$2,721	$2,742	$2,053	$1,464	$1,986	$1,423			
Number Retirees & Beneficiaries	1368	858	476	77	1	1			
2014 Average Monthly Benefit	$2,772	$2,577	$1,811	$1,520	$1,634				
Number Retirees & Beneficiaries	1364	844	375	46	2				
2013 Average Monthly Benefit	$2,769	$2,374	$1,518	$1,677	$1,594				
Number Retirees & Beneficiaries	1297	776	306	3	2				
General Tier 4 (PEPRA)									
2022 Average Monthly Benefit	$1,387								
Number Retirees & Beneficiaries	5								
2021 Average Monthly Benefit	$1,403								
Number Retirees & Beneficiaries	4								

NOTE: 2021 was the first year for which there were retirees in General Tier 4 (PEPRA).

	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40+
General Tier 5 (PEPRA)									
2022 Average Monthly Benefit	$900	$398							
Number Retirees & Beneficiaries	111	5							
2021 Average Monthly Benefit	$748								
Number Retirees & Beneficiaries	67								
2020 Average Monthly Benefit	$719								
Number Retirees & Beneficiaries	39								
2019 Average Monthly Benefit	$586								
Number Retirees & Beneficiaries	20								
2018 Average Monthly Benefit	$383								
Number Retirees & Beneficiaries	11								

NOTE: 2018 was the first year for which there were retirees in General Tier 5 (PEPRA).

(continues)

Schedule of Average Benefit Payment Amounts *(continued)*

Estimates Based on Annualized Benefit Amounts at December 31 of Each Year

	Years of Retirement								
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40+
Safety Tier A and C									
2022 Average Monthly Benefit	$6,679	$6,743	$8,807	$8,909	$8,417	$6,344	$6,424	$4,932	$4,530
Number Retirees & Beneficiaries	379	325	488	412	361	186	137	90	86
2021 Average Monthly Benefit	$6,600	$6,395	$8,784	$9,093	$7,248	$6,090	$5,873	$4,501	$4,627
Number Retirees & Beneficiaries	391	335	458	494	276	193	108	93	80
2020 Average Monthly Benefit	$6,162	$7,568	$8,546	$8,348	$6,874	$5,769	$5,227	$4,241	$4,682
Number Retirees & Beneficiaries	401	435	402	422	274	192	102	75	73
2019 Average Monthly Benefit	$5,963	$7,756	$8,326	$7,749	$6,497	$5,860	$4,656	$4,514	$4,484
Number Retirees & Beneficiaries	348	487	416	383	254	185	105	70	66
2018 Average Monthly Benefit	$5,949	$7,651	$7,991	$7,493	$5,863	$5,594	$4,476	$4,629	$4,206
Number Retirees & Beneficiaries	328	502	414	383	215	169	110	72	57
2017 Average Monthly Benefit	$5,640	$7,737	$7,899	$6,943	$5,574	$5,144	$4,182	$4,553	$4,023
Number Retirees & Beneficiaries	292	495	461	347	199	139	110	70	47
2016 Average Monthly Benefit	$6,069	$7,582	$7,890	$6,126	$5,409	$4,857	$4,176	$4,459	$3,833
Number Retirees & Beneficiaries	341	459	470	298	208	123	108	64	43
2015 Average Monthly Benefit	$6,590	$7,444	$7,262	$5,984	$5,033	$4,775	$3,983	$4,336	$3,676
Number Retirees & Beneficiaries	440	412	438	288	213	122	94	69	49
2014 Average Monthly Benefit	$6,837	$7,376	$6,771	$5,715	$5,227	$4,298	$4,157	$4,170	$3,397
Number Retirees & Beneficiaries	487	426	403	263	205	121	89	73	38
2013 Average Monthly Benefit	$6,858	$7,145	$6,583	$5,150	$5,117	$4,155	$4,255	$3,986	$3,093
Number Retirees & Beneficiaries	493	421	404	226	186	123	90	69	33
Safety Tier D and E (PEPRA)									
2022 Average Monthly Benefit	$2,434	$2,431							
Number Retirees & Beneficiaries	18	1							
2021 Average Monthly Benefit	$1,828	$2,360							
Number Retirees & Beneficiaries	9	1							
2020 Average Monthly Benefit	$2,099								
Number Retirees & Beneficiaries	4								
2019 Average Monthly Benefit	$1,679								
Number Retirees & Beneficiaries	3								
2018 Average Monthly Benefit	$2,160								
Number Retirees & Beneficiaries	1								

NOTE: 2018 was the first year for which there were retirees in Safety Tiers D and E (PEPRA).

Participating Employers and Active Members for Years 2014–2023

	2023[1]	% of Totals	2022	2021	2020	2019	2018	2017	2016	2015	2014
County of Contra Costa											
General Members	7,855	76.04%	7,667	7,627	7,672	7,657	7,608	7,643	7,436	7,306	6,897
Safety Members	895	8.65%	880	906	911	910	937	947	951	936	894
Total County of Contra Costa	8,750	84.77%	8,547	8,533	8,583	8,567	8,545	8,590	8,387	8,242	7,791
Participating Agencies											
Bethel Island Municipal Improvement District	5	0.05%	5	5	5	4	4	4	1	1	1
Byron-Brentwood-Knightsen Union Cemetery District	4	0.04%	5	5	4	3	4	4	4	5	5
Central Contra Costa Sanitary District	279	2.70%	281	277	272	283	278	279	282	272	262
Contra Costa County Employees' Retirement Association	66	0.64%	59	61	59	58	56	51	47	48	43
Contra Costa County Fire Protection District	534	5.16%	481	391	396	380	348	326	337	304	297
Contra Costa Mosquito and Vector Control District	32	0.31%	31	33	35	34	36	35	33	33	33
First 5—Contra Costa Children & Families Commission	24	0.23%	28	29	30	28	30	29	28	26	22
Housing Authority of the County of Contra Costa	78	0.75%	80	82	84	81	82	82	87	84	82
In-Home Supportive Services Authority (IHSS)	14	0.14%	14	14	15	16	15	15	15	13	12
Local Agency Formation Commission (LAFCO)	2	0.02%	1	1	1	1	2	2	2	2	2
Moraga-Orinda Fire Protection District	65	0.63%	65	67	71	65	61	64	63	62	62
Rodeo-Hercules Fire Protection District	22	0.21%	20	21	21	19	21	19	18	24	23
Rodeo Sanitary District	8	0.08%	6	6	7	6	7	7	7	8	7
San Ramon Valley Fire Protection District	169	1.63%	173	163	169	170	164	172	164	152	155
Superior Court of California, County of Contra Costa	297	2.87%	286	276	303	318	331	323	330	331	324
East Contra Costa Fire Protection District[2]	-	-	-	41	44	42	37	36	43	35	38
Total Participating Agencies	1,599	15.23%	1,535	1,472	1,516	1,508	1,476	1,448	1,461	1,400	1,368
Total Active Membership	**10,349**	**100.00%**	**10,082**	**10,005**	**10,099**	**10,075**	**10,021**	**10,038**	**9,848**	**9,642**	**9,159**

1 2023 total active membership is preliminary and will be finalized upon completion of 2023 Actuarial Valuation report anticipated in August 2024.

2 East Contra Costa Fire Protection District was annexed by Contra Costa County Fire Protection District in June 2022.

CCCERA OPEB Trust Plan

Changes in Fiduciary Net Position and Participant Data

For Years Ended December 31, 2018, through 2023[1]
(Dollars in Thousands)

	2023	2022	2021	2020	2019	2018
Additions						
Employer Contribution	$158	$268	$268	$536	$828	$2,542
Net Investment Income (Loss)	549	(797)	414	566	313	-
Total Additions	**707**	**(529)**	**682**	**1,102**	**1,141**	**2,542**
Deductions						
Benefits Paid	208	156	83	66	53	-
Total Deductions	**208**	**156**	**83**	**66**	**53**	**-**
Change in Fiduciary Net Position	**$499**	**$(685)**	**$599**	**$1,036**	**$1,088**	**$2,542**

1 Due to OPEB Plan inception date, information not available for ten years.

Participant Data from 2023 Valuation		
Active Employees	66	60
Average Age at Valuation Date	48.59	48.59
Current Retirees	18	7
Average Age at Retirement	63.43	63.43

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CCCERA
Contra Costa County Employees'
Retirement Association

1200 Concord Avenue, Suite 300
Concord, California 94520
www.cccera.org

Meeting Date
06/26/2024
Agenda Item
#5

Contra Costa County Employees' Retirement Association

Timothy Price

Chief Investment Officer

CCCERA Asset Liability Study

July 26, 2024

Overview

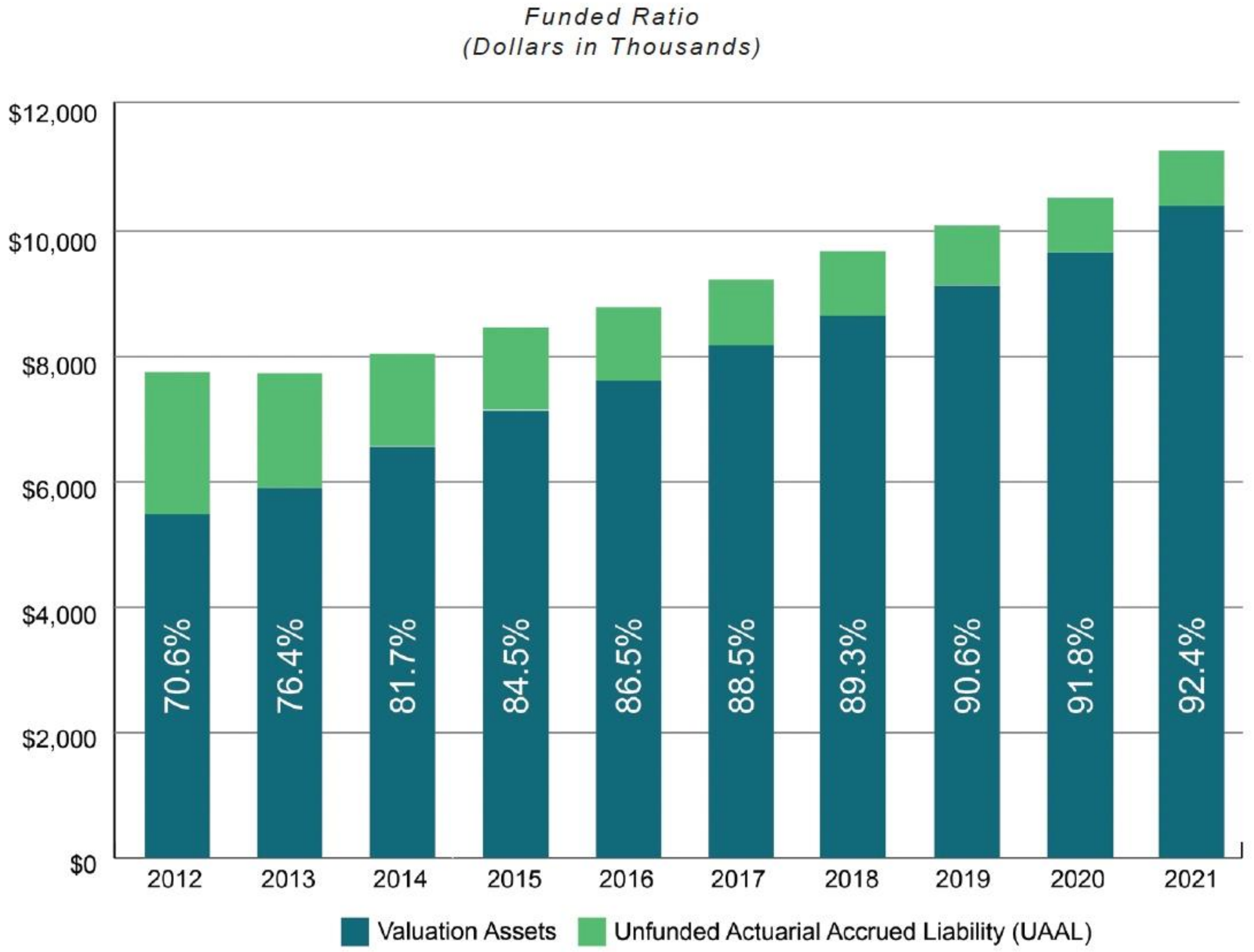
1. Role of Asset/Liability Study in CCCERA Governance
2. Plan dynamics
3. Market dynamics
4. Next steps

Role of Asset/Liability Study

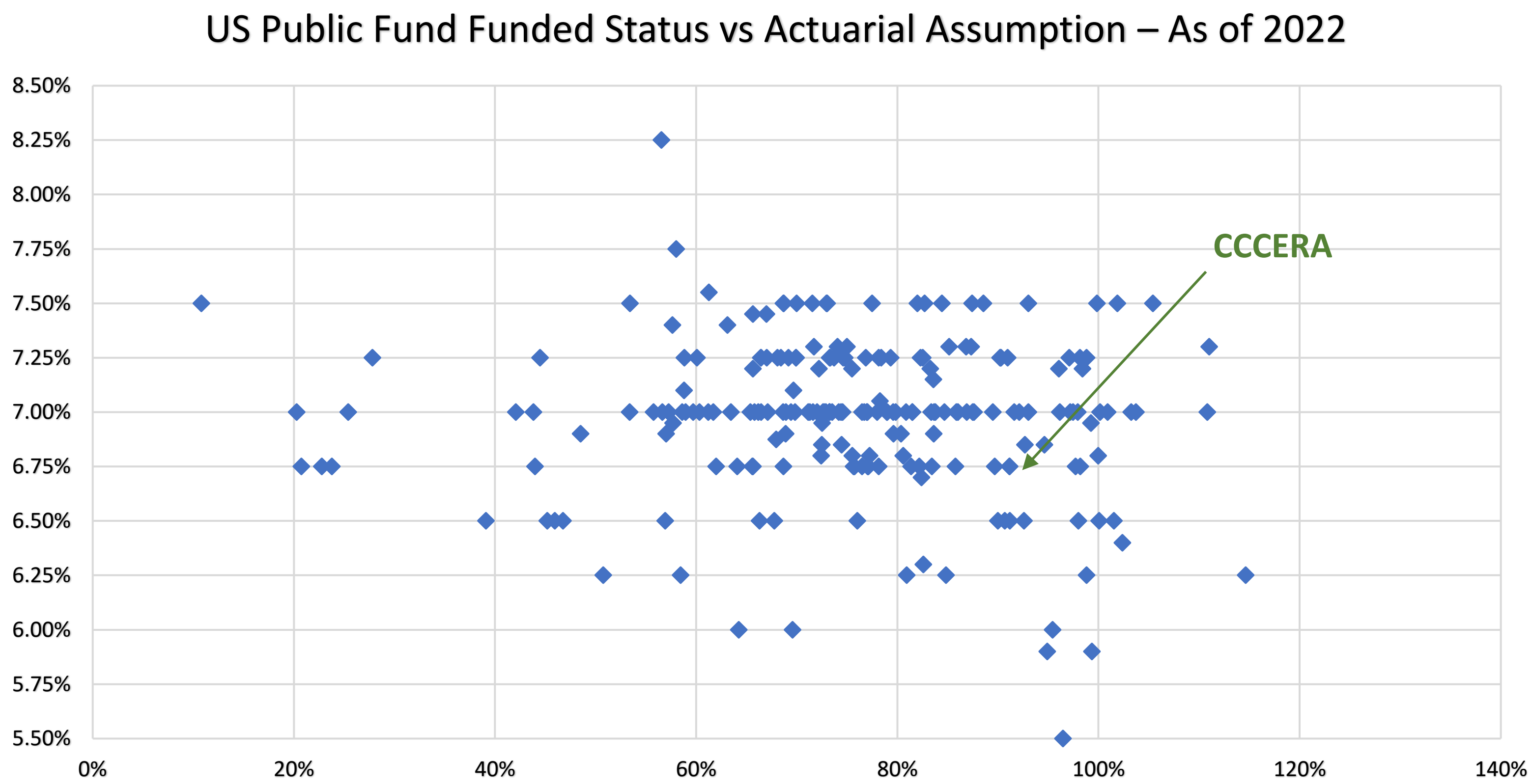
- Asset/Liability study conducted every 3-5 years
  - Last conducted in 2016 and 2020
- Measures how effectively various asset mixes can be used to fund projected plan liabilities
- Results in Board adoption of a strategic asset allocation (SAA) targets
- SAA gives staff direction to implement the new asset mix
- **Provides the framework for managing the investment portfolio for the next 3-5 years**

Plan Dynamics

Steady Growth



Funded Status



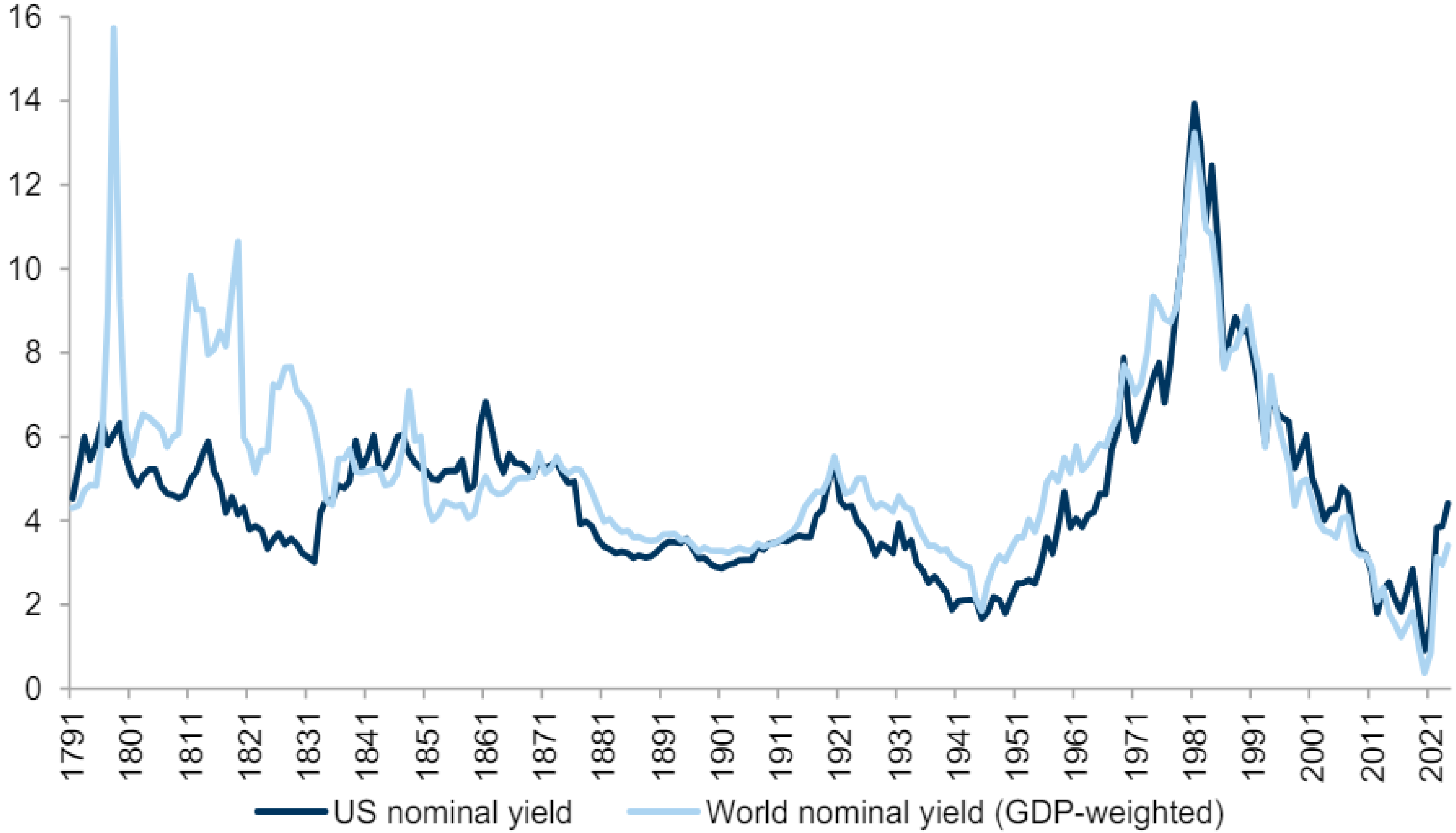
Source: Center for Retirement Research at Boston College

Projected Cash Flow

Net Cashflow	2024	2026	2028	2030	2032	2034	2036	2038	2040	2042
$M	(177)	(212)	(241)	(364)	(538)	(493)	(514)	(550)	(583)	(673)
% of Projected Assets	-1.6%	-1.8%	-1.8%	-2.6%	-3.5%	-3.0%	-2.9%	-2.9%	-2.9%	-3.1%

Market Dynamics

250 years of rates



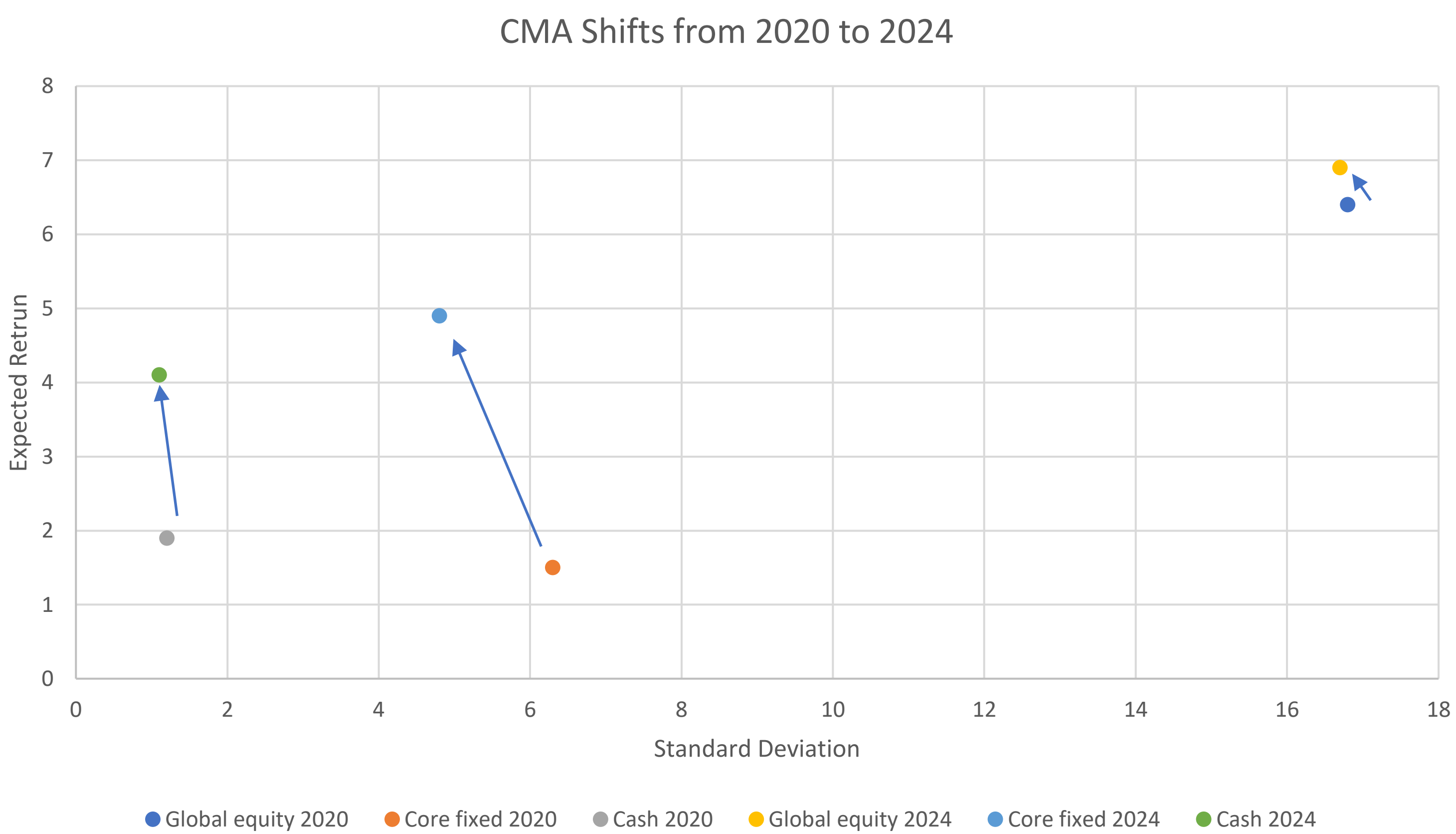
Source: Bloomberg, Goldman Sachs

Base rates closer to normal

60/40 TOTAL RETURN		RISK FREE RATE		BETA
Since 1980				
10%	=	5.2%	+	4.8%
Since 2004				
7.3%	=	1.5%	+	5.8%

PORTFOLIO TODAY				
2024 CMAs				
7.5%	=	4.1%	+	3.4%

Flatter Capital Market Line



Next Steps

- Review Verus study and recommendations
- Board agrees on long-term target or asks for additional information
- Once long-term target is adopted, launch an implementation study
- Update Investment Policy Statement
- Adopt updated Investment Resolution

Meeting Date
06/26/2024
Agenda Item
#5

Verus

PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS

JUNE 2024

Asset/Liability Study

Contra Costa County Employees’ Retirement Association

Table of contents

Verus®

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SEATTLE 206.622.3700
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Executive summary

— FFP has served CCCERA well, but opportunities for improvement exist

— CCCERA's risk tolerance has remained stable over time

— A higher rate environment has increased the utility of income generating investments and decreased the opportunity cost of cash and equivalent securities relative to equity

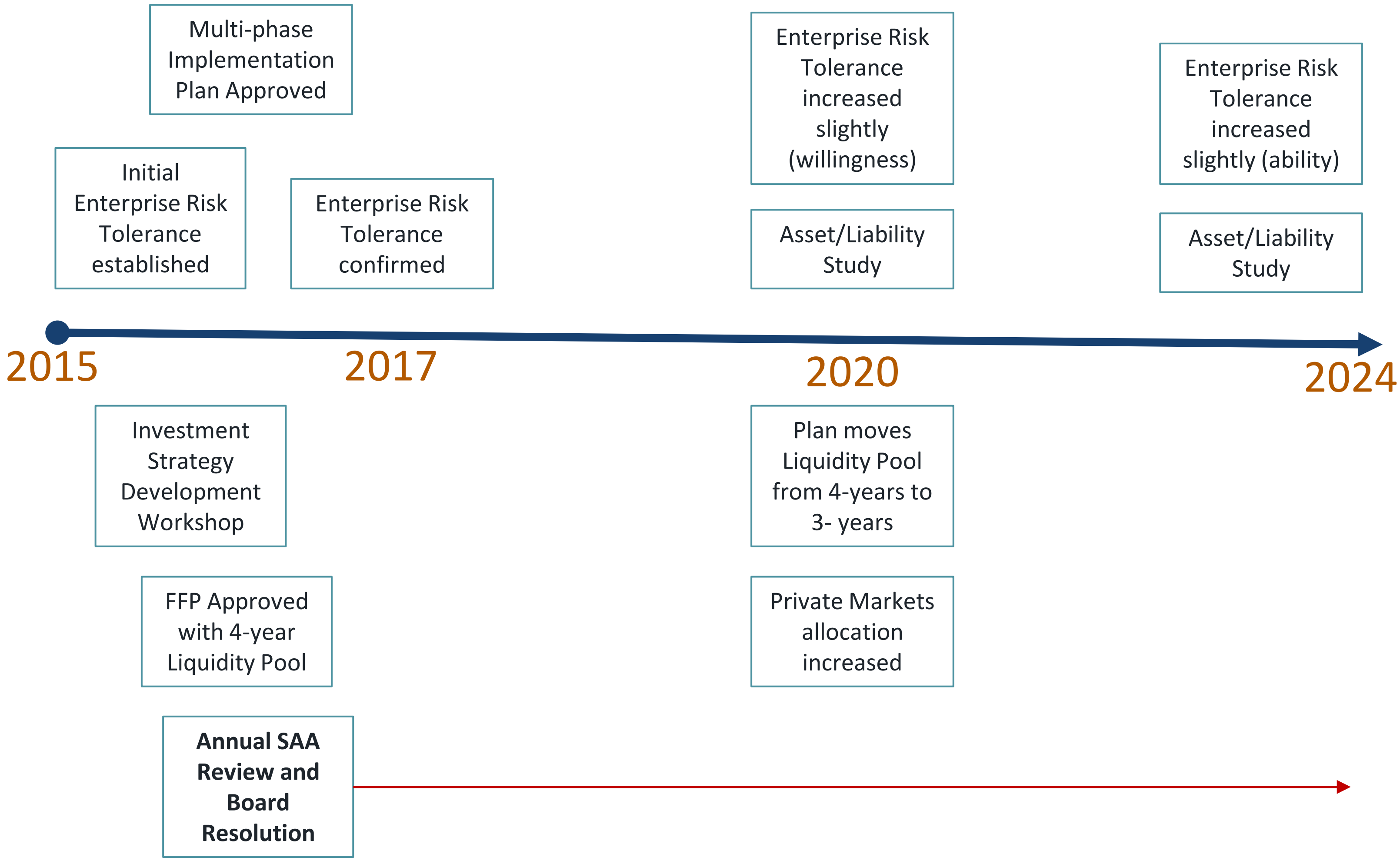
— Adjustments to CCCERA's long-term Strategic Asset Allocation are appropriate

— Recommendations include:

- **Growth Portfolio:** Remove Risk Parity; add Estate Debt and Multi-Sector Credit
- **Risk Diversifying Portfolio:** Remove Core FI; add US Treasuries
- **Liquidity Portfolio:** Maintain 3-Yr reserve

Introduction

Historical context



Portfolio and market evolution

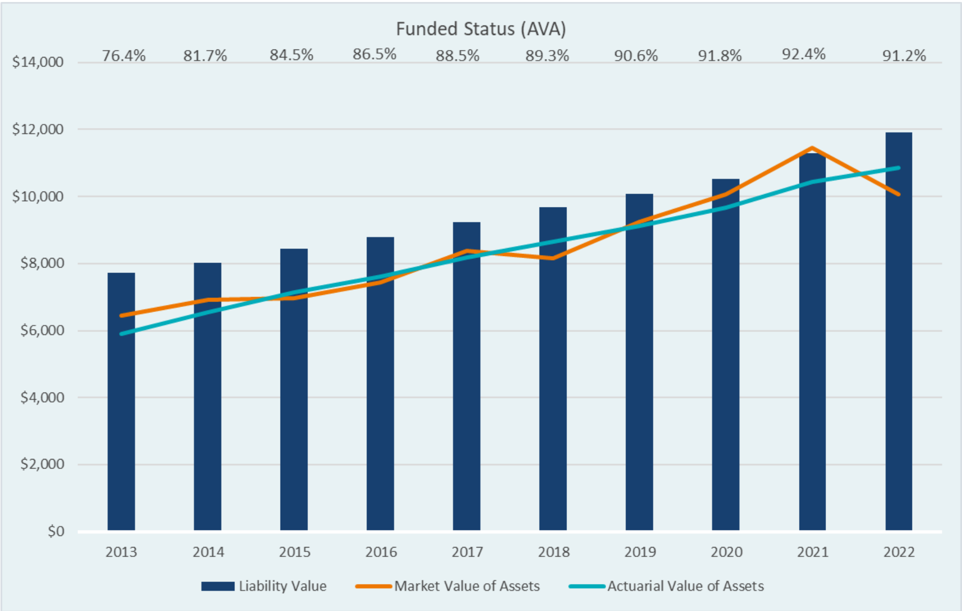
	2016	2020	2024
POLICY ALLOCATION			
Growth	63%	76%	76%
Diversifying	12%	7%	7%
Liquidity	25%	17%	17%
CAPITAL MARKET ASSUMPTIONS			
Global Equity	7.4%	6.4%	6.9%
Core Fixed Income	3.1%	1.5%	4.9%
Cash	2.1%	1.9%	4.1%
EXPECTED OUTCOME			
10-Year Annualized Return	6.6%	6.9%	8.1%
Annual Standard Deviation	9.5%	11.8%	11.9%

Risk premia have narrowed as rates have increased, but higher rates have also also led to higher return expectations

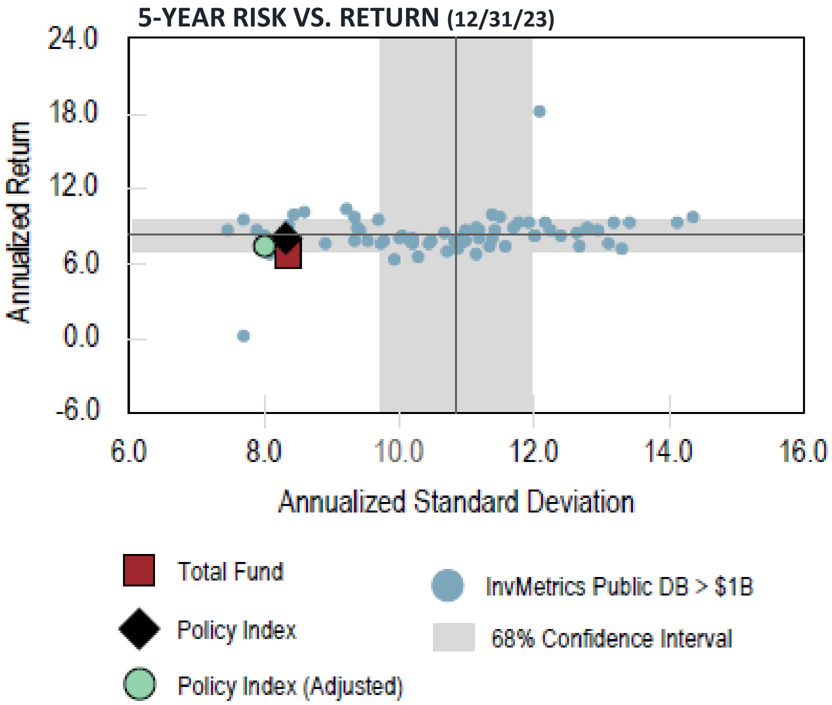
Source: CCCERA Annual Resolutions, Verus Capital Markets Assumptions, MPI

FFP has served CCCERA well…

Funded status has increased steadily since the inception of the FFP strategy



CCCERA's risk/reward profile has been much more favorable than more traditional portfolios



Source: Segal 2022 Actuarial Valuation Review
Note: Valuation value of assets was used to calculate funded status

…but improvement opportunities remain

Performance has lagged the policy and implementation benchmarks over multiple years

	2023	2022	2021	2020	2019	2018	2017	2016
Total Fund	9.0	-10.6	13.9	9.2	14.6	-2.7	13.9	6.9
Policy Index	9.9	-8.4	15.3	10.8	14.6	-0.9	13.7	8.9
Implementation Index	9.0	-8.7	14.2	8.7	13.6	-1.5	13.2	8.0

Risk Parity has not met expectations since inception

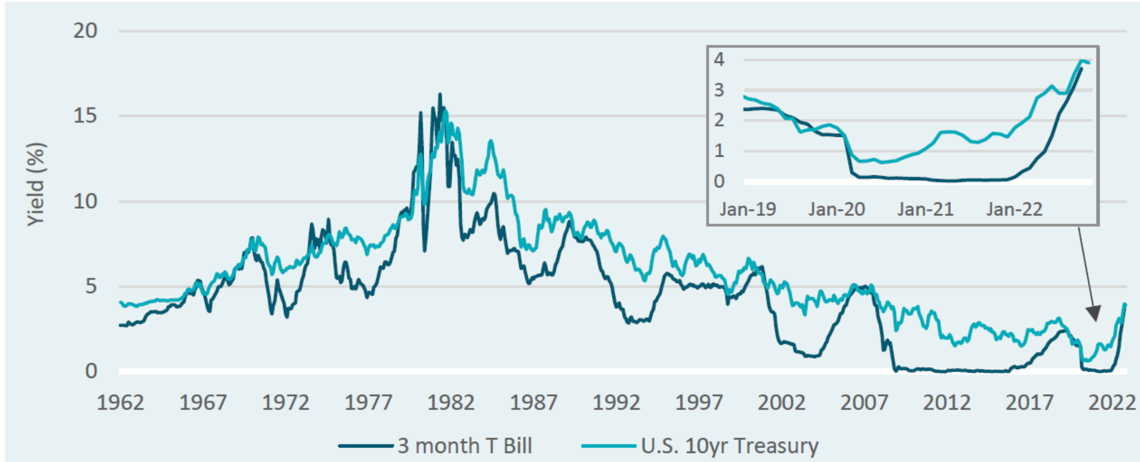
	2023	2022	2021	2020	2019
Risk Parity	4.9	-21.5	9.7	10.0	18.1
RP Benchmark	15.4	-17.3	8.8	14.0	18.6

Source: Verus Quarterly Performance Report, CCCERA Quarterly CIO Report

Perspectives on diversification

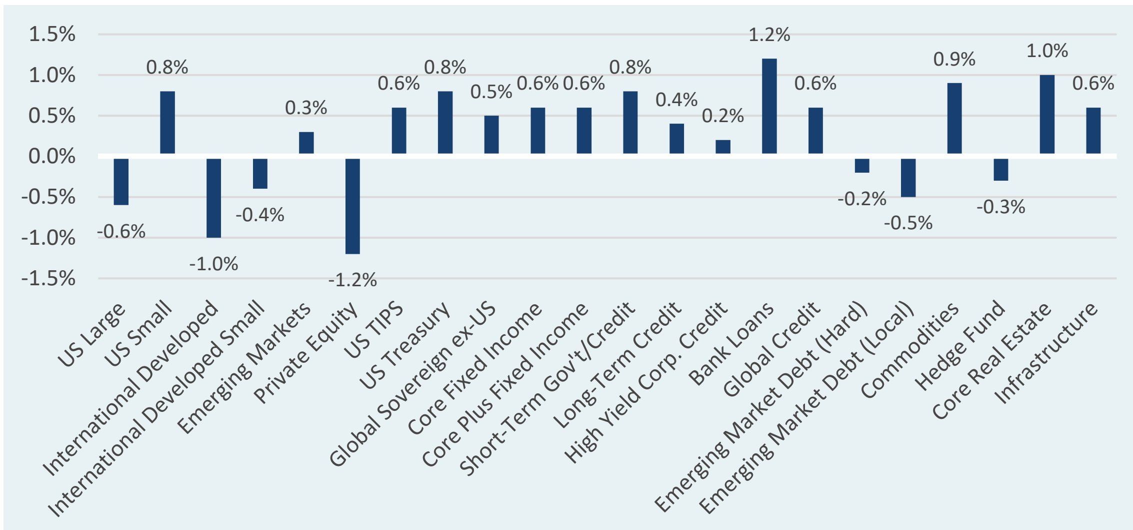
- Persistently low interest rates since the GFC led to outperformance of public equity-heavy portfolios and a decrease in the value of diversification
- "Normalization" of rates following the recovery from the Global Pandemic has led to renewed confidence in the value of diversification as the gap between expected returns for equity and lower-risk, rate-based investments has narrowed
- This "return to normal" should provide a tail wind to CCCERA's FFP structure and also lead to favorably divergent **upside and downside market capture**

A HIGHER RATE ENVIRONMENT



Source: FRED

2023 VS. 2024 RETURN EXPECTATIONS

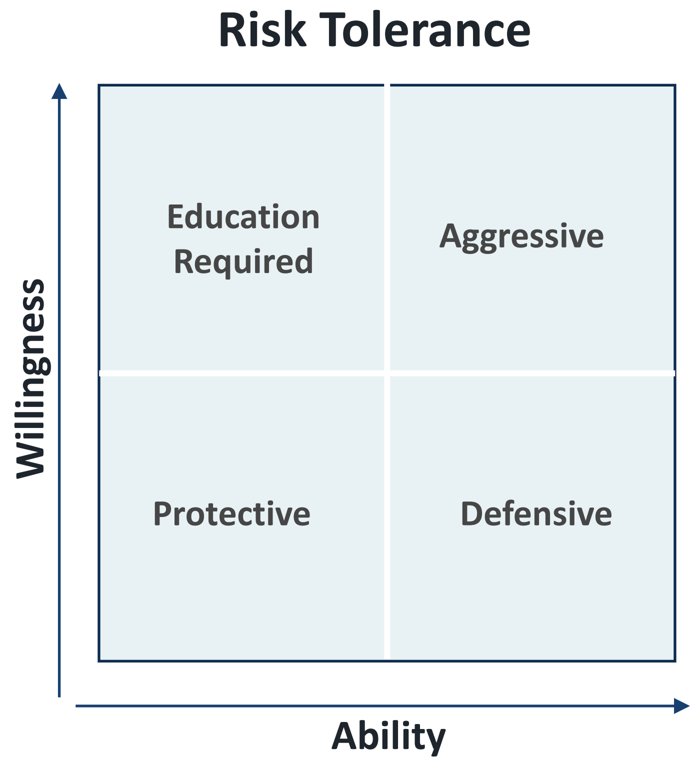


Source: Verus

Enterprise risk tolerance assessment

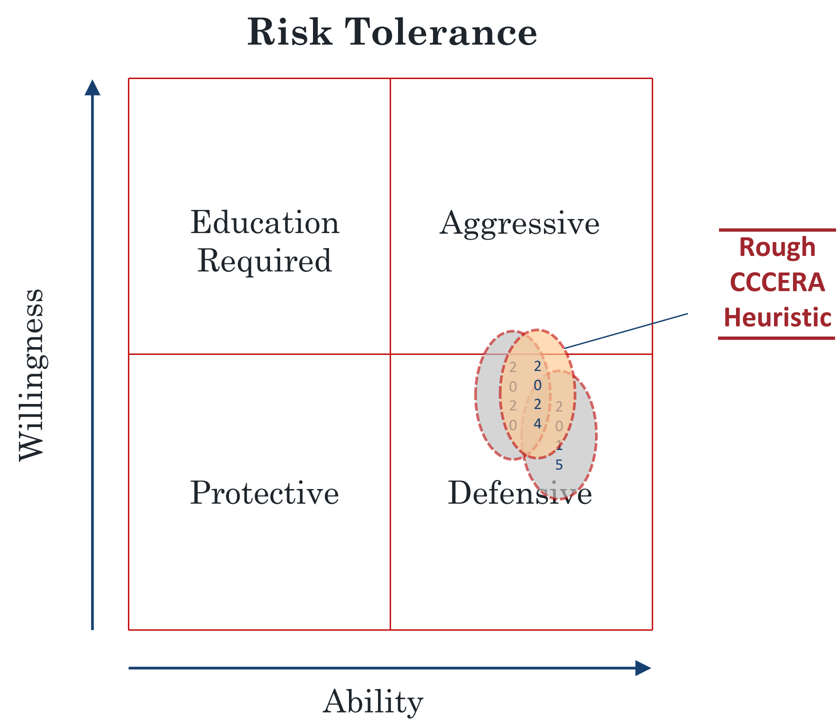
Enterprise risk tolerance in context

- Properly assessing Enterprise Risk Tolerance has important and practical implications for investment strategy development.
- Identifying the appropriate risk tolerance for a plan involves viewing risk in terms of the Plan's willingness and ability to bear risk.
- The ability to bear risk depends on financial circumstances while the willingness to bear risk is generally based on investor's attitudes and beliefs about investments.
- Although the CCCERA Board's duty is to the beneficiaries of the Association, assessing the County's financial situation and ability to make contributions to the Pension is one component in evaluating the Plan's ability to take on risk.
- In today's session, we review CCCERA's willingness and ability to incur investment risk, based on our findings from recent Trustee and Staff interviews, as well as an assessment of the financial health of the Plan sponsor.



Assessment results

- Plan sponsor health remains high (as reflected in fiscal fitness of Contra Costa County and retreat of resolution of uncertainty associated with global pandemic)
  - High credit rating
  - Manageable debt load
  - Steadily growing revenue
  - Diversified employer base and low unemployment, partially offset by declining population growth
- Interview responses indicate willingness to incur risk that generally fell within a similar range as the 2020 assessment
- Overall Enterprise Risk Tolerance has not changed meaningfully from previous studies



Liquidity analysis

Liquidity pool assessment

The table displays the necessary allocation to the liquidity pool to cover varying time horizons of cash outflows. The results depend heavily on the extent to which we include contributions as an offset the cash outflows.

% OF TOTAL ASSETS NECESSARY FOR LIQUIDITY POOL

Assumed Contributions		Gross 0%	25%	50%	75%	Net 100%
# of Years Secured	1	6%	5%	4%	3%	2%
	2	12%	10%	8%	6%	4%
	3	19%	15%	12%	9%	5%
	4	25%	20%	16%	11%	7%
	5	31%	25%	20%	14%	9%
	6	37%	30%	24%	17%	11%
	7	43%	36%	28%	21%	13%
	8	49%	41%	33%	24%	16%
	9	55%	46%	37%	29%	20%
	10	61%	51%	42%	32%	23%

Liquidity assessment

Liquidity should be managed to reasonably ensure that the Plan can meet its obligations under various market conditions

To gauge the health of CCCERA's liquidity position, we leverage a cash-flow based analysis that is rooted in the Basel 3 banking regulation framework

Determining the appropriate Liquidity Coverage Ratio (LCR):

— While there is no "right" ratio, a value less than 1 means there is insufficient liquidity to meet cash outflow needs

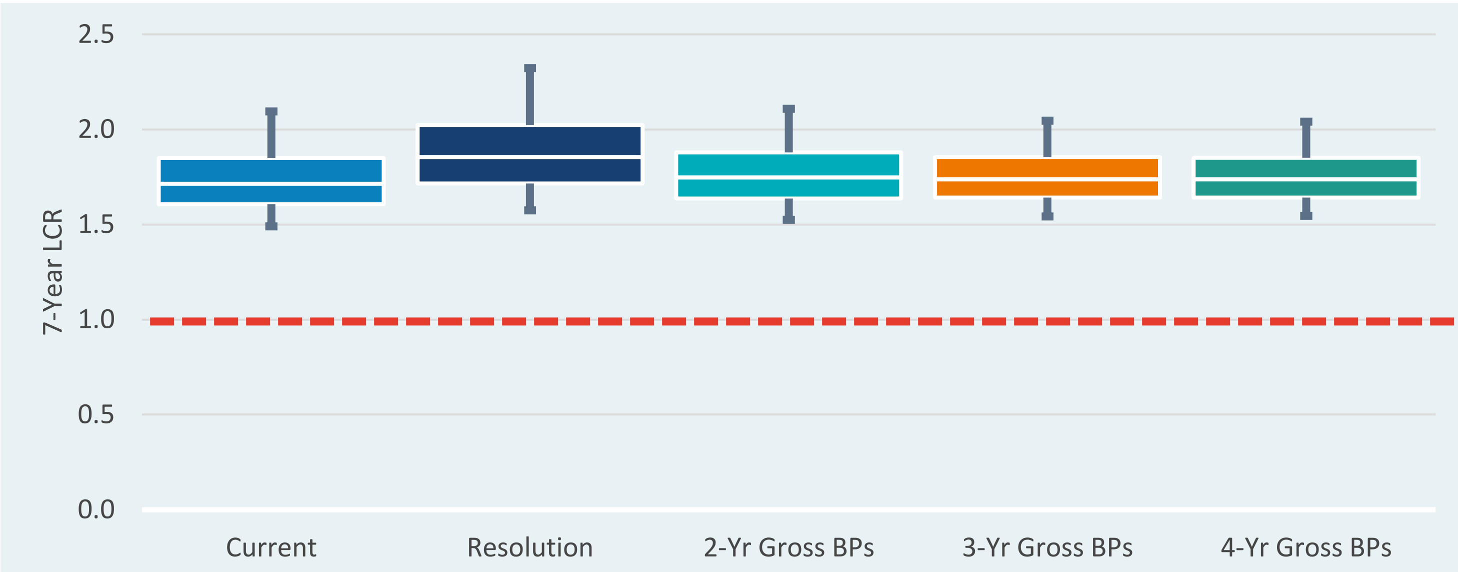
— An appropriate LCR is impacted by several variables:

- Access to external sources of liquidity (i.e., line of credit)
- Projected cash flows of the portfolio and their respective volatility
- Overall risk tolerance

Maintaining an LCR above 1 would imply there is sufficient liquidity to meet cash outflow needs

LCR analysis

LIQUIDITY COVERAGE RATIO (7-YEAR)



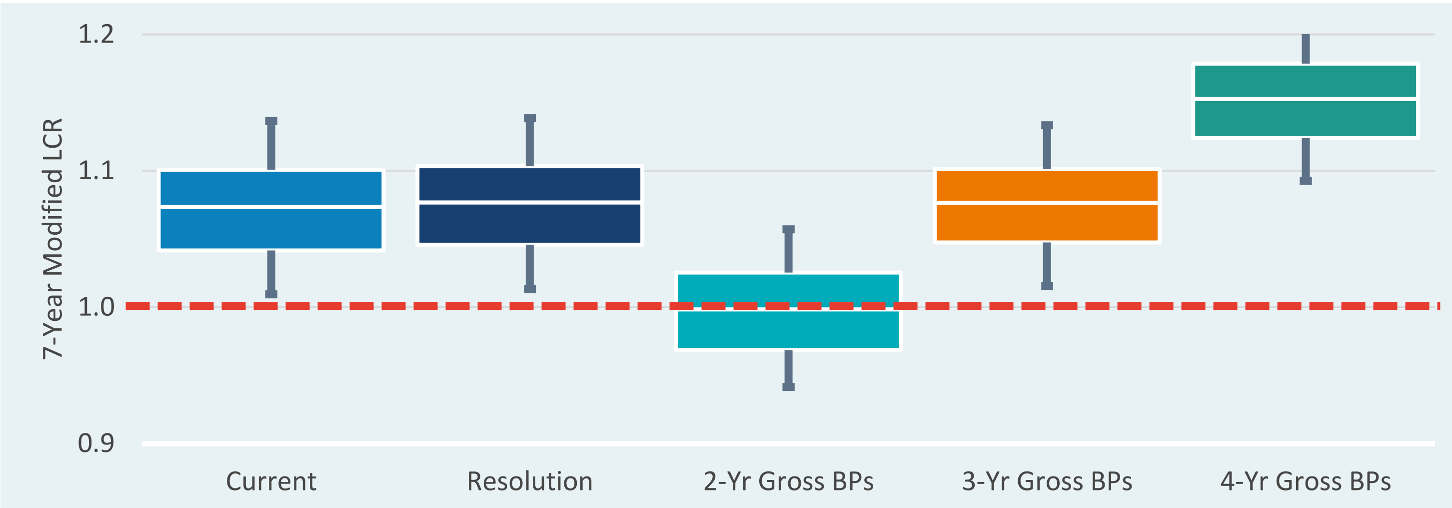
7-Year LCR	Current	Resolution	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
Percentile					
95%	2.1	2.3	2.1	2.0	2.0
75%	1.8	2.0	1.9	1.9	1.9
50%	1.7	1.9	1.7	1.7	1.7
25%	1.6	1.7	1.6	1.6	1.6
5%	**1.5**	**1.6**	**1.5**	**1.5**	**1.5**
Probability of Liquidity Event	**<0.1%**	**<0.1%**	**<0.1%**	**<0.1%**	**<0.1%**

CCCERA is expected to have sufficient liquidity to make benefit payments over the next 10 years for all mixes, even in extreme market conditions.

Based on a 1,000-independent monte-carlo simulations.

Modified LCR analysis (Liquidity Pool only)

LIQUIDITY COVERAGE RATIO (7-YEAR)



7-Year Modified LCR	Current	Resolution	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
Percentile					
95%	1.14	1.14	1.06	1.13	1.21
75%	1.10	1.10	1.03	1.10	1.18
50%	1.07	1.08	1.00	1.08	1.15
25%	1.04	1.05	0.97	1.05	1.12
5%	**1.01**	**1.01**	**0.94**	**1.02**	**1.09**
Probability of Insufficient Liquidity Pool					
Year 4	0%	0%	0%	0%	0%
Year 5	0%	0%	52%	0%	0%
Year 6	0%	0%	54%	0%	0%
Year 7	0%	0%	58%	0%	0%

Based on 1,000-independent monte-carlo simulations

When considering only the Liquidity Pool for use in satisfying cash needs, the expected LCR of the 2-year gross benefit payment alternative dips below 1 after year 4

Asset / liability analysis

Asset/liability modeling process

Enterprise risk tolerance assessment > **Enterprise return objectives** > **Multifaceted risk analytics** > **Strategic asset allocation**

Holistic approach integrates CCCERA's liabilities and assets to support Board policy decision

Design tools

- Monte-Carlo stochastic modeling
- MSCI BarraOne Risk factor modeling
- Scenario analysis & Stress testing
- Asset Liability Modeling
- Verus Liquidity Coverage analysis

Assets

— Portfolio alternatives

— Capital market assumptions (risk / return / correlation)

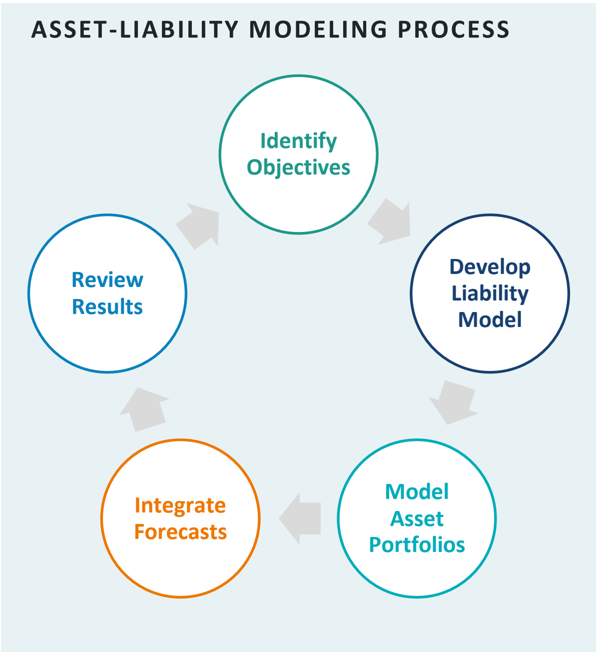
Liabilities

— Actuarial assumptions and methods

— Census data

— Plan provisions

— Funding policy



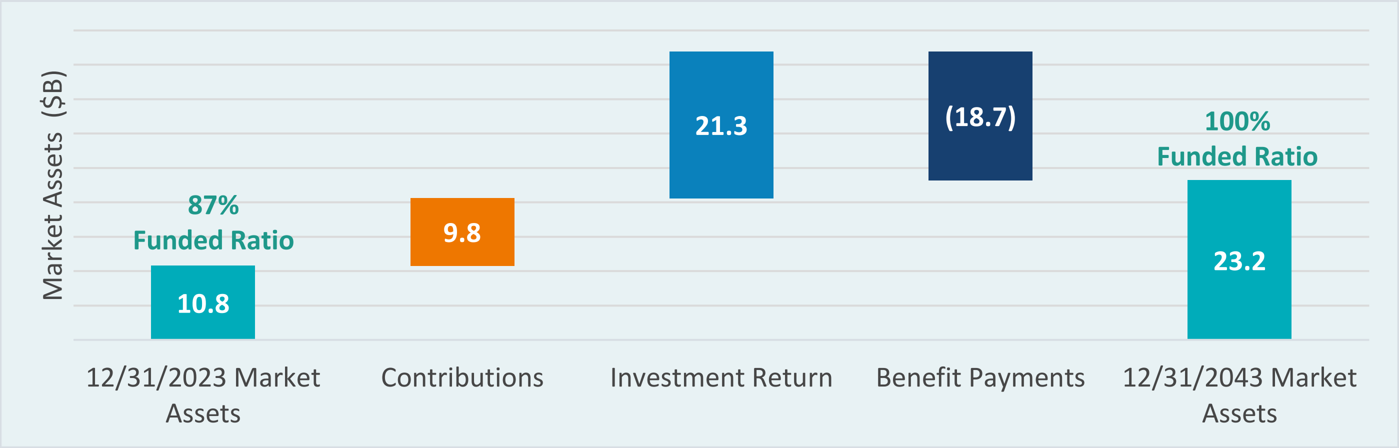
The pension equation

Current Assets + Future Contributions + Investment Returns = Future Benefits and Expenses

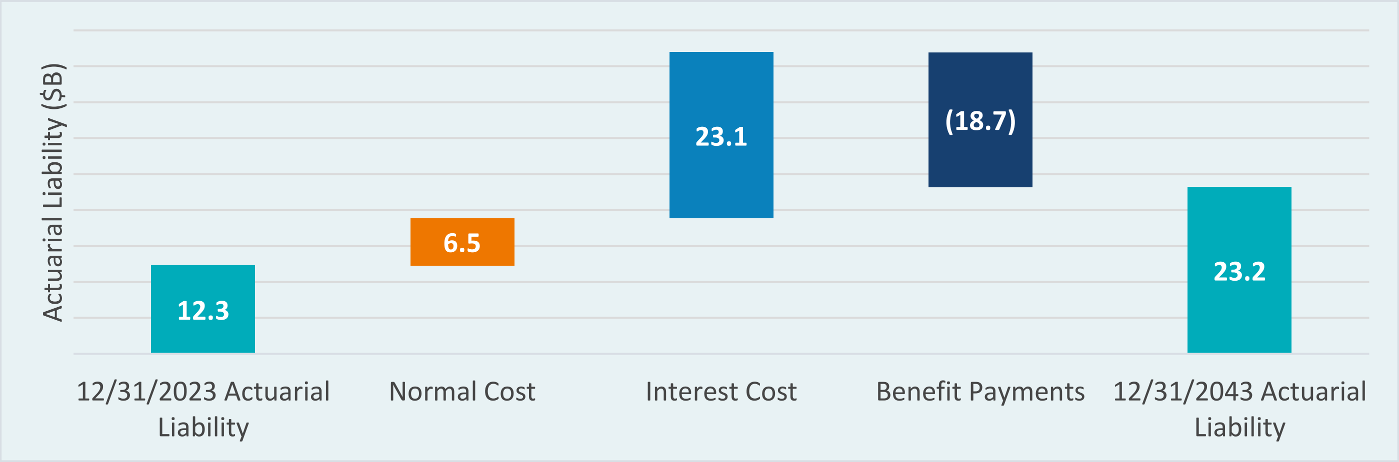
Assumptions

The pension equation in action

20 YEAR PROJECTION: MARKET VALUE OF ASSETS ($BILLIONS)



20 YEAR PROJECTION: ACTUARIAL LIABILITY ($BILLIONS)

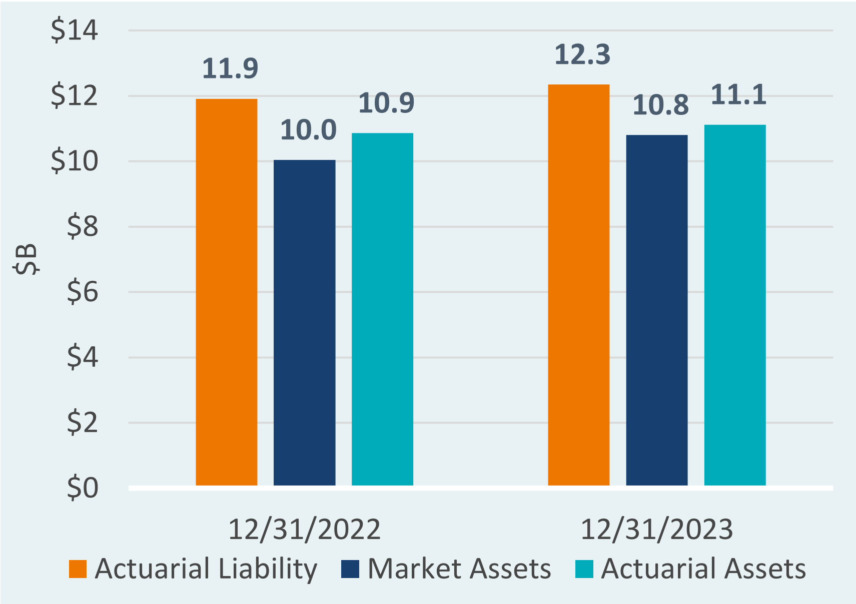


Under the baseline return assumption of 6.75%, where all actuarial assumptions are met and unchanged, the plan will reach full funding in approximately 20 years

Asset returns are equal to the EROA of 6.75% in each year of the projection. Employer contributions are the employer normal cost + payment of unfunded actuarial accrued liability (UAAL). The 12/31/23 starting point is estimated based on a one-year roll-forward of the 12/31/22 valuation, reflecting expected assumptions, cashflows, and the actual 2023 asset return of 9.0%.

Current state

ASSETS AND LIABILITIES ($B)[1]



December 31, 2022		December 31, 2023
84%	Market Funded Ratio	87%
91%	Actuarial Funded Ratio	90%
6.75%	Assumed Return	6.75%

12/31/2022 results are from the most recent valuation report. The 12/31/23 results are estimated based on a one-year roll-forward of the 12/31/22 valuation, reflecting expected assumptions, cashflows, and the actual 2023 asset return of 9.0%.

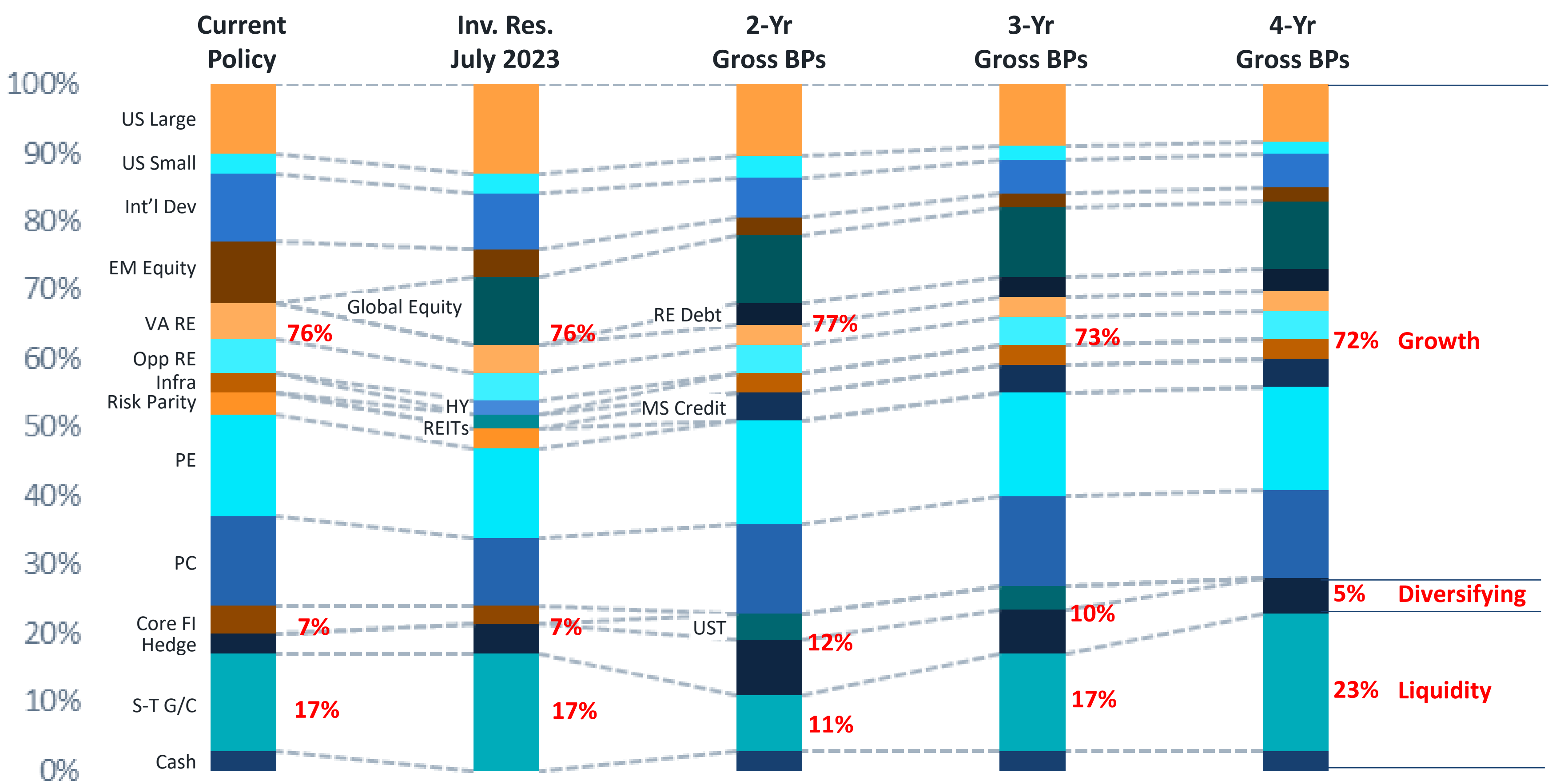
	Current Policy	Investment Resolution - July 2023
Growth	**76**	**76**
US Large	10.0	13.0
US Small	3.0	3.0
International Developed	10.0	8.0
Global Equity	0.0	10.0
Emerging Markets	9.0	4.0
Value Add Real Estate	5.0	4.0
Opportunistic Real Estate	5.0	4.0
REITs	0.0	2.0
Infrastructure	3.0	0.0
High Yield Corp. Credit	0.0	2.0
Risk Parity 10% Target Vol	3.0	3.0
Private Equity	15.0	13.0
Private Credit	13.0	10.0
Risk Diversifying	**7**	**7**
Core Fixed Income	4.0	2.5
Hedge Funds	3.0	4.5
Liquidity	**17**	**17**
Short-Term Gov't/Credit	14.0	17.0
Cash	3.0	0.0

— Funding levels improved in 2023, driven by asset returns

— The current policy allocation's median long-term return is 8.0%, which exceeds the required rate of 6.75%

— If actuarial funding and return requirements are met, the plan will reach full funding in approximately twenty years

Asset mix alternatives



Asset mix outcomes

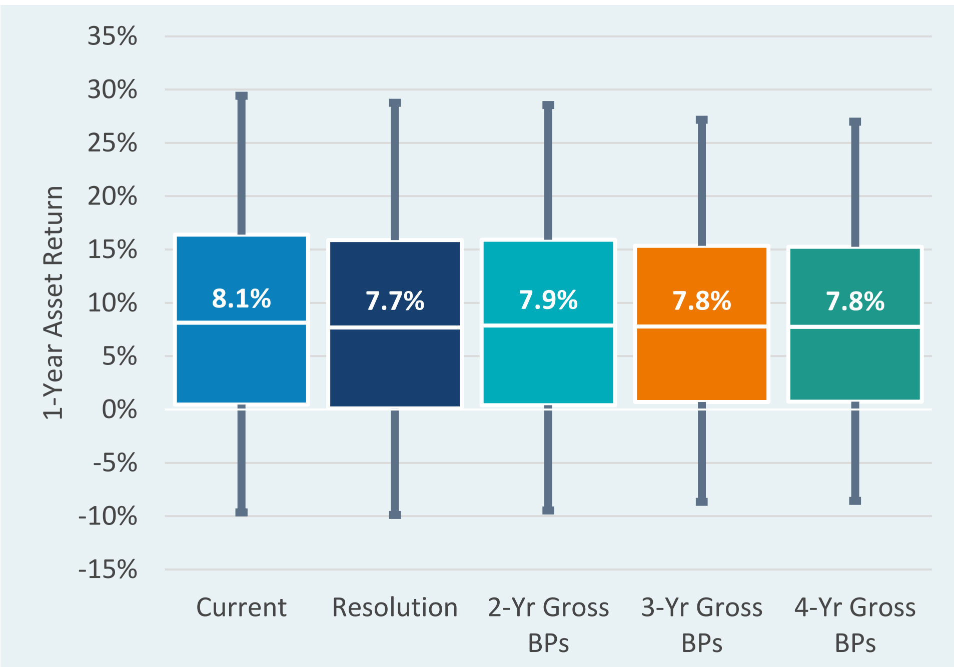
	Current		Alternatives			Verus 2024 CMAs			
	Current Policy	Investment Resolution - July 2023	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs	Return (g)	Return (a)	Standard Deviation	Sharpe Ratio
Growth	**76**	**76**	**77**	**73**	**72**				
US Large	10.0	13.0	10.5	9.0	8.5	*5.9*	*7.0*	*15.5*	*0.19*
US Small	3.0	3.0	3.0	2.0	1.5	*6.2*	*8.2*	*21.4*	*0.19*
International Developed	10.0	8.0	6.0	5.0	5.0	*8.1*	*9.5*	*17.6*	*0.31*
Emerging Markets	9.0	4.0	2.5	2.0	2.0	*8.8*	*11.4*	*24.6*	*0.30*
Global Equity	0.0	10.0	10.0	10.0	10.0	*6.9*	*8.2*	*16.7*	*0.17*
Real Estate Debt	0.0	0.0	3.0	3.0	3.0	*7.4*	*7.7*	*7.5*	*0.48*
Value Add Real Estate	5.0	4.0	3.0	3.0	3.0	*8.8*	*9.9*	*15.4*	*0.38*
Opportunistic Real Estate	5.0	4.0	4.0	4.0	4.0	*9.8*	*11.7*	*21.1*	*0.36*
REITs	0.0	2.0	0.0	0.0	0.0	*6.8*	*8.5*	*19.2*	*0.23*
Infrastructure	3.0	0.0	3.0	3.0	3.0	*8.4*	*9.7*	*16.9*	*0.33*
High Yield Corp. Credit	0.0	2.0	0.0	0.0	0.0	*6.6*	*7.2*	*11.0*	*0.28*
Multi-Sector Credit	0.0	0.0	4.0	4.0	4.0	*7.1*	*7.7*	*11.1*	*0.33*
Risk Parity	3.0	3.0	0.0	0.0	0.0	*7.2*	*7.8*	*10.0*	*0.37*
Private Equity	15.0	13.0	15.0	15.0	15.0	*8.0*	*10.9*	*25.6*	*0.27*
Private Credit	13.0	10.0	13.0	13.0	13.0	*9.5*	*10.2*	*12.6*	*0.48*
Risk Diversifying	**7**	**7**	**12**	**10**	**5**				
Core Fixed Income	4.0	2.5	0.0	0.0	0.0	*4.9*	*5.0*	*4.8*	*0.19*
US Treasury	0.0	0.0	4.0	3.5	0.0	*4.6*	*4.8*	*7.1*	*0.10*
Hedge Funds	3.0	4.5	8.0	6.5	5.0	*5.4*	*5.6*	*6.4*	*0.23*
Liquidity	**17**	**17**	**11**	**17**	**23**				
Short-Term Gov't/Credit	14.0	17.0	8.0	14.0	20.0	*4.7*	*4.8*	*3.6*	*0.19*
Cash	3.0	0.0	3.0	3.0	3.0	*4.1*	*4.1*	*1.1*	*--*
Portfolio Statistics									
Expected Return (10-Year)	8.1	7.7	7.9	7.8	7.8				
Standard Deviation	11.9	11.8	11.6	10.9	10.7				
Sharpe Ratio	0.39	0.35	0.37	0.38	0.38				
1st Percentile Return (1-Year)	-16.1	-16.3	-15.8	-14.7	-14.4				

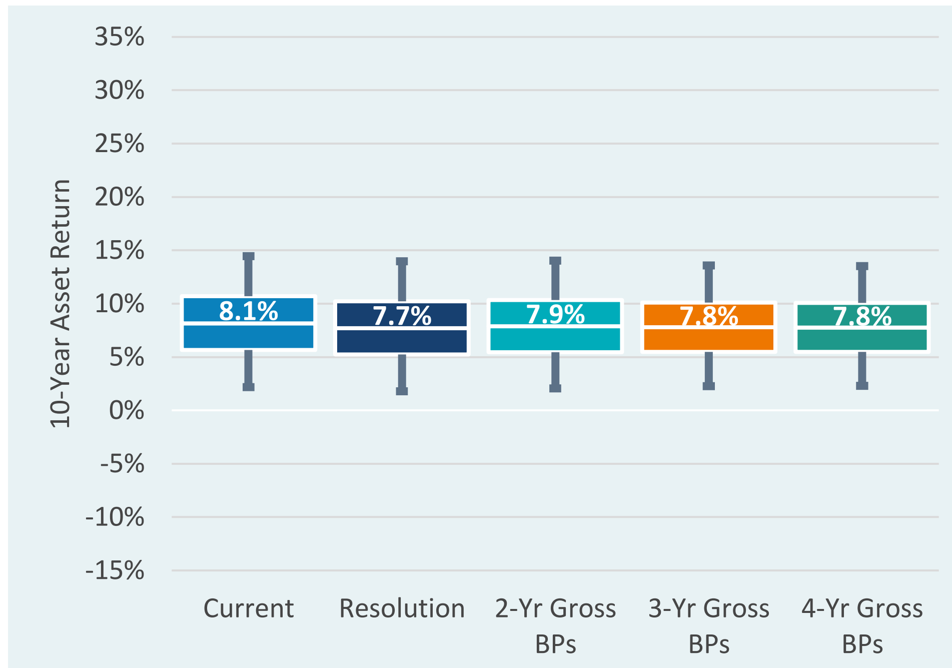
Source: MPI

Note: Multi-Sector Credit is modeled as a blend of High Yield Debt, Bank Loans, Long-Term Credit, and Emerging Market Debt

Range of potential outcomes

1-YEAR Current	1-YEAR Resolution	1-YEAR 2-Yr Gross BPs	1-YEAR 3-Yr Gross BPs	1-YEAR 4-Yr Gross BPs	Percentile	10-YEAR Current	10-YEAR Resolution	10-YEAR 2-Yr Gross BPs	10-YEAR 3-Yr Gross BPs	10-YEAR 4-Yr Gross BPs
29.4%	28.8%	28.6%	27.2%	26.8%	95th	14.5%	14.0%	14.0%	13.6%	13.4%
16.4%	15.9%	15.9%	15.3%	15.2%	75th	10.7%	10.2%	10.4%	10.1%	10.1%
8.1%	**7.7%**	**7.9%**	**7.8%**	**7.8%**	**50th**	**8.1%**	**7.7%**	**7.9%**	**7.8%**	**7.8%**
0.5%	0.1%	0.4%	0.7%	0.8%	25th	5.7%	5.3%	5.5%	5.5%	5.5%
-9.6%	**-9.9%**	**-9.5%**	**-8.7%**	**-8.4%**	**5th**	**2.2%**	**1.8%**	**2.1%**	**2.3%**	**2.4%**
55%	**53%**	**54%**	**54%**	**54%**	**Prob > 6.75%**	**65%**	**60%**	**62%**	**62%**	**62%**

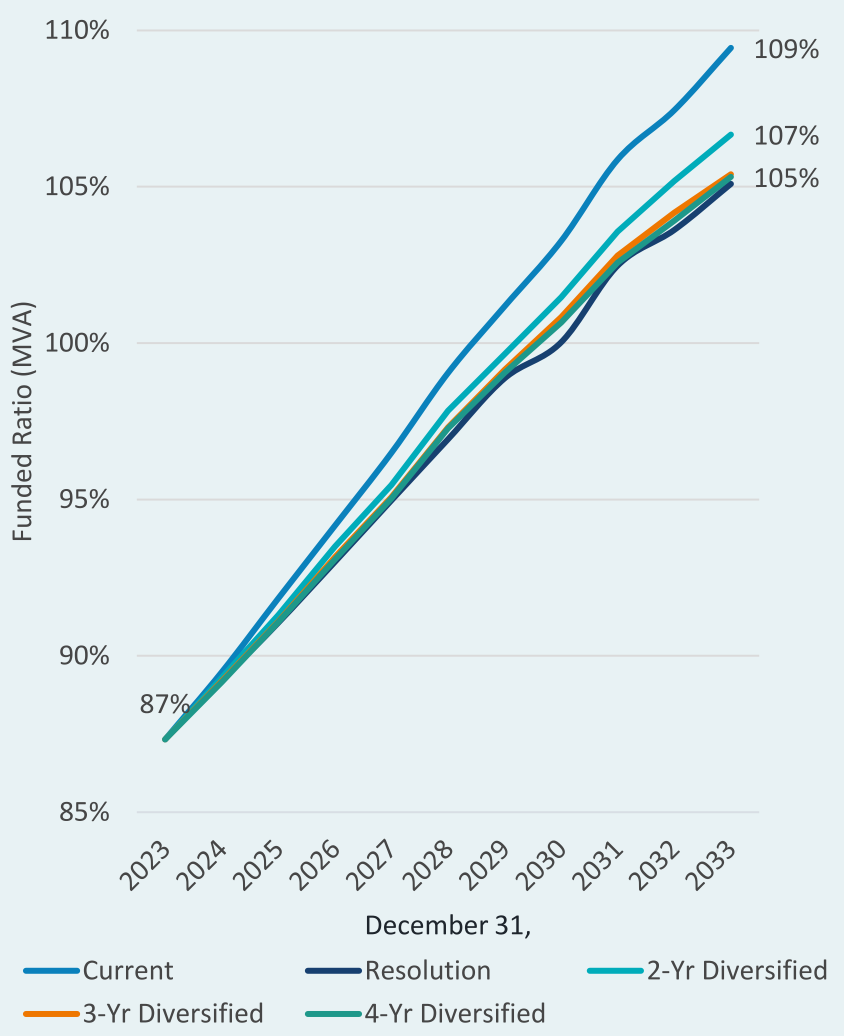




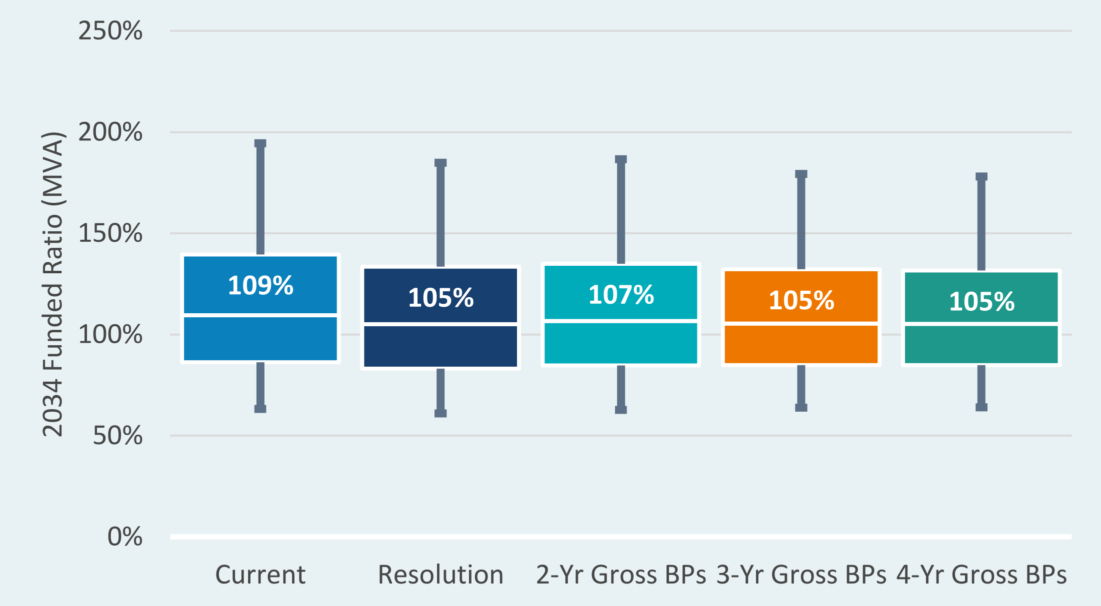
Source: MPI

Funded ratio (Market Assets)

MEDIAN FUNDED RATIO (MVA) PROJECTION



2034 FUNDED RATIO (MVA) DISTRIBUTION

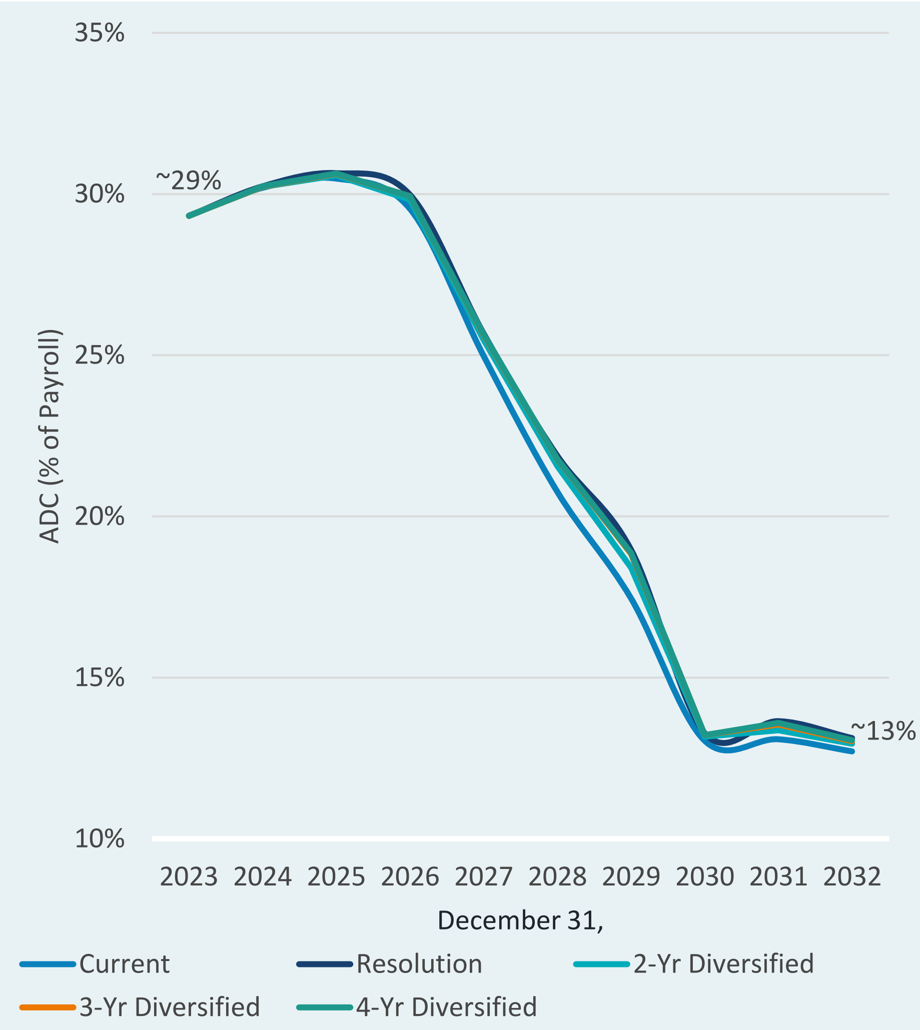


Funded Ratio (MVA)	Current	Resolution	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
Percentile					
95%	194%	185%	187%	179%	178%
75%	140%	133%	135%	132%	132%
50%	**109%**	**105%**	**107%**	**105%**	**105%**
25%	86%	83%	85%	85%	85%
5%	**63%**	**61%**	**63%**	**64%**	**64%**
Prob > 95%	66%	62%	63%	63%	63%
Prob > 100%	60%	55%	57%	57%	56%

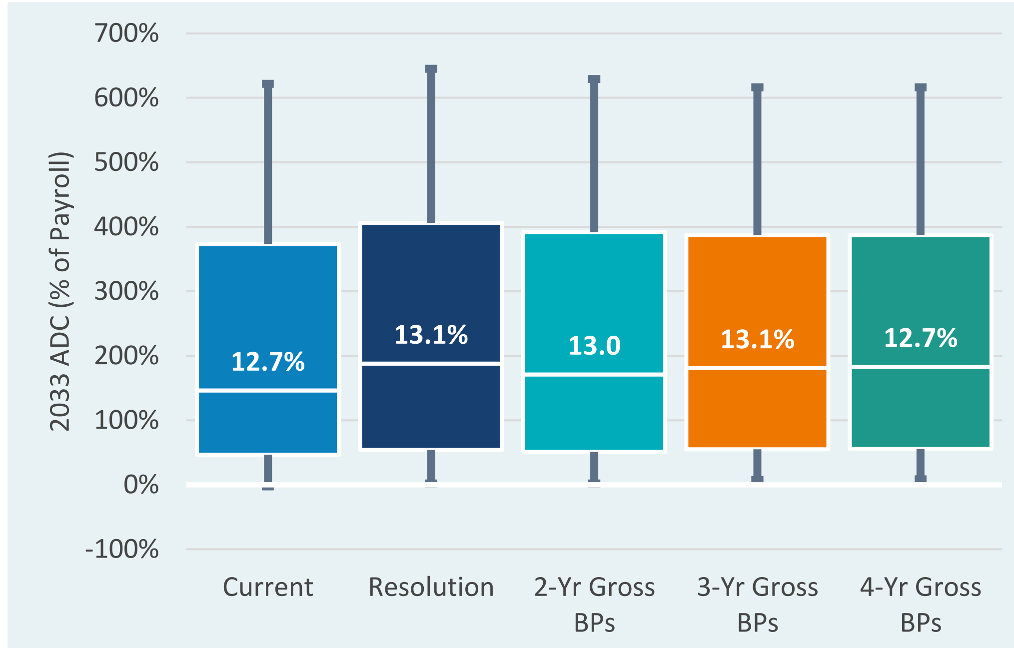
Source: Based on a 5,000-independent monte-carlo simulations.

Employer contributions

MEDIAN RECOMMENDED ER CONTRIBUTION PROJECTION



2033 RECOMMENDED ER CONTRIBUTION (% OF PAYROLL) DISTRIBUTION



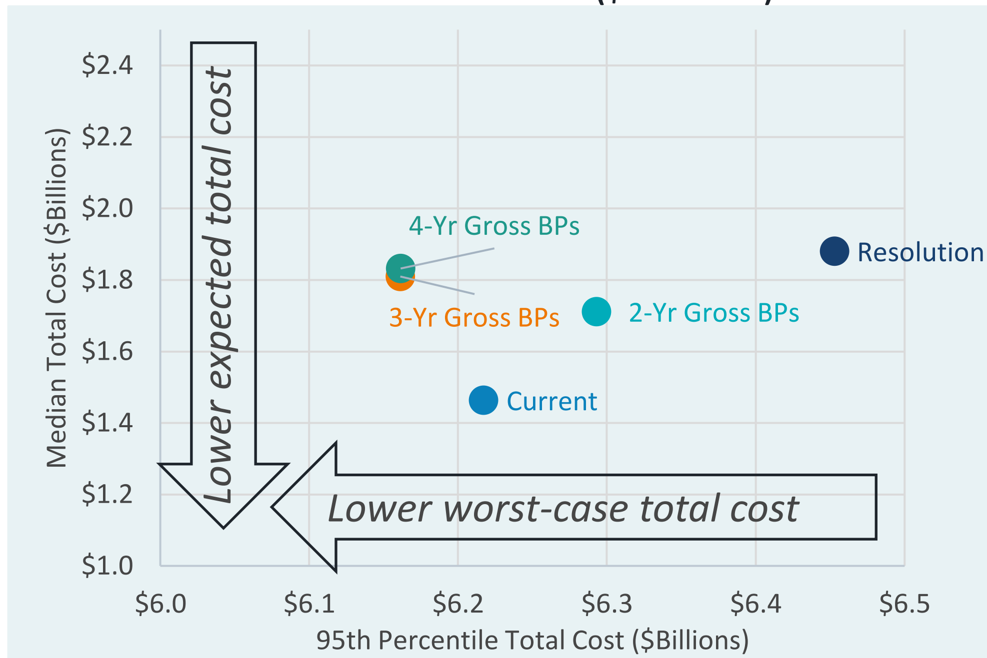
ADC (% of Payroll)	Current	Resolution	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
Percentile					
95%	**44.2%**	**45.8%**	**43.7%**	**43.6%**	**44.2%**
75%	26.6%	28.9%	27.5%	27.5%	26.6%
50%	**12.7%**	**13.1%**	**13.0%**	**13.1%**	**12.7%**
25%	8.4%	10.6%	10.8%	10.9%	8.4%
5%	0.0%	0.0%	0.0%	0.0%	0.0%
Prob > 30%	21%	25%	23%	22%	22%
Prob = 0%	15%	12%	13%	11%	11%

Source: Based on a 5,000-independent monte-carlo simulations. Output reflects recommended contribution, rather than cash contributed (e.g., the 12/31/2023 recommended contribution determines cash contributed in 2025).

Total full funding cost

TOTAL COST DISTRIBUTION ($BILLIONS)

TOTAL COST RISK REWARD TRADE-OFF ($BILLIONS)



Total Cost ($B)	Current	Resolution	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
Percentile					
95%	**6.22**	**6.45**	**6.29**	**6.16**	**6.16**
75%	3.73	4.06	3.92	3.87	3.87
50%	**1.46**	**1.88**	**1.71**	**1.81**	**1.83**
25%	0.47	0.54	0.51	0.55	0.55
5%	-0.02	0.02	0.02	0.08	0.09

Source: Based on a 5,000-independent monte-carlo simulations.

Metric estimates the Total Cost to achieve full funding by adding together the following:

1. The amount contributed during the projection
2. The amount needed to be contributed at the end of the projection to be 100% funded

Summary and recommendation

Observations and recommendation

Observations

— Based on a review of Trustee preferences and County financial health, CCCERA's enterprise risk tolerance has remained stable

— Moving to a smaller liquidity reserve may run the risk of having to sell assets at a loss in a market severe drawdown, but the Plan should be able to cover its obligations under any circumstances

— The current Strategic Asset Allocation remains attractive, based on Mean Variance Analysis

— A higher rate environment provides opportunities to make advantageous adjustments

Recommendations

— Select and implement the Gross 3-Yr BPs asset mix

- Eliminate Risk Parity allocation
- Implement Real Estate and Multi-Sector Credit allocations
- Adjust Diversifying pool (remove Core FI; add US Treasuries)
- Maintain 3-Yr Liquidity reserve

Potential next steps

— Select preferred Strategic Asset Allocation

— Develop Implementation Plan

— Update Investment Policy Statement

— Draft 2024 Board Resolution

Appendices

Appendix A: Enterprise risk tolerance assessment

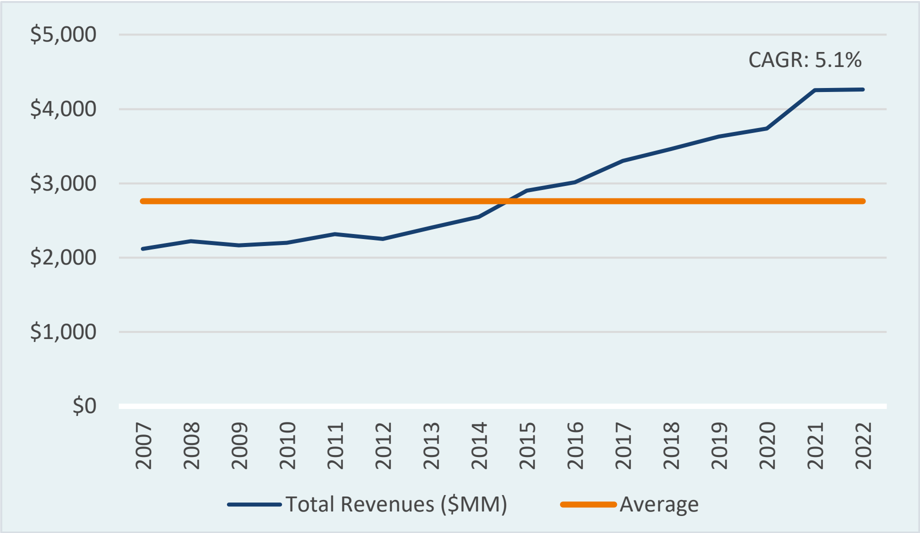
Plan sponsor review (ability)

County Revenues

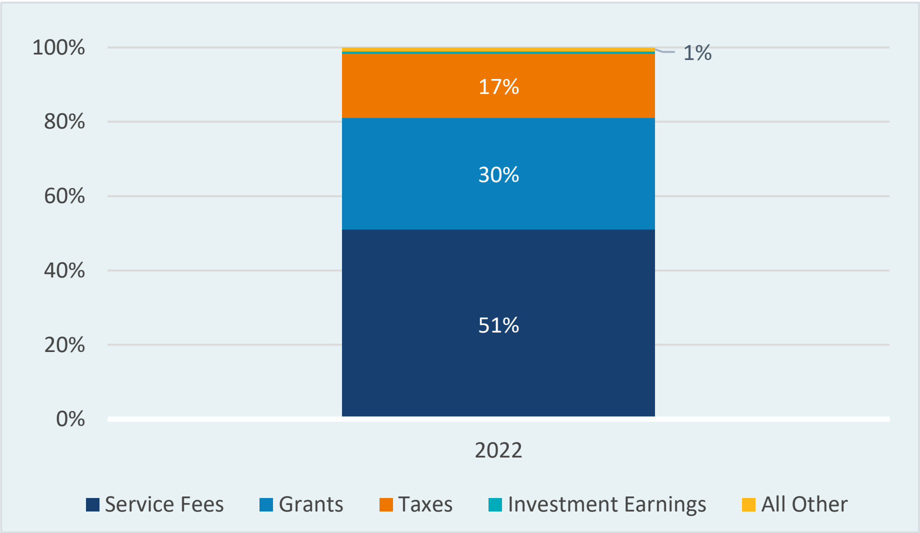
— Total county revenues have increased steadily over the past 15 years to $4.27 billion in Fiscal Year 2022

— The county's primary revenue sources are Service Charges, Program Grants, and Taxes (predominantly property tax), which together make up approximately 98% of total county revenue

REVENUE GROWTH (THOUSANDS)

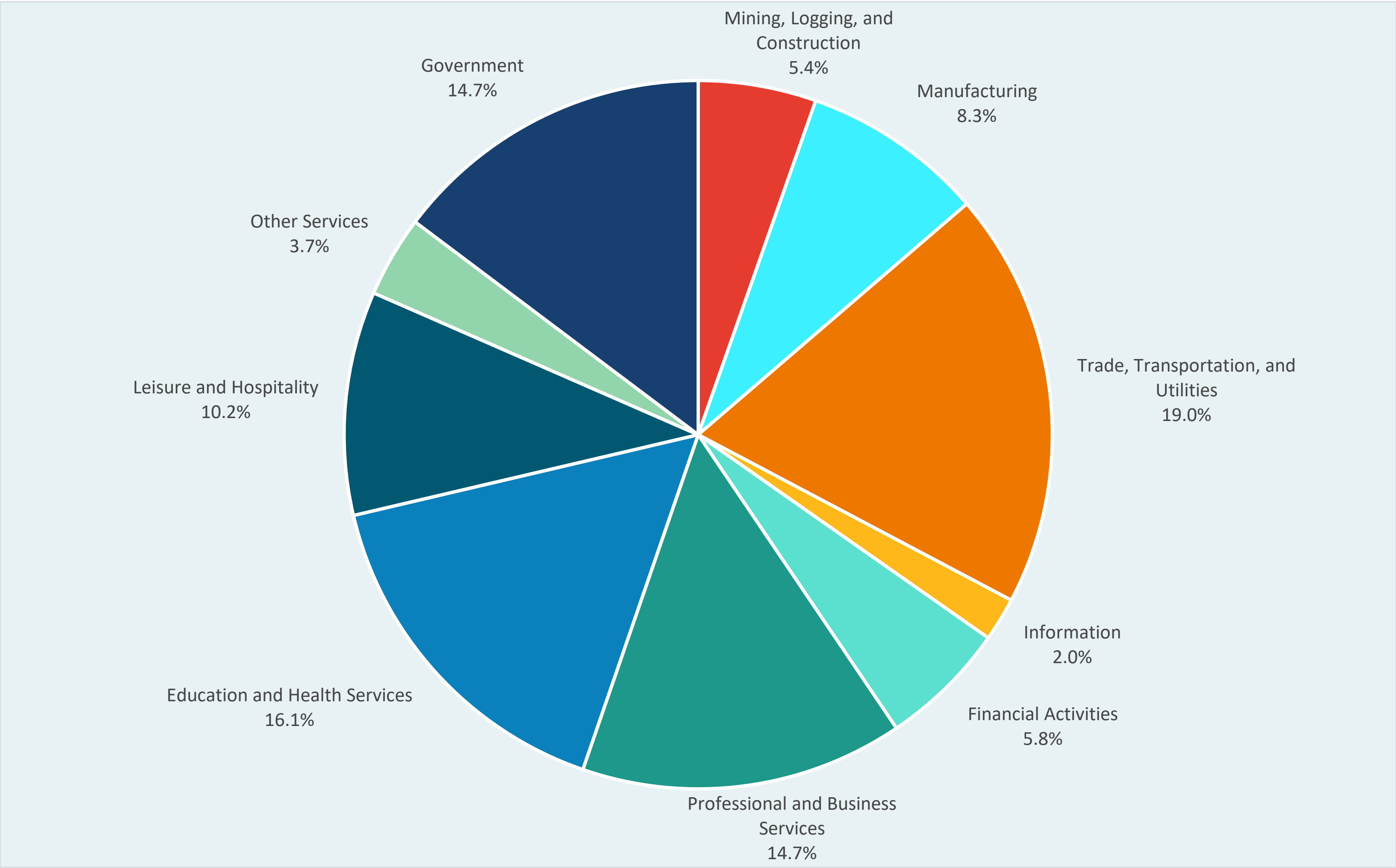


REVENUE MIX



Source: Contra Costa County CAFRs, 2005 to 2022
Average and CAGR calculated from 2004 - 2022

Employment by Industry



Source: https://datausa.io/profile/geo/contra-costa-county-ca/#employment_by_industries

Well-diversified employment base not highly dependent on any single industry.

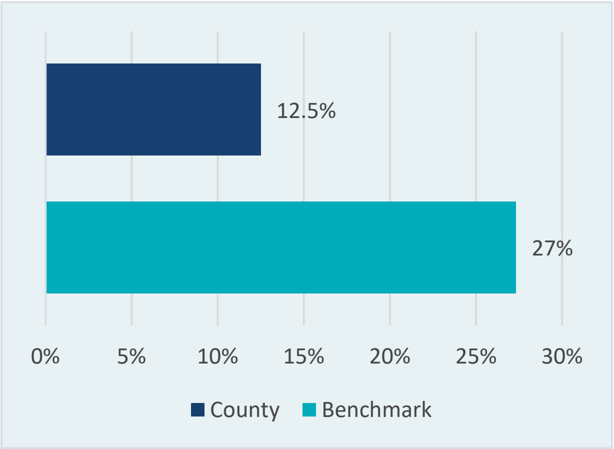
Debt Ratios

- Total County debt is 12.5% of total revenues, which is significantly lower than the cohort median.
- Total debt is 0.11% of the County's assessed value (taxable property), well below the legal limit of 5% and also below the cohort median.
- Debt payments to the General Fund expenditures is 5.5%, which is a higher ratio relative to the benchmark.

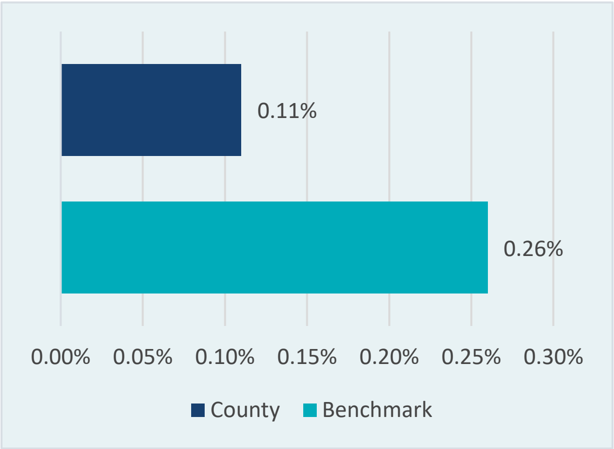
Cohort includes:

- Alameda
- Riverside
- Sacramento
- San Bernardino
- San Joaquin
- San Mateo
- Santa Clara

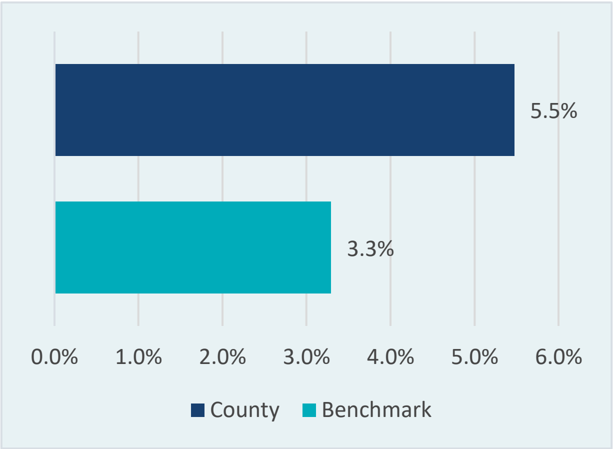
DEBT AS % OF REVENUE



DEBT TO ASSESSED VALUE



DEBT PAYMENTS TO GENERAL FUND EXPENDITURES



1. Source: County of Contra Costa 2021-22 Debt Report
2. Benchmark: Cohort median shown in 2021-22 Annual Debt Report

Credit Ratings

— Moody's assigned the County an issuer rating in the High-Quality Investment Grade category.
— Contra Costa POB was paid off in 2022.
— Both firms assigned the County's ratings a Stable outlook, which has been unchanged since 2007.

Strengths
— Large, diverse tax base
— Strong resident wealth levels
— Quick payout of general fund and lease obligations
— Eliminated pension obligation bond balance
— Improved fiscal position relative to similarly rated credits.
— Currently no specific plans to issue additional debt in the near future.

Challenges
— Notable but manageable social service burden
— Lease revenue bonds balances which impact the County General Fund
— Tax Allocation Bonds secured by property tax incremental revenue

County Issuer Ratings, POBs, and Revenue Relative to Similarly-sized Counties

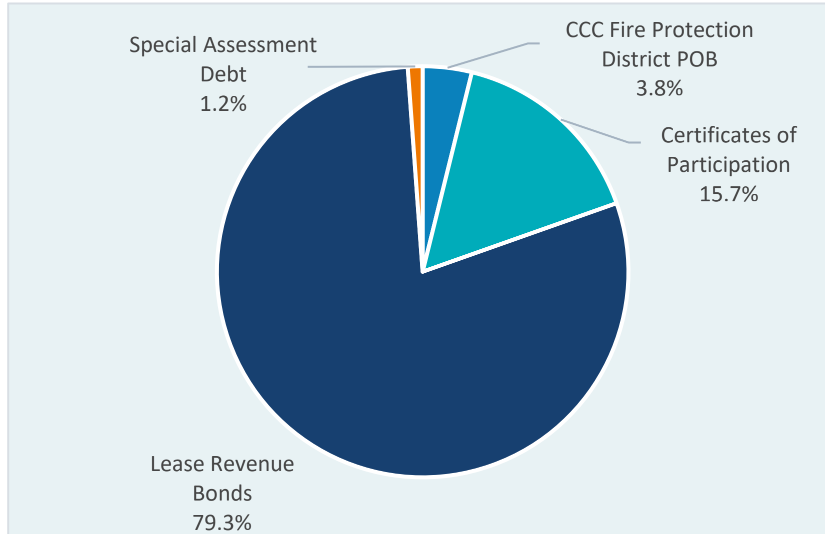
	S&P	Moody's	Pension Funded Ratio	Outstanding POBs (000s)	County Revenue (000s)	POB to Revenue	Funded Ratio as of FY
Alameda	AAA	Aaa	86.5%	$0	$4,103,231	0.00%	12/31/2021
Contra Costa[1]	AAA	Aa1	91.2%	$0	$4,265,257	0.00%	12/31/2022
Riverside	AA	Aa2	81.6%	$748,540	$5,169,570	14.48%	6/30/2023
Sacramento	AA-	A1	86.1%	$359,847	$3,296,549	10.92%	6/30/2023
San Bernardino	AA+	Aa1	86.1%	$0	$4,672,448	0.00%	6/30/2023
San Joaquin	AA-	Aa2	78.0%	$0	$3,331,466	0.00%	12/31/2022
San Mateo	AAA	Aaa	88.3%	$0	$2,227,397	0.00%	6/30/2023
Santa Clara	AAA	A1	78.0%	$329,742	$5,236,017	6.30%	6/30/2021

[1] On 6/1/22, the County's 2003A POBs matured and were paid off in full

Sources:
Contra Costa County ACFR FY 6/30/22
Contra Costa Debt Report FY 6/30/22
Funded Ratio from each respective County's ERS/ERA Actuarial Valuation Review reports as of FY Ended in table
Revenue and POB data from each respective County's ACFR

Long-Term Obligations

- The county's legal General Obligation bonded debt limit is 5% of the value of taxable property (or assessed value).
- The county's net assessed value is $237.8 billion, and the legal debt limit is approximately $11.9 billion.
- Total long-term debt obligations for the county is valued at $283.3 million, well under the legal limit.
- Pension Obligation Bonds that were issued in 2003 & 2005 have matured as of 2022.
- If necessary, the County has the capacity to issue POBs to meet contribution requirements or to fund the unfunded liability.

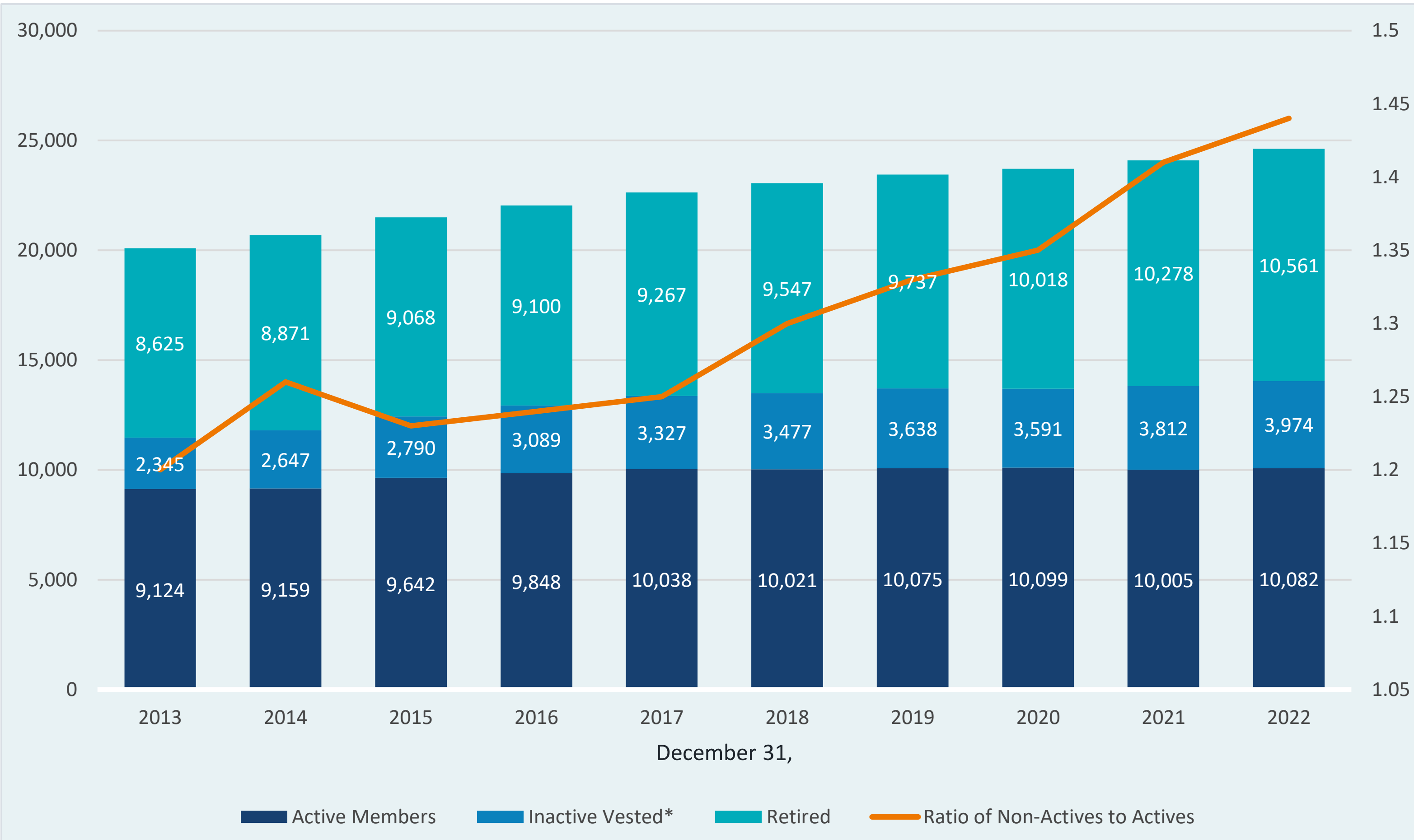


County's Outstanding Long-Term Debt	$ Value (000s)	Allocation %
Pension Obligation Bonds	$ 0	0.0%
CCC Fire Protection District POB	$ 10,900	3.8%
Certificates of Participation	$ 44,580	15.7%
Lease Revenue Bonds	$ 224,500	79.3%
Special Assessment Debt	$ 3,285	1.2%
Total	**$ 283,265**	**100.0%**

Source: Contra Costa County 2021-22 Debt Report
Debt includes outstanding principal only

Plan demographics

CCCERA MEMBER POPULATION



As of December 31, 2022, there were 10,082 active members, 10,561 retirees, and 3,974 inactive vested members.

For every 1 active employee there are 1.44 inactive employees

Over the past decade, the active population has grown by 10.5% while inactives have grown by 32.5%

Source: Segal CCCERA Actuarial Valuation and Review 2022
** Includes inactive members with member contributions on deposit*

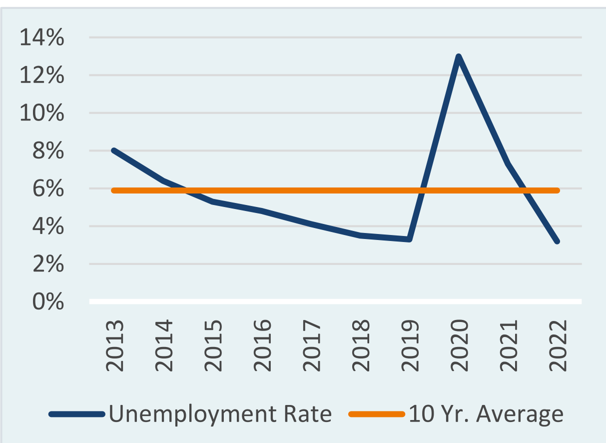
Economic & Demographic Statistics

— Personal income per capital has been steadily increasing through the observation period and has been above the 10-year average since 2017.

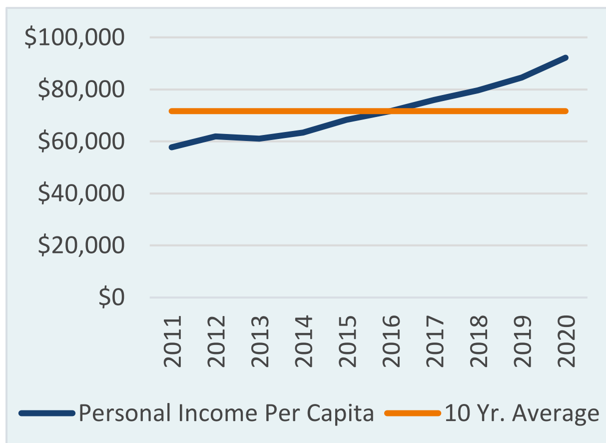
— The unemployment rate has recovered from the highs during the Covid pandemic and recently reached record lows.

— One area to is the population growth rate, which has gradually declined over the last 10 years and turned negative in 2022

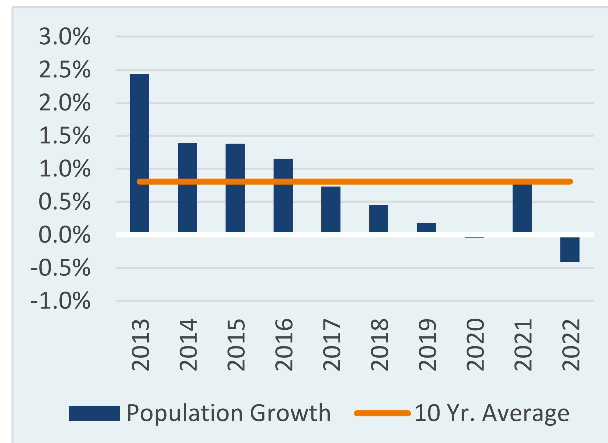
UNEMPLOYMENT RATE



PERSONAL INCOME PER CAPITA



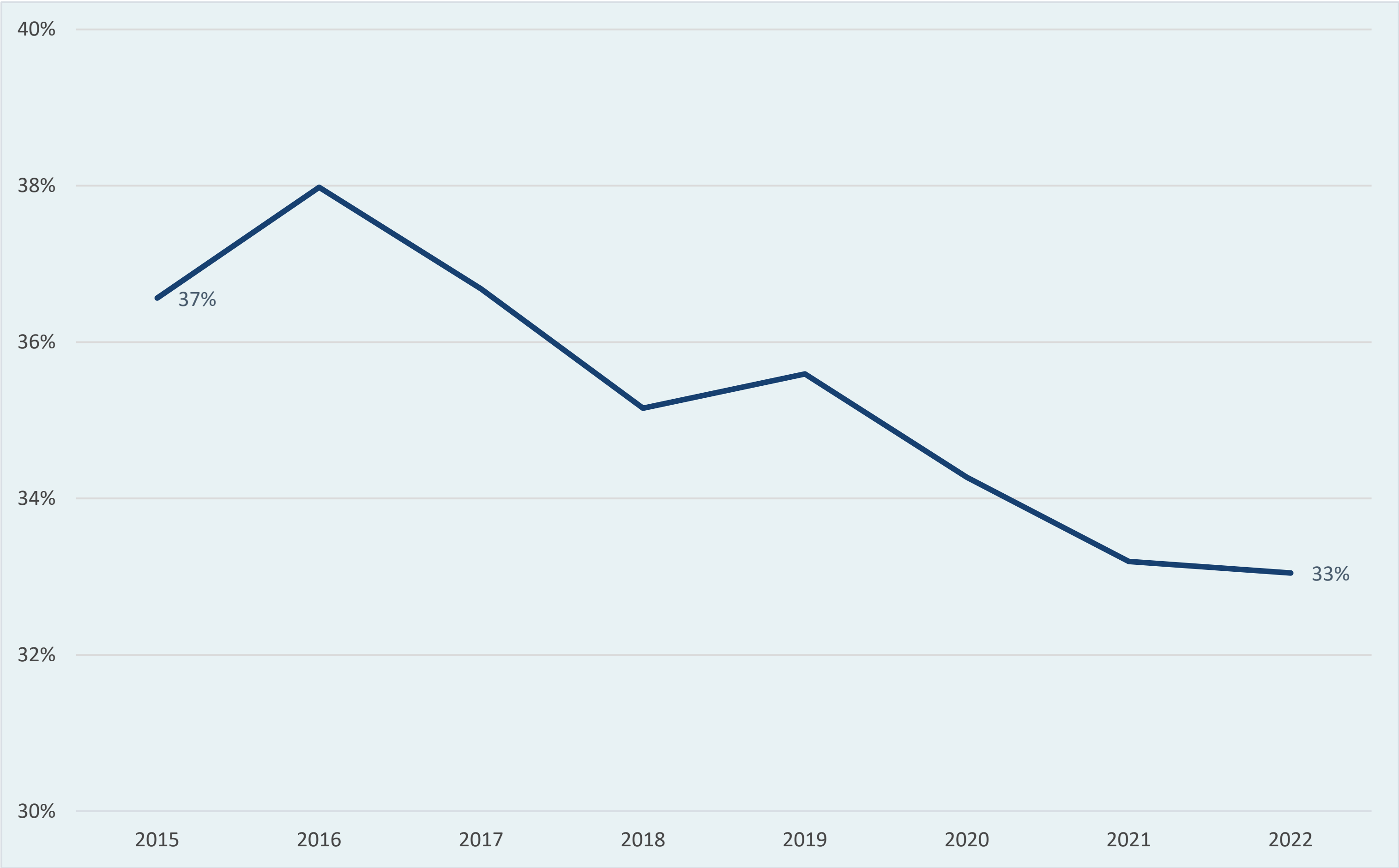
POPULATION GROWTH



1. Source: Contra Costa County ACFRs, 2022
2. Personal income per capita not available FY End 2021 & 2022

Historical employer contributions

CONTRIBUTIONS AS A % OF COVERED PAYROLL

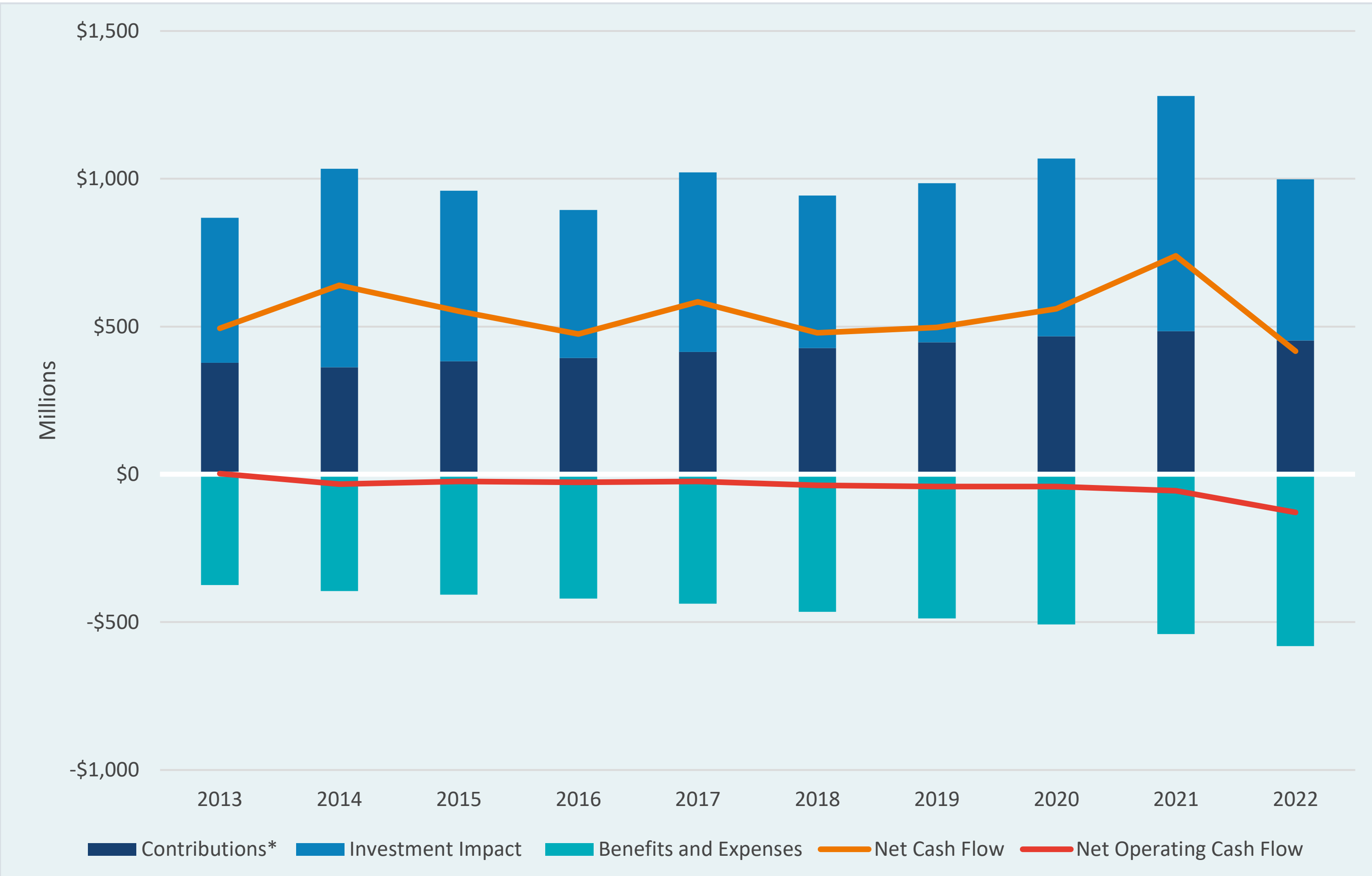


Contributions as a percent of pay has gradually declined over the observation period.

Source: CCCERA ACFR 2022

Historical cash flows

NET CASH FLOW ($) AND NET OPERATING CASH FLOWS ($)



Source: Segal – CCCERA Actuarial Valuation Reports 2013 to 2022
Note: Net cash flow considers investment impact; investment impact consists of interest, dividends, unrealized and realized gains/losses
*Contributions do not include pension obligation bond proceeds

Net operating cash flow has had some volatility but is trending lower over the past 3-years.

— Market volatility can have a greater impact as there is less principal to reinvest during favorable return periods.

Year-over-year net cash flows have averaged $544 mm driven by strong investment returns over the past decade.

Survey findings (willingness)

Plan health

Key Takeaways

— Board is consistent in its view that the Plan is healthy, based on:

- Funded status trend
- Contribution rate stability
- Appropriate diversification
- Strong governance
- Strong investment staff

— Opportunities for continuous improvement include:

- Manager performance
- Upside/downside capture

Respondents all rated current plan health as "healthy or "very healthy"

Governance

Key Takeaways

— High consistency that current governance structure is broadly appropriate and effective

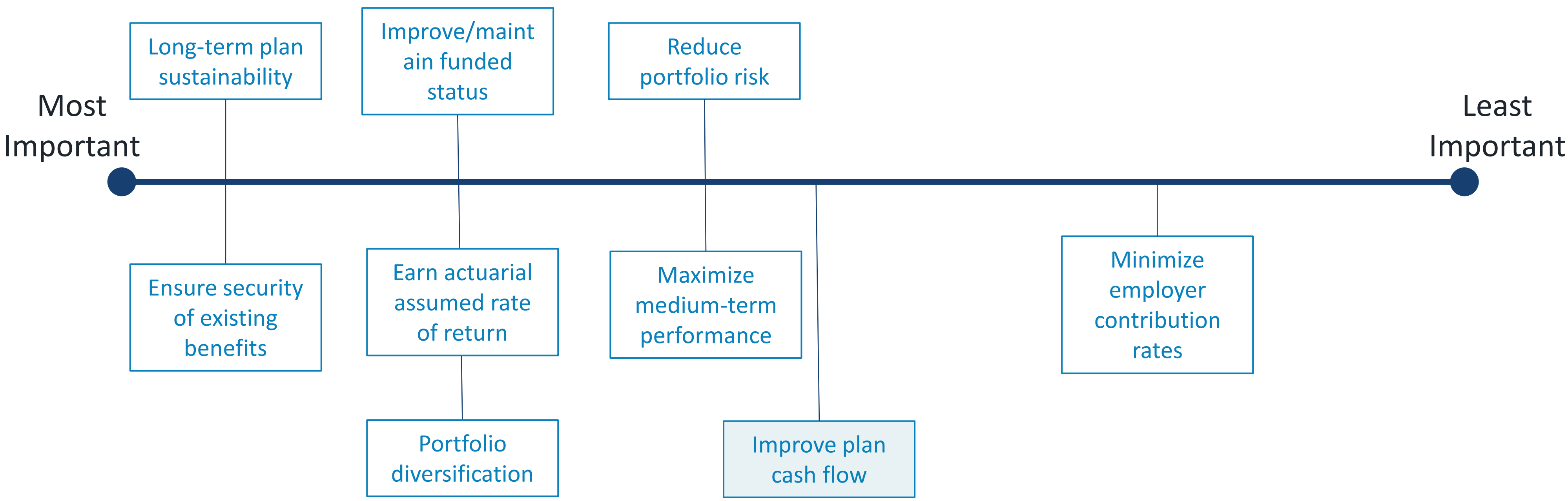
- Current policies effectively grant authorities, delegate responsibilities, and ensure accountability across all parties involved
- Current policies in place keep the Board effectively focused on relevant issues
- Prior to making a decision, our discussions generally are appropriate
- Time spent on specific topics is generally appropriate

— Although respondents have confidence that investment staff is monitoring investment management fees, many would like to see additional supporting information

Plan objectives

Relative importance of long-term objectives

Additional discussion of Trustee perspectives on improving plan cash flow is warranted



Strategic importance

Forced ranking of factors impacting Plan's ability to meet objectives

RANKING STATISTICS

		Mean	Mode	Min	Max
1st	Strategic asset allocation	1.5	1	1	3
2nd	Finding good active managers	2.5	2	1	3
3rd	Exceeding actuarial return	2.5	3	1	4
4th	Tactical allocation	3.8	4	1	5
5th	Outperforming peers	4.6	5	3	5

Strategic asset allocation is recognized as the primary factor for ensuring Plan success

Risk profile

Key Takeaways

— Clear understanding of long-term nature of Plan

— Comfortable with reasonable drawdown (10-20%) and volatility (10-15%), which is consistent with modeled expectations

— General preference for an "all weather" portfolio

— Clear preference for active management

— Some willingness to allocate tactically based on market expectations, within reasonable boundaries

— Peer risk is generally not a consideration

Board perspectives on risk is consistent across respondents and across time (i.e., similar to 2015, 2017, and 2020 survey results)

SAA implications

Key Takeaways

— Most respondents are generally comfortable with most asset classes, including alternatives

— Risk Parity was the exception, with most expressing general discomfort or a lack of understanding

Recommended Action

— Eliminate/re-allocate current Risk Parity mandate (3% target allocation)

Board is willing to take advantage of broad investment opportunity set

Appendix B: Liquidity analysis

Liquidity coverage ratio (LCR)

Will you need to sell illiquid assets to cover cash outflows?

$$Liquidity\ Coverage\ Ratio\ (LCR) = \frac{\begin{array}{c} Starting\ Liquid\ Financial\ Assets \\ \sum(Distributions\ from\ Illiquid\ Assets) \\ \sum(Contributions) \\ \sum(Liquid\ Investment\ Return) \end{array}}{\begin{array}{c} \sum(Benefit\ Payments) \\ \sum(Capital\ Calls\ for\ Illiquid\ Assets) \\ \sum(Administrative\ Expenses) \end{array}}$$

Modeled stochastically

LCR Value	Implication
<1	Yes
>1	No

Liquidity Assumptions

By asset class

	Current Policy	Investment Resolution - July 2023	2-Yr Gross BPs	3-Yr Gross BPs	4-Yr Gross BPs
CDI Lock-In (Years, Gross)	**3**	**3**	**2**	**3**	**4**
CDI Lock-In (Years, Net)	**8**	**8**	**6**	**8**	**10**
Liquidity Pool	**17**	**17**	**11**	**17**	**23**
Short-Term Gov't/Credit	14.0	17.0	8.0	14.0	20.0
Cash	3.0	0.0	3.0	3.0	3.0
Liquid Return-Seeking	**42**	**52**	**51**	**45**	**39**
US Large	10.0	13.0	10.5	9.0	9.0
US Small	3.0	3.0	3.0	2.0	2.0
International Developed	10.0	8.0	6.0	5.0	5.0
Emerging Markets	9.0	4.0	2.5	2.0	2.0
Global Equity	0.0	10.0	10.0	10.0	10.0
Real Estate Debt	0.0	0.0	3.0	3.0	3.0
REITs	0.0	2.0	0.0	0.0	0.0
High Yield Corp. Credit	0.0	2.0	1.0	1.0	1.0
Bank Loans	0.0	0.0	1.0	1.0	1.0
Long-Term Credit	0.0	0.0	1.0	1.0	1.0
Emerging Market Debt (Hard)	0.0	0.0	0.5	0.5	0.5
Emerging Market Debt (Local)	0.0	0.0	0.5	0.5	0.5
Risk Parity 10% Target Vol	3.0	3.0	0.0	0.0	0.0
Core Fixed Income	4.0	2.5	0.0	0.0	0.0
US Treasury	0.0	0.0	4.0	3.5	0.0
Hedge Funds	3.0	4.5	8.0	6.5	4.0
Illiquid	**41**	**31**	**38**	**38**	**38**
Value Add Real Estate	5.0	4.0	3.0	3.0	3.0
Opportunistic Real Estate	5.0	4.0	4.0	4.0	4.0
Infrastructure	3.0	0.0	3.0	3.0	3.0
Private Equity	15.0	13.0	15.0	15.0	15.0
Private Credit	13.0	10.0	13.0	13.0	13.0

Liquidity assessment documentation

GENERAL INPUTS, ASSUMPTIONS, AND METHODS

Starting Asset Value	$10.7B as of 1/1/2024
Capital market assumptions	Verus' 2024 CMAs (details in Appendix C)
Rebalancing methodology	The liquid portfolio is rebalanced after every projection year such that each liquid asset class makes up its target weight of the total liquid portfolio.
Funding Policy	Employer contributions reflect stochastic projections of asset returns and CCCERA's actual funding policy. Employee contributions and actuarial liabilities are modeled statically in the model, based on baseline assumptions.

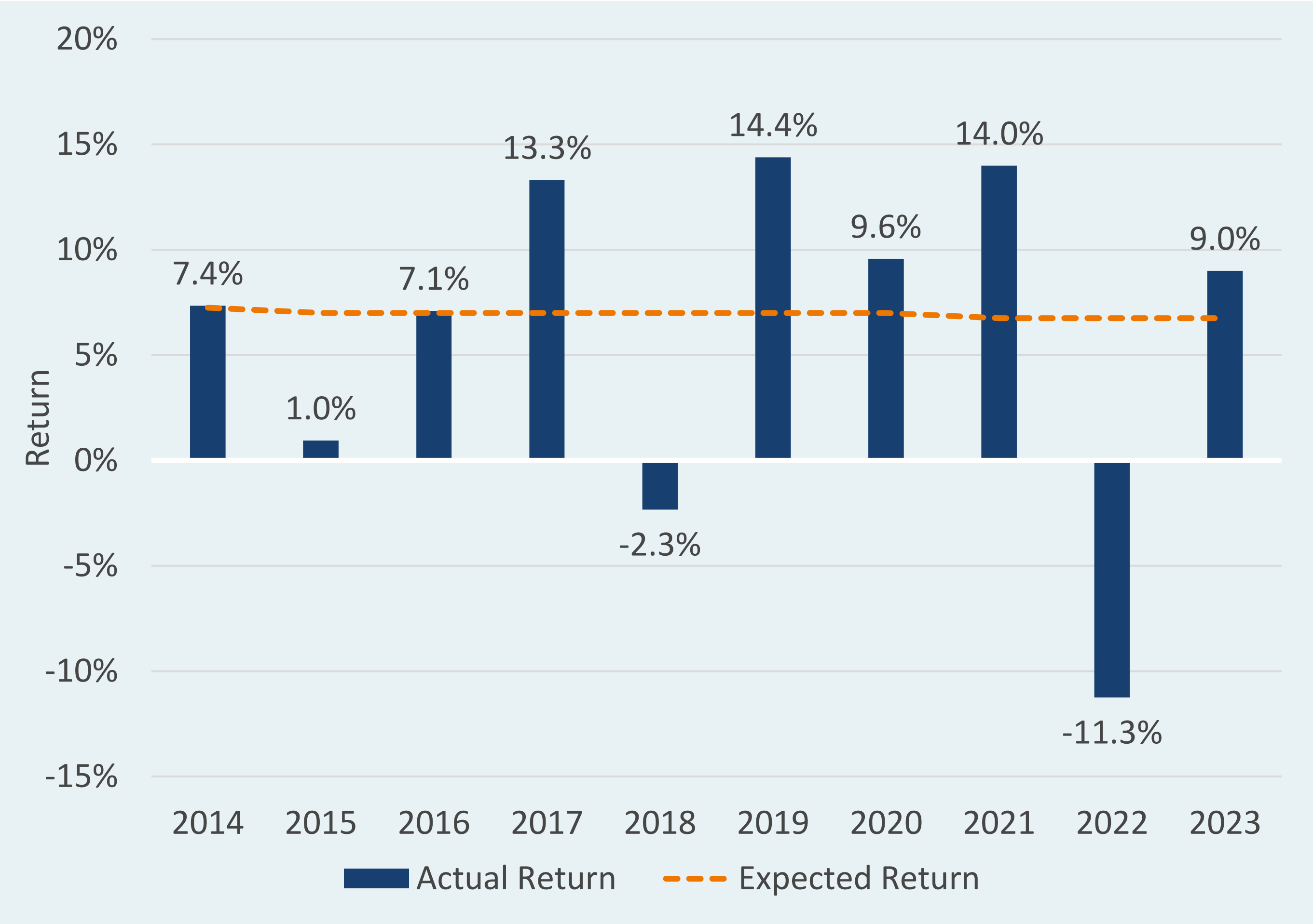
Year	Benefit Payments	Administrative Expenses	Illiquid Distributions	Illiquid Capital Calls
2024	644,575,253	12,134,921	720,050,000	808,200,000
2025	643,320,895	12,498,968	676,700,000	928,200,000
2026	676,290,475	12,873,937	701,000,000	893,500,000
2027	709,175,726	13,260,155	949,000,000	896,000,000
2028	741,622,790	13,657,960	1,209,800,000	933,500,000
2029	773,639,379	14,067,699	1,255,500,000	956,000,000
2030	806,387,008	14,489,730	1,283,000,000	945,000,000

Appendix C: Asset / liability modeling

Historical experience

Investment returns

ACTUAL VS. ASSUMED



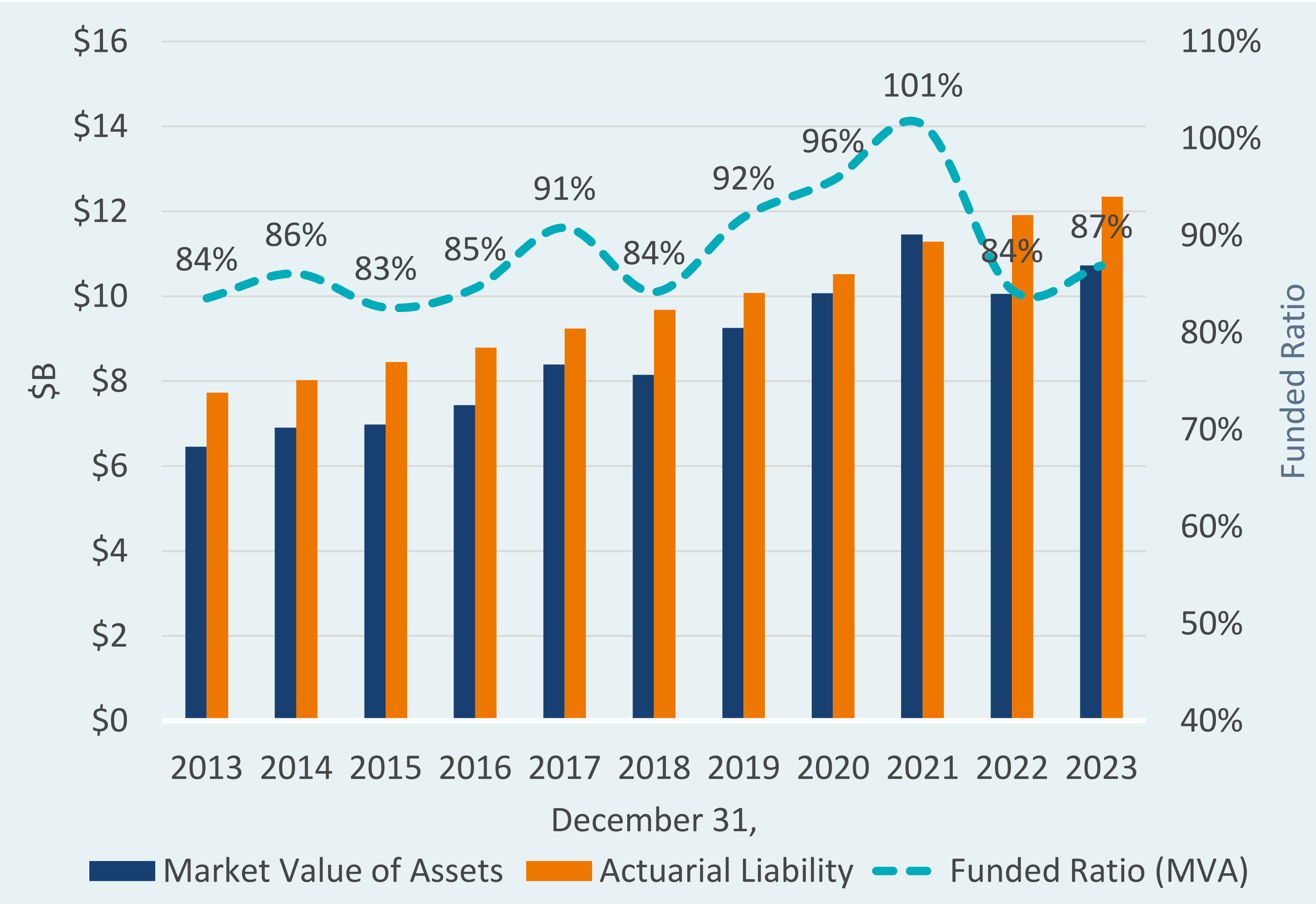
Annualized returns over the prior 10 years were 5.9%

During this time, the plan's assumed return has been reduced from 7.25% to 6.75%

Source: CCERA 12/31/22 Actuarial Valuation Report. 2023 result based on Q4 2023 Verus performance report.

Funded status

MARKET VALUE OF ASSETS VS. ACTUARIAL LIABILITIES

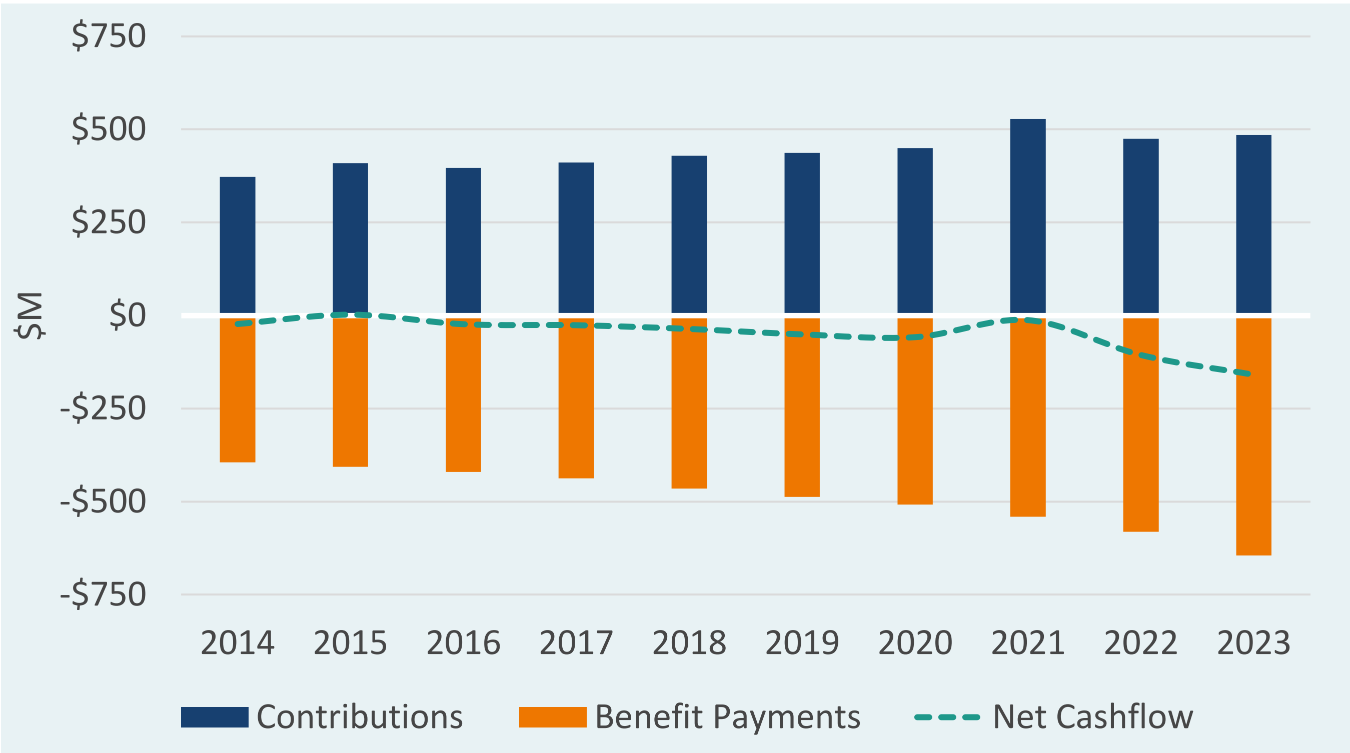


The growth of the asset portfolio has kept pace with the growth of the liabilities, and the funded status has remained relatively stable over the past decade.

Source: CCERA 12/31/22 Actuarial Valuation Report. 2023 result estimated based on a roll forward of the 12/31/2022 valuation and the actual 2023 asset return. The 12/31/23 results are estimated based on a one-year roll-forward of the 12/31/22 valuation, reflecting expected assumptions, cashflows, and the actual 2023 asset return of 9.0%.

Cash flows

TOTAL CONTRIBUTIONS VS. BENEFIT PAYMENTS ($M)



The plan's cashflow position has generally been neutral over the past decade but has recently turned negative

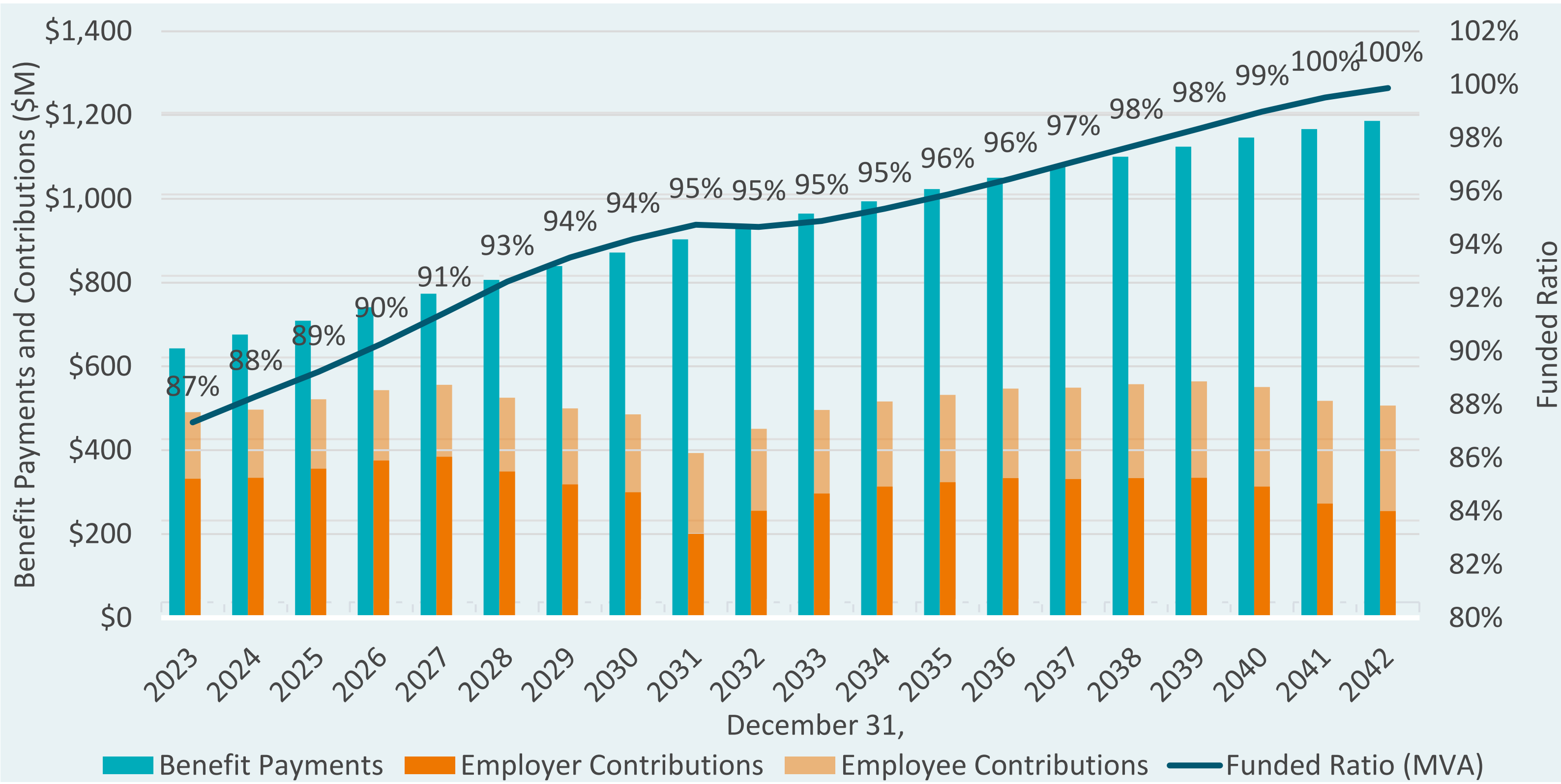
Net Cashflow	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
$M	(23)	2	(23)	(26)	(36)	(51)	(58)	(13)	(107)	(160)
% of BOY Assets	-0.4%	0.0%	-0.3%	-0.4%	-0.4%	-0.6%	-0.6%	-0.1%	-0.9%	-1.6%

Source: CCERA 12/31/22 Actuarial Valuation Report. 2023 estimated based on actuarially required contribution and expected benefit payments.

Deterministic projections

Baseline projection

20 YEAR PROJECTION



As CCCERA approaches full funding, the plan's cashflow profile will become increasingly negative

Net Cashflow	2024	2026	2028	2030	2032	2034	2036	2038	2040	2042
$M	(177)	(212)	(241)	(364)	(538)	(493)	(514)	(550)	(583)	(673)
% of BOY Assets	-1.6%	-1.8%	-1.8%	-2.6%	-3.5%	-3.0%	-2.9%	-2.9%	-2.9%	-3.1%

Asset returns are equal to the EROA of 6.75% in each year of the projection. Employer contributions are the employer normal cost + payment of unfunded actuarial accrued liability (UAAL). Contributions are shown for the following calendar year (e.g., the contributions that correspond to the 12/31/2023 column reflect cash contributed during 2024).

Projected funded status heat map

20 YEAR PROJECTION

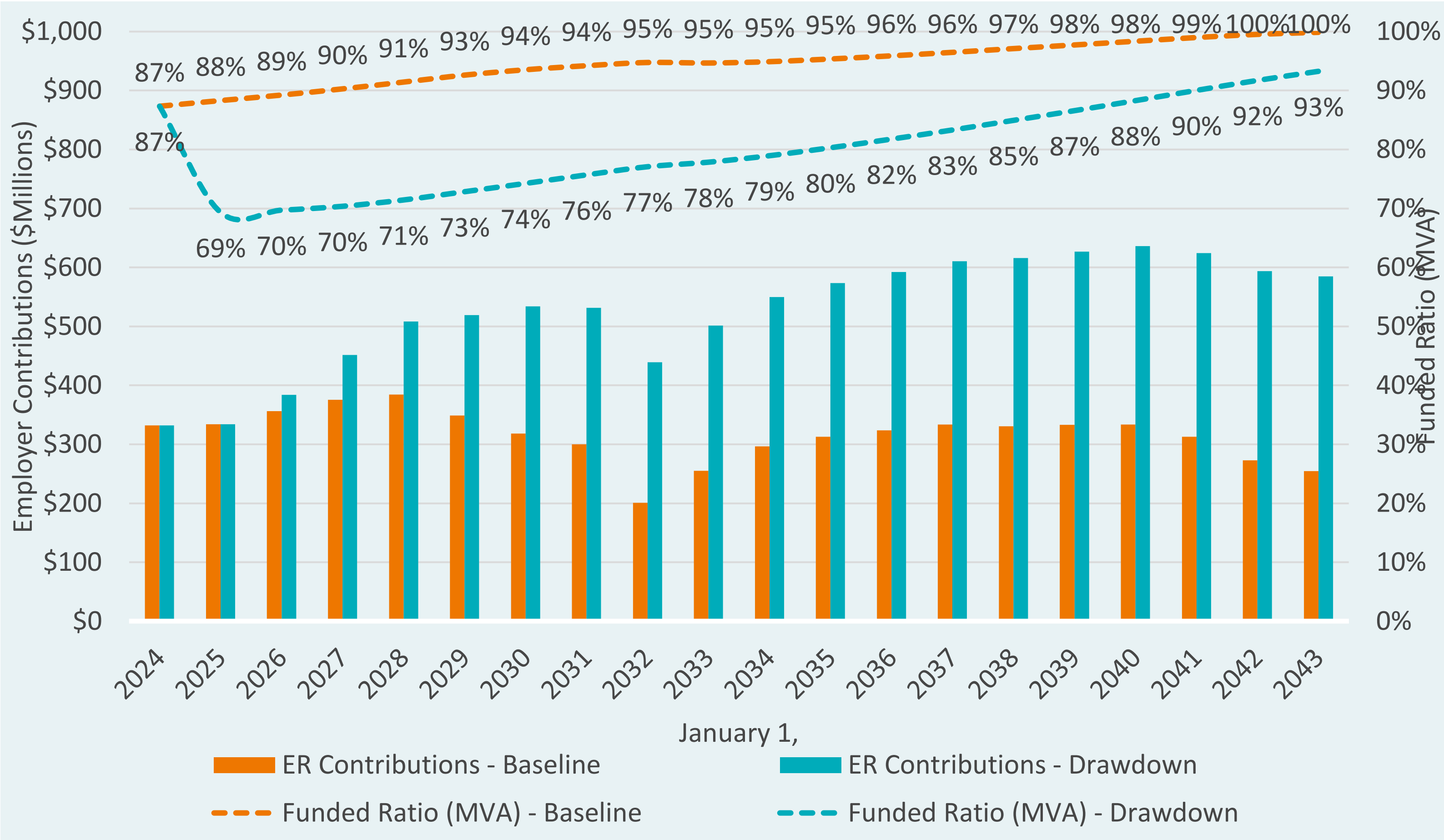
Year-End Funded Ratio (MVA)												
		2023	2025	2027	2029	2031	2033	2035	2037	2039	2041	2043
Annual Investment Return	3.75%	87%	84%	81%	79%	76%	72%	70%	69%	68%	68%	67%
	4.75%	87%	86%	85%	83%	82%	79%	78%	77%	77%	76%	76%
	5.75%	87%	88%	88%	88%	88%	87%	86%	86%	87%	87%	87%
	6.75%	87%	89%	91%	94%	95%	95%	96%	97%	98%	100%	100%
	7.75%	87%	91%	95%	99%	102%	104%	106%	109%	111%	114%	117%
	8.75%	87%	93%	99%	105%	110%	115%	120%	126%	133%	140%	147%
	9.75%	87%	94%	102%	111%	118%	126%	136%	146%	156%	168%	181%

Annual Employer Contribution (% of Payroll)												
		2025	2027	2029	2031	2033	2035	2037	2039	2041	2043	20-Year Total ($M)
Annual Investment Return	3.75%	29%	32%	31%	30%	30%	37%	41%	44%	45%	45%	11,036
	4.75%	29%	32%	30%	28%	26%	32%	35%	37%	37%	36%	9,611
	5.75%	29%	31%	29%	25%	22%	26%	28%	28%	28%	25%	8,041
	6.75%	29%	31%	27%	22%	18%	20%	21%	19%	17%	13%	6,310
	7.75%	29%	31%	26%	19%	12%	12%	11%	11%	10%	10%	4,808
	8.75%	29%	30%	24%	13%	12%	12%	11%	10%	5%	1%	4,236
	9.75%	29%	30%	23%	13%	12%	12%	7%	0%	0%	0%	3,409

Asset returns are as stated in each year of the projection. Employer contributions are the employer normal cost + payment of unfunded actuarial accrued liability (UAAL). Employer contribution correspond to the above funded ratios (i.e., the 2025 contribution is based on the 12/31/2023 valuation).

Drawdown impact on funding policy

NO DRAWDOWN VS. 16% DRAWDOWN (6.75% INVESTMENT RETURN OTHERWISE)



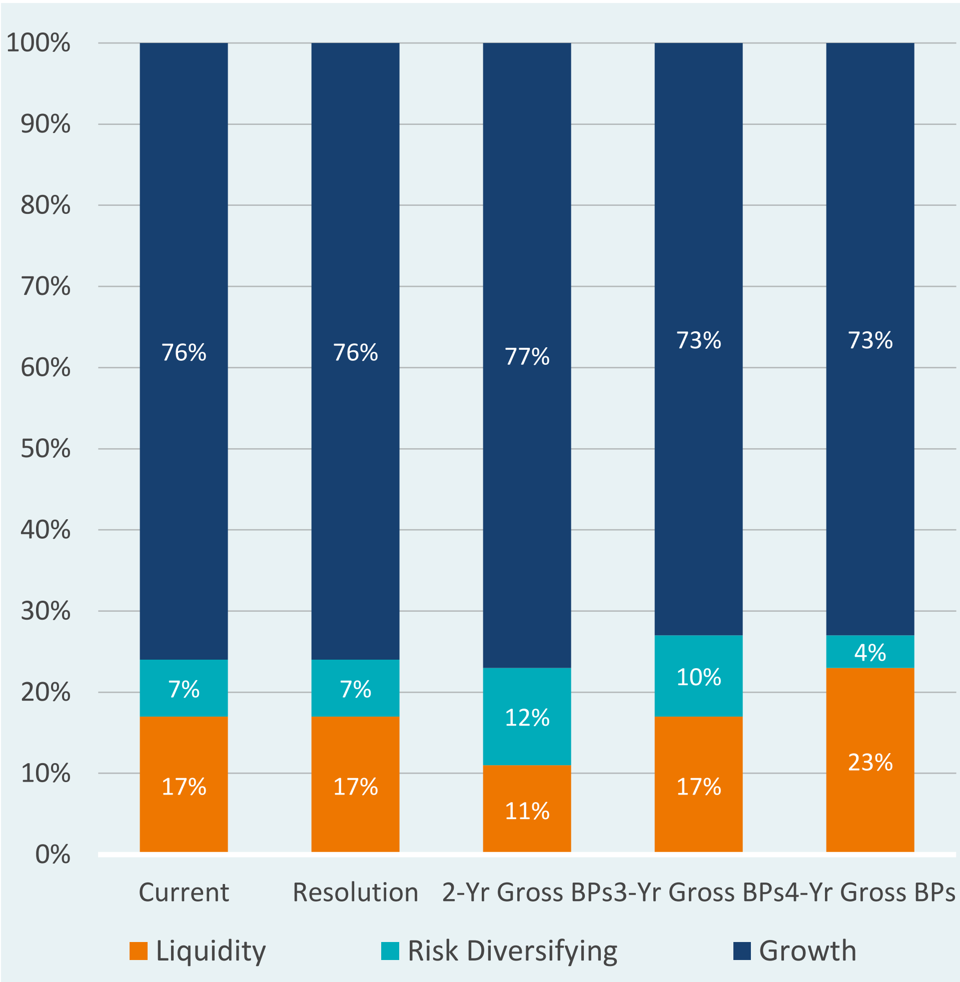
A 16% drawdown in the first year leads to ~$4.2B in additional contributions over 20 years.

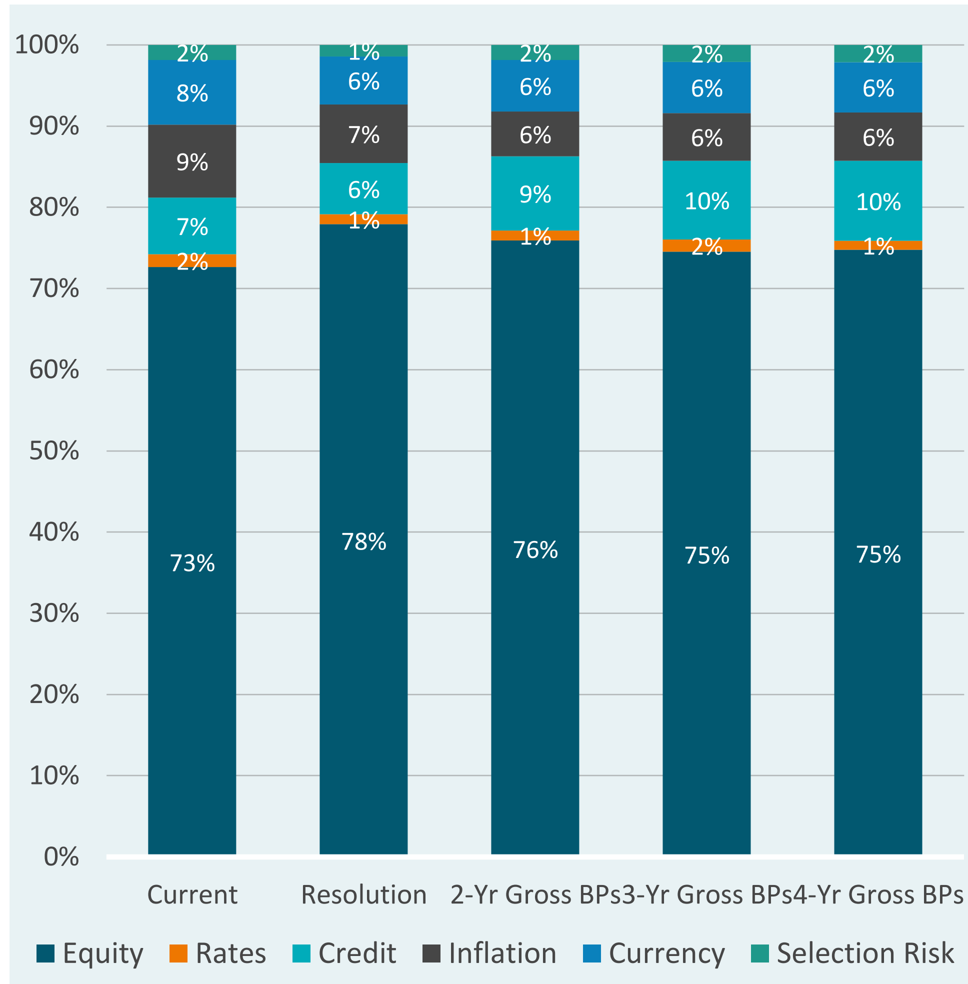
Contributions impacts lag the drawdown and phase in through time.

Asset returns are as stated in each year of the projection. Employer contributions are the employer normal cost + payment of unfunded actuarial accrued liability (UAAL).

Risk analysis

Capital allocation and risk decomposition

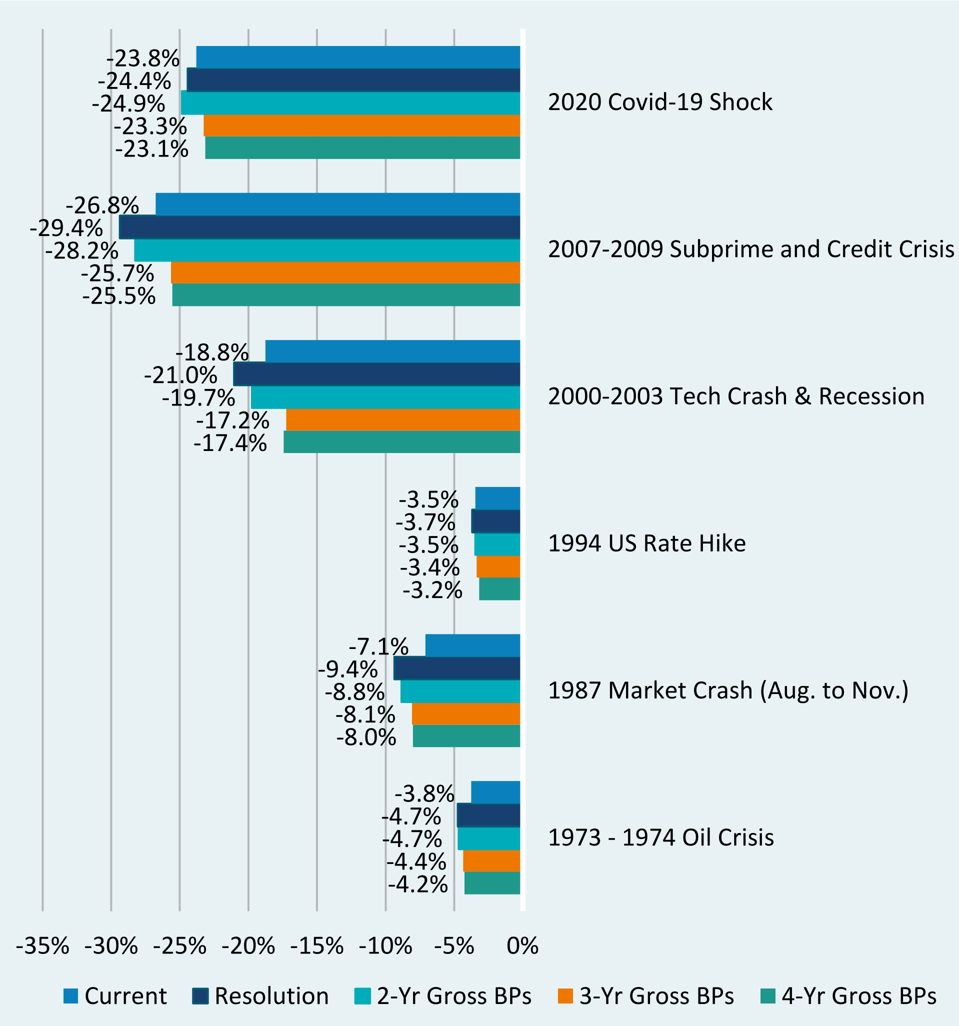




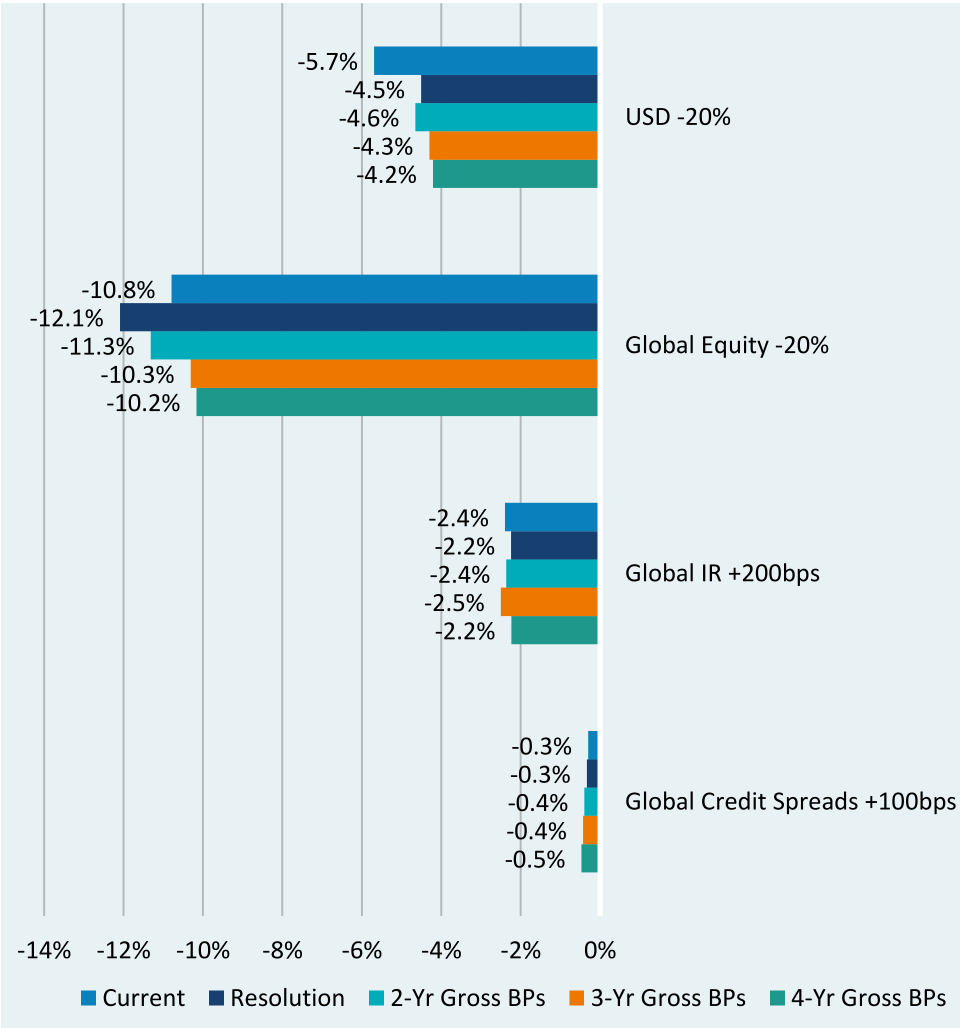
Source: Barra

Tail risk – scenario analysis

SCENARIO ANALYSIS



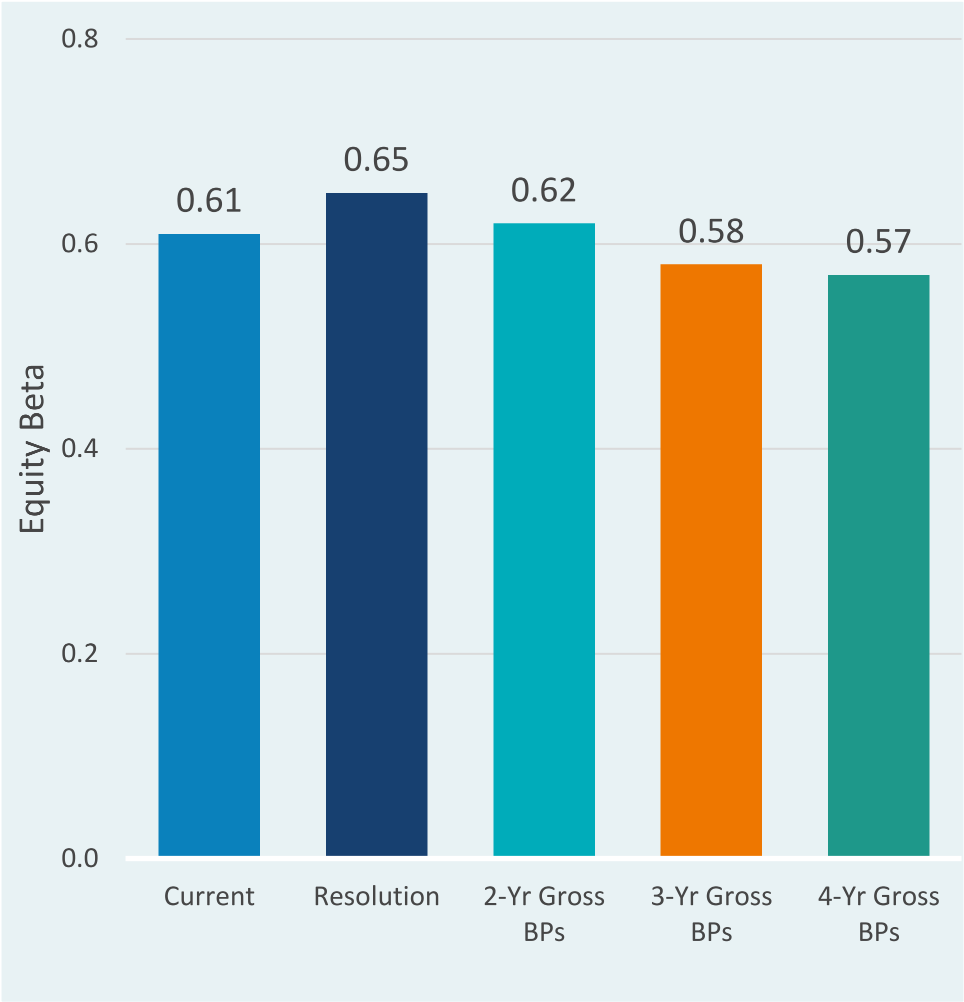
SCENARIO ANALYSIS



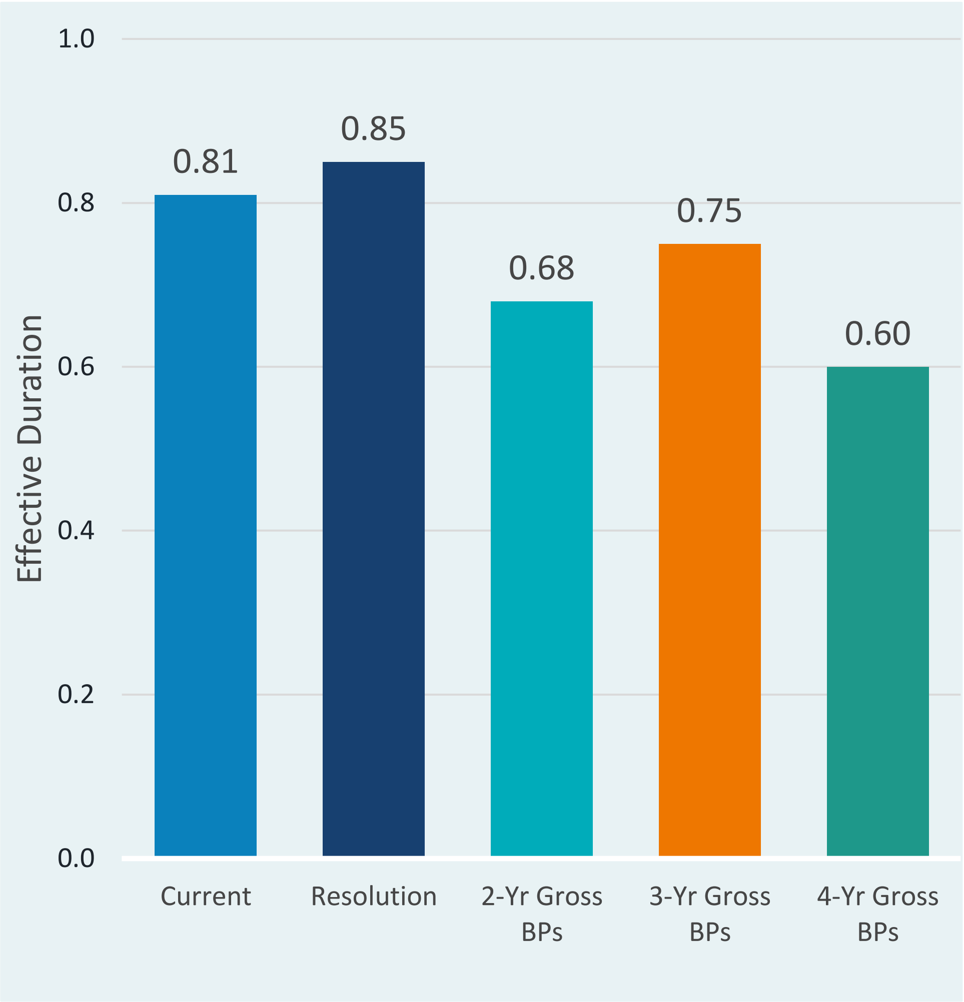
Source: Barra

Equity beta and effective duration

EQUITY BETA



EFFECTIVE DURATION



Source: Barra

How to read “box-and-whisker” charts

— Top line represents the 100th percentile (all data excluding outliers exists at or below this line)

— Top bar of the box represents the 75th percentile

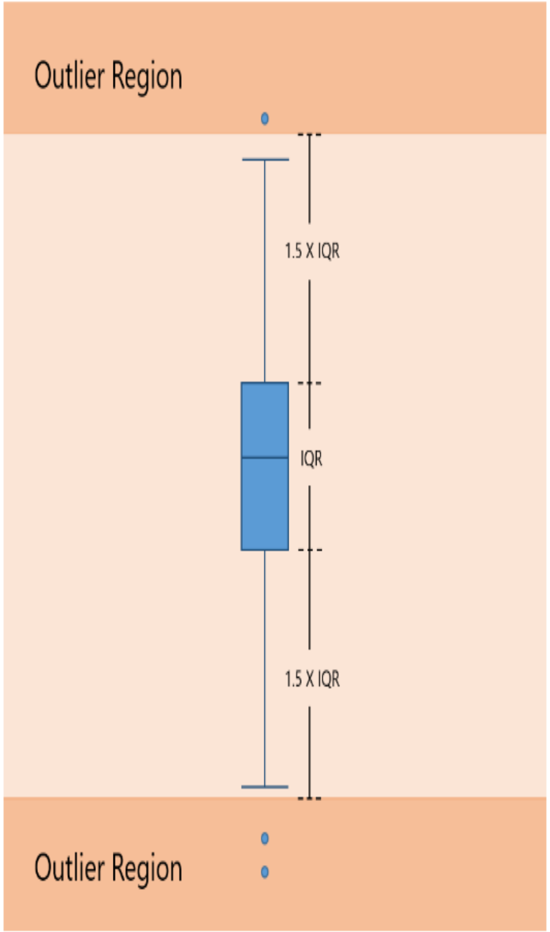
— Middle line within the box represents the 50th percentile

— The X within the box represents the average

— Bottom bar of the box represents the 25th percentile

— Bottom line represents the 0th percentile (all data excluding outliers exists at or above this line)

— Note that chart also includes outliers, these are values which are abnormally large/small. The determination of an outlier is based on the Tukey industry standard which states that values are considered outliers only if they lie 1.5x the length of the ‘interquartile’ range (“IQR”). See the informational graphic on the right for a visual explanation.



Modeling assumptions

CCCERA actuarial assumptions and methods

Funding Policy	Employer share of normal cost + contribution to the unfunded actuarial accrued liability (UAAL). Actuarial gains and losses (census, assumptions, and methods) are amortized over 18 years, as a level % of payroll.
Actuarial Cost Method	Entry Age
Asset valuation method	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value and are recognized semi-annually over a five-year period.
Investment rate of return	6.75%, net of investment expenses
Inflation	2.5%
Payroll growth	3.0%
COLA	2.75%, subject to 2% maximum for certain tiers

Capital market assumption process

- **Asset Returns**
  - Strategic Purpose - Horizon = 2 to 3 Market Cycles
  - Based on Capital Asset Pricing Model (CAPM)
    - Investor Must Be Compensated for Taking Higher Risk
  - Economic Growth Forecasts
  - Stay Within Long-Term Real Return Corridors, Combined with Mean Reversion
  - Qualitative Overlay
    - Expectations Must Produce Reasonable Portfolios and a "Stable Frontier"
  - Data Sources/Return
    - Complete Monthly Return History
    - Blue Chip Economic Forecast (Inflation, GDP Growth Estimates)
    - Wall Street Forecasts
    - Global Manager Forecasts
    - CAPM (For "Difficult" Asset Classes)
- **Asset Risk (Standard Deviation)**
  - Fairly Stable (Two Factor Model; Historical 1976 to present, Half-Life 1985 to Present)
- **Correlations**
  - Most Stable (90-Month Half-Life, 1985 to Present)

Methodology

CORE INPUTS

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

Asset	Return Methodology	Volatility Methodology*
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the 10-year TIPS breakeven rate	-
Cash	1/3 * current federal funds rate + 1/3 * U.S. 10-year Treasury yield + 1/3 * Federal Reserve long-term interest rate target	Long-term volatility
Bonds	Nominal bonds: current yield; Real bonds: real yield + inflation forecast	Long-term volatility
International Bonds	Current yield	Long-term volatility
Credit	Current option-adjusted spread + U.S. 10-year Treasury – effective default rate	Long-term volatility
International Credit	Current option-adjusted spread + foreign 10-year Treasury – effective default rate	Long-term volatility
Private Credit	Levered gross return (SOFR + spread + original issuance discounts) – management fees – carried interest	Estimated volatility
Equity	Current yield + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Long-term volatility
Intl Developed Equity	Current yield + real earnings growth (historical average) + inflation on earnings (intl. inflation forecast) + expected P/E change	Long-term volatility
Private Equity**	US large cap domestic equity forecast * 1.85 beta adjustment	1.2 * Long-term volatility of U.S. small cap
Commodities	Collateral return (cash) + spot return (inflation forecast) + roll return (assumed to be zero)	Long-term volatility
Hedge Funds	Return coming from traditional betas + 15-year historical idiosyncratic return	Long-term volatility
Core Real Estate	Cap rate + real income growth – capex + inflation forecast	65% of REIT volatility
REITs	Core real estate	Long-term volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 3%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Infrastructure	Current yield + real income growth + inflation on earnings (inflation forecast)	Long-term volatility
Risk Parity	Modeled as the 10-year return expectations of a *representative selection of Risk Parity strategies*	Target volatility

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

***Private Equity is modeled assuming an 8.0% floor for expected return, and a 3% return premium ceiling over U.S. Large Cap Equity. These adjustments are in place to recognize that higher interest rates (cost of leverage) act as a drag on expected Private Equity returns but that this drag has had limits historically, and to recognize that future Private Equity total universe performance is likely to be more anchored to public equity performance than in past times, given a more competitive market environment*

10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast Geometric	Ten Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
Equities								
U.S. Large	S&P 500	5.9%	7.0%	15.5%	0.12	0.19	0.72	0.75
U.S. Small	Russell 2000	6.2%	8.2%	21.4%	0.10	0.19	0.28	0.37
International Developed	MSCI EAFE	8.1%	9.5%	17.6%	0.23	0.31	0.18	0.25
International Small	MSCI EAFE Small Cap	8.8%	10.9%	21.7%	0.22	0.31	0.20	0.27
Emerging Markets	MSCI EM	8.8%	11.4%	24.6%	0.19	0.30	0.06	0.14
Global Equity	MSCI ACWI	6.9%	8.2%	16.7%	0.17	0.25	0.44	0.50
Global Equity ex USA	MSCI ACWI ex USA	8.5%	10.2%	19.5%	0.23	0.31	0.15	0.22
Private Equity	CA Private Equity	8.0%	10.9%	25.6%	0.15	0.27	-	-
Private Equity Direct	CA Private Equity	9.0%	11.8%	25.6%	0.19	0.30	-	-
Private Equity (FoF)	CA Private Equity	7.0%	9.9%	25.6%	0.11	0.23	-	-
Fixed Income								
Cash	30 Day T-Bills	4.1%	4.1%	1.1%	-	-	-	-
U.S. TIPS	Bloomberg U.S. TIPS 5-10	4.7%	4.8%	5.5%	0.11	0.13	0.13	0.15
Non-U.S. Inflation Linked Bonds	Bbg World Govt. Inflation Linked Bond ex U.S.	3.9%	4.2%	7.4%	(0.03)	0.01	(0.15)	(0.11)
U.S. Treasury	Bloomberg Treasury 7-10 Year	4.6%	4.8%	7.1%	0.07	0.10	(0.05)	(0.02)
Long U.S. Treasury	Bloomberg Treasury 20+ Year	4.7%	5.5%	13.2%	0.05	0.11	0.00	0.25
Global Sovereign ex U.S.	Bloomberg Global Treasury ex U.S.	2.7%	3.2%	9.9%	(0.14)	(0.09)	(0.40)	(0.36)
Global Aggregate	Bloomberg Global Aggregate	4.1%	4.3%	6.6%	0.00	0.03	(0.27)	(0.24)
Core Fixed Income	Bloomberg U.S. Aggregate Bond	4.9%	5.0%	4.8%	0.17	0.19	0.00	0.02
Core Plus Fixed Income	Bloomberg U.S. Universal	5.2%	5.3%	4.5%	0.24	0.27	0.07	0.09
Investment Grade Corp. Credit	Bloomberg U.S. Corporate Investment Grade	5.7%	6.0%	8.4%	0.19	0.23	0.17	0.20
Short-Term Gov't/Credit	Bloomberg U.S. Gov't/Credit 1-3 Year	4.7%	4.8%	3.6%	0.17	0.19	(0.07)	(0.07)
Short-Term Credit	Bloomberg Credit 1-3 Year	5.1%	5.2%	3.6%	0.28	0.31	0.23	0.24
Long-Term Credit	Bloomberg Long U.S. Credit	5.7%	6.3%	10.9%	0.15	0.20	0.15	0.20
High Yield Corp. Credit	Bloomberg U.S. Corporate High Yield	6.6%	7.2%	11.0%	0.23	0.28	0.42	0.44
Bank Loans	Morningstar LSTA Leveraged Loan	8.0%	8.4%	9.0%	0.43	0.48	0.58	0.59
Global Credit	Bloomberg Global Credit	5.1%	5.4%	7.7%	0.13	0.17	0.01	0.04
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	8.7%	9.2%	10.6%	0.43	0.48	0.15	0.20
Emerging Markets Debt (Local)	JPM GBI-EM Global Diversified	6.5%	7.2%	12.2%	0.20	0.25	(0.17)	(0.12)
Private Credit	Morningstar LSTA Leveraged Loan	9.2%	9.8%	11.9%	0.43	0.48	-	-
Private Credit (Direct Lending - Unlevered)	Morningstar LSTA Leveraged Loan	8.0%	8.4%	9.0%	0.43	0.48	-	-
Private Credit (Direct Lending - Levered)	Morningstar LSTA Leveraged Loan	9.5%	10.2%	12.6%	0.43	0.48	-	-
Private Credit (Credit Opportunities)	Morningstar LSTA Leveraged Loan	9.6%	10.3%	12.8%	0.43	0.48	-	-
Private Credit (Junior Capital / Mezzanine)	Morningstar LSTA Leveraged Loan	9.0%	9.6%	11.4%	0.43	0.48	-	-
Private Credit (Distressed)	Morningstar LSTA Leveraged Loan	9.1%	12.7%	29.1%	0.17	0.30	-	-

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

10-year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast Geometric	Ten Year Return Forecast Arithmetic	Standard Deviation Forecast	Sharpe Ratio Forecast (g)	Sharpe Ratio Forecast (a)	10-Year Historical Sharpe Ratio (g)	10-Year Historical Sharpe Ratio (a)
Other								
Commodities	Bloomberg Commodity	6.6%	7.8%	16.1%	0.16	0.23	(0.13)	(0.06)
Hedge Funds	HFRI Fund Weighted Composite	4.3%	4.6%	7.5%	0.03	0.07	0.48	0.49
Hedge Fund of Funds	HFRI Fund of Funds Composite	3.3%	3.6%	7.5%	(0.11)	(0.07)	-	-
Hedge Funds (Equity Style)	Custom HFRI Benchmark Mix*	7.2%	8.1%	14.1%	0.22	0.28	-	-
Hedge Funds (Credit Style)	Custom HFRI Benchmark Mix*	7.3%	7.7%	9.4%	0.34	0.38	-	-
Hedge Funds (Asymmetric Style)	Custom HFRI Benchmark Mix*	5.4%	5.6%	6.4%	0.20	0.23	-	-
Real Estate Debt	Bloomberg CMBS IG	7.4%	7.7%	7.5%	0.44	0.48	0.14	0.15
Core Real Estate	NCREIF Property	6.8%	7.5%	12.5%	0.22	0.27	-	-
Value-Add Real Estate	NCREIF Property + 200bps	8.8%	9.9%	15.4%	0.31	0.38	-	-
Opportunistic Real Estate	NCREIF Property + 300bps	9.8%	11.7%	21.1%	0.27	0.36	-	-
REITs	Wilshire REIT	6.8%	8.5%	19.2%	0.14	0.23	0.35	0.42
Global Infrastructure	S&P Global Infrastructure	8.4%	9.7%	16.9%	0.25	0.33	0.20	0.28
Risk Parity**	S&P Risk Parity 10% Vol Index	7.2%	7.8%	10.0%	0.31	0.37	-	-
Currency Beta	MSCI Currency Factor Index	2.3%	2.4%	3.4%	(0.52)	(0.49)	(0.06)	0.21
Inflation		2.5%	-	-	-	-	-	-

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

**To represent hedge fund styles, we use a combination of HFRI benchmarks: Equity Style = 33% HFRI Fundamental Growth, 33% HFRI Fundamental Value, 33% HFRI Activist. Credit Style = 20% HFRI Distressed/Restructuring, 20% HFRI Credit Arbitrage, 20% HFRI Fixed Income-Corporate, 20% HFRI Fixed Income-Convertible Arbitrage, 20% HFRI Fixed Income-Asset Backed. Asymmetric Style = 50% HFRI Relative Value, 50% HFRI Macro*

***The Risk Parity forecast shown here assumes a 10% target volatility strategy. We recommend customizing this forecast to the target volatility specifications of the risk parity strategy that an investor wishes to model. Please speak with your Verus consultant for customization needs.*

Correlation assumptions

	Cash	US Large	US Small	Intl Large	Intl Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign ex-US	US Core	Core Plus	Short-Term Gov't/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Infrastructure	Currency Beta	Risk Parity
Cash	1.0																											
US Large	-0.1	1.0																										
US Small	-0.2	0.9	1.0																									
Intl Large	-0.1	0.9	0.8	1.0																								
Intl Small	-0.1	0.9	0.8	1.0	1.0																							
EM	-0.1	0.7	0.6	0.8	0.8	1.0																						
Global Equity	-0.1	1.0	0.9	0.9	0.9	0.8	1.0																					
PE	-0.2	0.7	0.7	0.6	0.6	0.6	0.7	1.0																				
US TIPS	-0.1	0.4	0.3	0.4	0.4	0.4	0.5	0.2	1.0																			
US Treasury	0.0	0.1	-0.1	0.0	0.0	0.1	0.1	-0.1	0.7	1.0																		
Global Sovereign ex-US	0.1	0.3	0.2	0.4	0.4	0.5	0.4	0.1	0.7	0.6	1.0																	
US Core	0.0	0.3	0.2	0.3	0.3	0.4	0.3	0.0	0.8	0.9	0.7	1.0																
Core Plus	0.0	0.4	0.3	0.4	0.4	0.5	0.4	0.1	0.8	0.8	0.8	1.0	1.0															
Short-Term Gov't/Credit	0.2	0.2	0.0	0.2	0.2	0.3	0.2	0.0	0.7	0.8	0.6	0.8	0.8	1.0														
Short-Term Credit	0.2	0.4	0.3	0.4	0.4	0.4	0.4	0.2	0.6	0.5	0.7	0.7	0.8	0.7	1.0													
Long-Term Credit	0.0	0.5	0.4	0.5	0.5	0.5	0.6	0.2	0.8	0.7	0.7	0.9	0.9	0.6	0.8	1.0												
US HY	-0.1	0.8	0.8	0.8	0.8	0.7	0.8	0.5	0.6	0.1	0.5	0.4	0.6	0.3	0.6	0.7	1.0											
Bank Loans	-0.1	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.3	-0.2	0.2	0.1	0.3	0.0	0.5	0.4	0.8	1.0										
Global Credit	0.0	0.7	0.5	0.7	0.7	0.7	0.7	0.3	0.7	0.5	0.8	0.8	0.9	0.6	0.8	0.9	0.8	0.6	1.0									
EMD USD	-0.1	0.7	0.6	0.7	0.7	0.7	0.7	0.4	0.6	0.3	0.6	0.6	0.7	0.4	0.6	0.8	0.8	0.7	0.9	1.0								
EMD Local	0.0	0.5	0.4	0.7	0.6	0.8	0.7	0.4	0.4	0.2	0.6	0.4	0.5	0.4	0.5	0.6	0.7	0.5	0.8	0.8	1.0							
Commodities	-0.1	0.4	0.4	0.5	0.5	0.5	0.5	0.3	0.2	-0.2	0.2	0.0	0.1	0.0	0.2	0.1	0.5	0.5	0.3	0.4	0.4	1.0						
Hedge Funds	-0.1	0.8	0.9	0.8	0.9	0.8	0.9	0.6	0.3	-0.2	0.3	0.2	0.3	0.0	0.4	0.5	0.8	0.8	0.6	0.7	0.6	0.6	1.0					
Real Estate	-0.3	0.6	0.6	0.5	0.5	0.5	0.6	0.4	0.2	0.0	-0.1	0.1	0.2	0.0	-0.2	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.5	1.0				
REITs	-0.2	0.7	0.7	0.6	0.6	0.5	0.7	0.5	0.6	0.3	0.3	0.5	0.5	0.2	0.3	0.6	0.7	0.5	0.6	0.6	0.5	0.3	0.6	0.7	1.0			
Infrastructure	-0.2	0.8	0.7	0.8	0.8	0.7	0.8	0.6	0.5	0.1	0.5	0.4	0.5	0.2	0.5	0.6	0.8	0.7	0.7	0.8	0.7	0.6	0.8	0.6	0.7	1.0		
Currency Beta	-0.1	0.0	0.0	-0.2	-0.2	-0.2	-0.1	0.1	-0.2	-0.1	-0.3	-0.2	-0.2	-0.1	-0.3	-0.2	-0.1	-0.1	-0.3	-0.2	-0.2	-0.2	-0.1	0.1	0.0	-0.1	1.0	
Risk Parity	0.0	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.4	0.4	0.0	0.5	0.5	0.7	0.3	0.7	0.7	0.7	0.5	0.7	0.6	0.5	0.5	0.4	0.0	0.7	-0.2	1.0

Note: as of 9/30/23 - Correlation assumptions are based on the last ten years. Private Equity and Real Estate correlations are especially difficult to model – we have therefore used BarraOne correlation data to strengthen these correlation estimates.

Notices & disclosures

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

Verus – also known as Verus Advisory™.

Meeting Date
06/26/2024
Agenda Item
#7a.

2024 iDAC SUMMIT
SEPTEMBER 24-26, 2024
BROOMFIELD, COLORADO

Staying the Course: Sustaining Momentum Amid DEI Challenges

iDAC is once again gathering industry leaders and organizations for its annual Summit, hosted at the majestic Partner's Group US headquarters in Broomfield, Colorado. This year's theme, "Staying the Course: Sustaining Momentum Amid DEI Challenges," invites leaders from all facets of the financial sector—whether they are longstanding proponents of DEI or are just beginning to explore its business implications—to participate in this groundbreaking event. By uniting our collective perspectives, participants will unlock opportunities for enhanced collaboration, improved outcomes for stakeholders, and maximized talent potential.

Space is limited and prioritized to IDAC Members!
Please register as a Member to receive your Summit Discount Code.

2024 SUMMIT REGISTRATION OPENING SOON

It's been an eventful year for private markets and we are eager to share and discuss the issues and trends we are seeing. A formal invitation, agenda and additional details will be shared in the coming weeks.

Conference Overview:

September 25: Conrad New York Downtown | 120 North End Ave, NYC
- **Conference Dinner**: 6:00 pm - 9:30 pm

September 26: Convene | 225 Liberty Street, NYC
- **360 Conference Program & Reception**: 8:00 am - 6:00 pm

Meeting Date
06/26/2024
Agenda Item
#7c.

with.
Intelligence

Pension Bridge Alternatives 2024

October 16-17, 2024

Convene 360 Madison Ave, NY, 10017

Wed **Oct 16**

12:00 PM

12:00 PM - 1:00 PM EDT / **9:00 AM - 10:00 AM** Your local time (1 Hour)

Lunch and Registration

1:00 PM

1:00 PM - 1:05 PM EDT / **10:00 AM - 10:05 AM** Your local time (5 Min)

Opening Remarks

1:05 PM

1:05 PM - 1:25 PM EDT / **10:05 AM - 10:25 AM** Your local time (20 Min)

Keynote Allocator Interview

2:00 PM

2:00 PM - 2:20 PM EDT / **11:00 AM - 11:20 AM** Your local time (20 Min)

Headline Presentation

2:20 PM

2:20 PM - 2:50 PM EDT / **11:20 AM - 11:50 AM** Your local time (30 Min)

Coffee and Refreshement Break

2:50 PM

2:50 PM - 3:25 PM EDT / **11:50 AM - 12:25 PM** Your local time (35 Min)

The Grass is Not Always Evergreen...

LPs want evergreen (or open-ended) fund structures. They allow them access to liquidity. In theory, at least. They like the flexibility, open-ended structure and that there is no termination date. Yet many GPs, in reality, offer evergreen options with strict withdrawal stipulations. How "evergreen" is evergreen in reality, and what conditions are driving their growth in the industry?

- Does the growth of evergreen funds in private markets offer genuine liquidity options for LPs?
- To what extent do evergreen funds fulfil their promoted terms?
- How do evergreen fund structures align with exit timing?
- Do early redemptions run the risk of losing out on future gains?
- How can LPs conduct proper due diligence that determines the right terms for them?

3:25 PM

3:25 PM - 4:00 PM EDT / **12:25 PM - 1:00 PM** Your local time (35 Min)

Private Equity: In the Crosshairs

The private equity industry is at a crossroads. Operating businesses are feeling the squeeze of higher rates. Debt is more expensive than it has been for over a decade. Thawed IPO and M&A markets means exit strategies are hard pressed. Thanks to the denominator effect many allocators can't increase exposure to private equity even if they wanted to. And the foregone conclusion that private equity outperforms all other asset classes is decreasingly foregone. How should LPs navigate such an environment?

- Does outperformance of private equity still hold?
- How will the IPO market develop in 2025?
- Are inflationary pressures still a concern?
- Are we entering a new growth cycle?
- To what extent will a new value creation model have to be embraced in order for the industry to progress?
- What is the outlook for co-investments in Private Equity?
- How can LPs navigate longer fundraising cycles?
- Is the hype around AI in private equity real?
- How will emerging managers fare in a capital-constrained world?

4:00 PM

4:00 PM - 4:35 PM EDT / **1:00 PM - 1:35 PM** Your local time (35 Min)

Going Niche with Private Credit

Private credit is becoming a mainstay of allocator portfolios. Yet many LPs count only middle market direct lending in their repertoire. As the asset class matures, so do the opportunities for diversification. From asset-based lending to litigation finance and royalties, many niche strategies offer different return profiles. This session will look, in depth, into how allocators might diversify their allocations in the private credit universe.

- Which areas of specialist private credit offers the best risk-adjusted returns?
- How can LPs identify emerging specialist strategies?
- Which specialist strategies offer the best liquidity profiles?
- To what degree does the due diligence and selection process between larger direct lending funds and smaller niche managers require a different mindset?
- How are pricing levels and covenant complexity in niche areas of the market, compared with middle-market or lower-middle market direct lending?

4:35 PM

4:35 PM - 4:55 PM EDT / **1:35 PM - 1:55 PM** Your local time (20 Min)

Headline Presentation

4:55 PM

4:55 PM - 6:35 PM EDT / **1:55 PM - 3:35 PM** Your local time (1 Hour, 40 Min)

Cocktail Reception

Thu **Oct 17**

8:00 AM

8:00 AM - 9:00 AM EDT / **5:00 AM - 6:00 AM** Your local time (1 Hour)

LP-Only Breakfast

8:00 AM - 9:00 AM EDT / **5:00 AM - 6:00 AM** Your local time (1 Hour)

Registration and Breakfast for All Attendees

9:00 AM

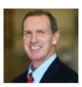
9:00 AM - 9:05 AM EDT / **6:00 AM - 6:05 AM** Your local time (5 Min)

Opening Remarks

9:05 AM

9:05 AM - 9:35 AM EDT / **6:05 AM - 6:35 AM** Your local time (30 Min)

Keynote Address



Steven Meier
Chief Investment Officer and Deputy Comptroller for Asset Management
New York City Retirement System
Keynote

9:35 AM

9:35 AM - 10:10 AM EDT / **6:35 AM - 7:10 AM** Your local time (35 Min)

Private Credit: Too Good to be True?

Many LPs class private credit as the golden child of alternatives. Proponents argue of high returns at relatively low risk. Yet skeptics remain. They point to the fact that most private credit funds have been set up since the global financial crisis of 2008-09 and have not experienced a proper downturn. Also that low loss ratios in good times are not the same as in bad. And that similar returns can be found in high yield public securities with far better liquidity profiles.

- How will "higher for longer" interest rates, with higher yield premiums, affect both the buyside and sellside private credit industry?
- What will widening credit spreads mean for private credit's outlook?
- Which segment of the market is best suited to different LPs with different risk profiles?
- Private credit in 2030: To what degree will private credit have replaced traditional fixed income in 2030?
- How can manager selectors work in an environment where most GPs sound the same?
- What is the outlook for real estate and infrastructure private credit, and where should they sit within the investment function?
- Are underexposed LPs "late to the party" and how should they approach increasing allocation?

10:10 AM

10:10 AM - 10:45 AM EDT / **7:10 AM - 7:45 AM** Your local time (35 Min)

Secondaries: Under What Conditions Might They Stall?

Secondaries continue to buck the depressed dealmaking trend, with investors expecting a strong showing for 2024 and 2025. Narrow bid-ask-spreads and an enduring hunger for liquidity contribute to sustained growth. Is there any end to the growth in traditional secondaries?

- What does a correction in valuations mean for the secondaries market?
- Given nearly 70% of 2023's total secondaries capital was raised by just four mega-funds, how should LPs view smaller players?
- What does an eventual rebound in the exit market mean for the longevity of the secondaries industry?
- To what degree are shorter duration secondary strategies of interest to LPs, and why?
- How are LPs approaching specialization and diversification strategies in the secondaries market?
- How are buyside entrants changing in the secondaries market?
- To what extent is there a disconnect between seller and buyer expectations among LPs?

10:45 AM

10:45 AM - 11:15 AM EDT / **7:45 AM - 8:15 AM** Your local time (30 Min)

Coffee and Refreshement Break

11:15 AM

11:15 AM - 11:35 AM EDT / **8:15 AM - 8:35 AM** Your local time (20 Min)

Headline Presentation

11:35 AM

11:35 AM - 12:10 PM EDT / **8:35 AM - 9:10 AM** Your local time (35 Min)

Venture: A Tale of Two Opinions

The venture industry is rebounding from a dreadful 2023. Yet the degree of the recovery is yet to be determined. Proponents view increases in fundraising shows LPs are once again viewing venture as an attractive asset class. Skeptics that AI is overhyped and that the main driver of investment is coming from family offices and not institutional-sized allocators. This session will pit bull vs bear to determine the reality.

- To what extent will record levels of dry powder depress returns?
- How can LPs determine hype from reality when it comes to managers obsessed with AI?
- Will 2025 see a rollback in bridge rounds and therefore more capital for startups?
- How will the tech M&A activity in 2025 develop?
- What are the opportunities for venture secondaries, given a sustained hunt for liquidity for LPs?
- How can LPs tap specialist strategies in venture in 2025?

12:15 PM

12:15 PM - 1:15 PM EDT / **9:15 AM - 10:15 AM** Your local time (1 Hour)

Lunch

1:15 PM

1:15 PM - 1:50 PM EDT / **10:15 AM - 10:50 AM** Your local time (35 Min)

Hedge Funds: A New Dawn?

The macroeconomic and geopolitical environment continues to sow uncertainty in financial markets, presenting both challenges and opportunities for hedge funds. Challenges in that skeptics argue that, given today's relentless growth, hedge funds are still not relevant. And opportunities in that a market correction might be long overdue.

- How can macro hedge funds capitalise on major trends?
- How can hedge funds, given fees and illiquidity, compete with an increasingly attractive IG fixed income market and differentiate returns?
- How can allocators gain access to the top names, given fund closures over the last few years?
- Grit in the machines: How can CTAs perform in a world of such uncertainty?
- Multi-strategy: To what extent do multi-strategy funds come with a strategy drag for allocators and how can they access the best funds?
- What is the role of emerging markets during flights to quality?
- To what extent will AI disrupt the investment function of hedge funds?

1:50 PM

1:50 PM - 2:25 PM EDT / **10:50 AM - 11:25 AM** Your local time (35 Min)

Real Estate: Over The Slump

Real estate has been under strain in recent years. Higher rates and structural trends such as falling occupancy rates and softening economic conditions are to blame. Even logistics is feeling the pinch, with dampening demand compared to previous years.

- Yet there is hope, mostly in the form of rate cuts from the Fed. How should investors proceed?
- To what extent will rate cuts affect allocator investment into the America's real estate sector?
- One warehouse too many: Has logistics peaked?
- How can allocators identify which managers can build resilient portfolios?
- Even with rate cuts, to what degree can commercial real estate rebound?
- Developed vs emerging: Where should allocators to achieve their risk-adjusted return objectives in real estate?

2:25 PM

2:25 PM - 3:00 PM EDT / **11:25 AM - 12:00 PM** Your local time (35 Min)

Infrastructure: Deciphering Hype from Reality

Performance in infrastructure has remained strong, albeit with lacklustre fundraising numbers. The reason? Investors are skeptical on valuations. Yet LPs are increasing exposure, especially in infrastructure linked to decarbonization, digitalization and deglobalization. This session will determine whether infrastructure will be the next big thing for LP allocation, or whether the skeptics are right.

- Under what conditions will the bid-ask spread shrink?
- How will the wind down of the inflation-interest rate shock of 2022-23 affect deal activity in infrastructure?
- Should inflation levels normalize, and given the liquidity terms of infrastructure, how will the asset class fare?
- Is there a dip to buy at current levels or should LPs wait for a market correction?
- Is AI a passing fad for digital infrastructure?

3:00 PM

3:00 PM - 3:35 PM EDT / **12:00 PM - 12:35 PM** Your local time (35 Min)

Accessing Alternatives - Challenging the Fundamentals

The denominator effect hasn't hit portfolio construction strategies as much as feared, given rebounds in equities and high yields in bond markets, although some LPs are still in a tough spot. But more generally the death of lower-for-longer rates and uncertain macroeconomic and geopolitical outlooks are triggering more fundamental discussions about longer term asset allocation mixes. Alternative portfolios are not immune to this, and in fact increasingly take center stage. In this session, three nominees from With Intelligence's Allocator Prizes will determine the future of portfolio construction in alternative asset classes.

- Is there a material change required in how asset allocation considerations are thought of?
- How can asset allocators maintain liquidity within their alternatives portfolios in an increasingly illiquid world?
- How do alternatives influence the successor to the 60/40 model of asset allocation, given higher-for-longer rates?
- What role does risk parity play in today's uncertain market?
- To what extent do asset allocators need to accept more risk premia to meet return targets for their stakeholders?
- To what degree have price corrections bottomed out and, depending on that extent, what type of vintage will 2025 be?

3:35 PM

3:35 PM - 3:55 PM EDT / 12:35 PM - 12:55 PM Your local time (20 Min)

Keynote Allocator Interview

Michael Trotsky
Executive Director and Chief Investment Officer
MassPRIM
Keynote

4:00 PM

4:00 PM - 5:30 PM EDT / 1:00 PM - 2:30 PM Your local time (1 Hour, 30 Min)

Pre-Allocator Prize Cocktail Reception