IN PERSON & VIRTUAL BOARD MEETING

MARCH 8, 2023 AT 9:00 AM
BOARD OF INVESTMENTS MEETING

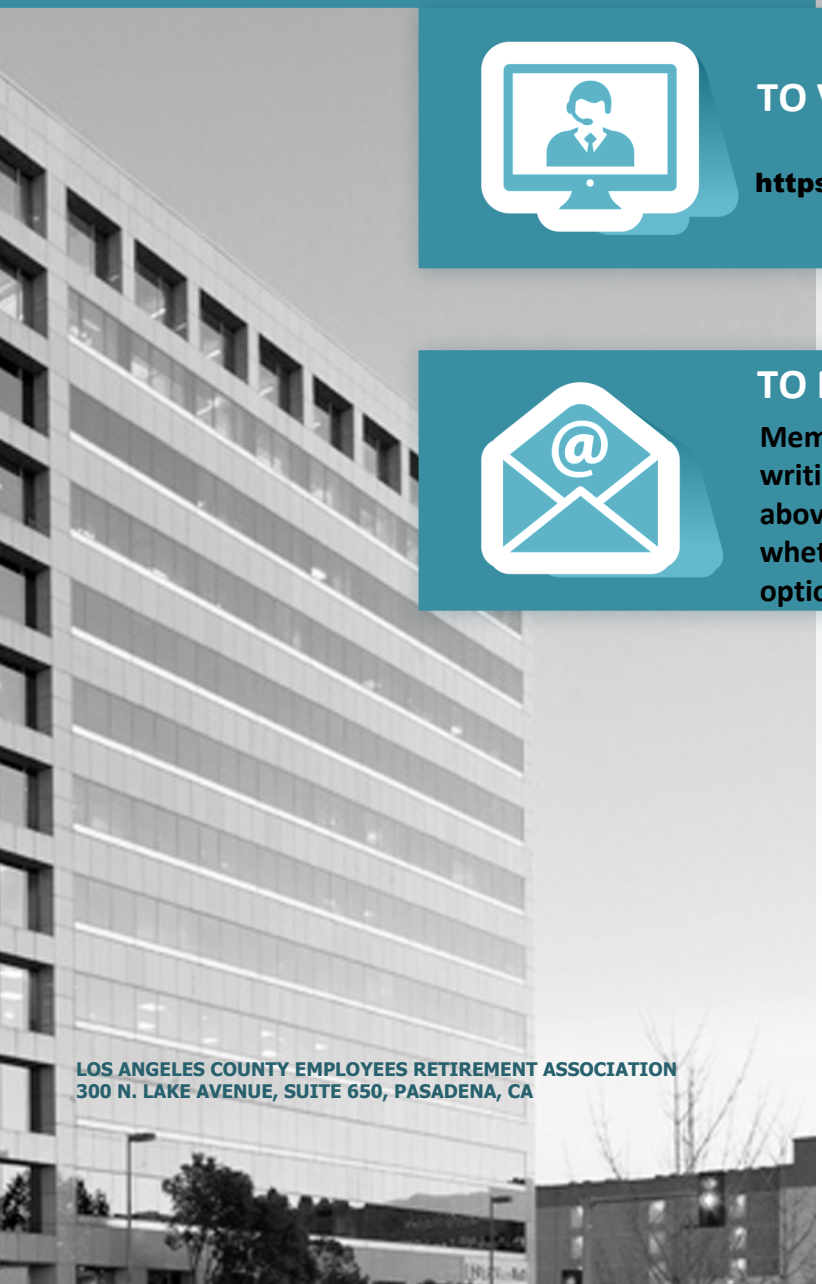
TO VIEW VIA WEB

https://lacera.com/leadership/board-meetings

TO PROVIDE PUBLIC COMMENT

Members of the public may address the Board orally and in writing. To provide Public Comment, you should visit the above link and complete the request form by selecting whether you will provide oral or written comment from the options located under Options next to the Board meeting.

Attention: If you have any questions, you may email PublicComment@lacera.com. If you would like to make a public comment during the board meeting, review the Public Comment instructions.



LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION
300 N. LAKE AVENUE, SUITE 650, PASADENA, CA

AGENDA

A REGULAR MEETING OF THE BOARD OF INVESTMENTS

LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

300 N. LAKE AVENUE, SUITE 810, PASADENA, CA 91101

9:00 A.M., WEDNESDAY, MARCH 8, 2023

This meeting will be conducted by the Board of Investments both in person and by teleconference under California Government Code Section 54953 (b), (f).

Any person may view the meeting in person at LACERA's offices or online at https://LACERA.com/leadership/board-meetings

The Board may take action on any item on the agenda, and agenda items may be taken out of order.

Teleconference Location for Trustees and the Public under California Government Code Section 54953(b)
Hilton Garden Inn Washington DC Downton Hotel: 815 14th Street N.W. Washington DC 20005

I. CALL TO ORDER

II. PLEDGE OF ALLEGIANCE

III. PROCEDURE FOR TELECONFERENCE MEETING ATTENDANCE UNDER AB 2449, California Government Code Section 54953(f) (Memo dated February 23, 2023)

A. Just Cause
B. Action on Emergency Circumstance Requests
C. Statement of Persons Present at AB 2449 Teleconference Locations

IV. APPROVAL OF MINUTES

A. Approval of the Minutes of the Regular Meeting of February 8, 2023

V. PUBLIC COMMENT

(Members of the public may address the Board orally and in writing. To provide Public Comment, you should visit https://LACERA.com/leadership/board-meetings and complete the request form by selecting whether you will provide oral or written comment from the options located under Options next to the Board meeting.

If you select oral comment, we will contact you via email with information and instructions as to how to access the meeting as a speaker. You will have up to 3 minutes to address the Board. Oral comment requests will be accepted up to the close of the Public Comment item on the agenda.

If you select written comment, please input your written public comment or documentation on the above link as soon as possible and up to the close of the meeting. Written comment will be made part of the official record of the meeting. If you would like to remain anonymous at the meeting without stating your name, please leave the name field blank in the request form. If you have any questions, you may email PublicComment@lacera.com.)

VI. EXECUTIVE UPDATE

A. Chief Executive Officer's Report

B. Chief Investment Officer's Report

VII. CONSENT ITEMS

A. **2023 Annual AVCA Conference in Cairo, Egypt on May 1 – 5, 2023**
Recommendation that the Board approve attendance of Trustees at the Approve attendance of Trustees at the 2023 Annual AVCA Conference held in Egypt, Cairo on May 1 – 5, 2023, and approve reimbursement of all travel costs incurred in accordance with LACERA's Trustee Education and Trustee Travel Policies. (Memo dated February 21, 2023) (Placed on the agenda by Trustee, David Green)

VIII. NON-CONSENT ITEMS

A. **2022 Actuarial Valuation of Retirement Benefits**
Recommendation as submitted by Santos H. Kreimann, Chief Executive Officer and Ted Granger, Interim Chief Financial Officer: That the Board:

VIII. NON-CONSENT ITEMS (Continued)

1. Accept the June 30, 2022 Actuarial Valuation of Retirement Benefits as submitted by the plan actuary, Milliman.

2. Adopt recommended employer contribution rates (all plan tiers) and employee contribution rates (all contributory plan tiers).

3. Delegate authority to the Chief Executive Officer to communicate the results of the 2022 Actuarial Valuation of Retirement Benefits to the Board of Supervisors on or before May 15, 2023, with a recommendation to implement the employer and employee rates no later than September 29, 2023. (Memo dated February 22, 2023)

B. **UPDATE LACERA'S ORDINANCE OF POSITIONS – Retirement Benefits Specialist I, Retirement Benefits Specialist II, Senior Disability Retirement Specialist**

Recommendation as submitted by Santos H. Kreimann, Chief Executive Officer: That the Board 1) Approve an increase in the number of Retirement Benefit Specialist I (Item #1309) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 17 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff; 2) Approve an increase in the number of Retirement Benefit Specialist II (Item #1310) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 21 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff; 3) Approve an increase in the number of Senior Disability Retirement Specialist II (Item #1632) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 3 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff. (Memo dated February 23, 2023) (Supplemental Memo dated March 2, 2023)

C. **Chief Executive Officer Compensation and Benefits – Transportation Allowance**

Recommendation as submitted by Carly Ntoya, Ph.D., Director, Human Resources: That the Board approve approves a $600 per month Transportation Allowance for Chief Executive Officer, Santos H. Kreimann, effective July 1, 2021. (Memo dated February 15, 2023)

IX. REPORTS

A. **LACERA Quarterly Performance Book**
Jude Pérez, Principal Investment Officer
Dale Johnson, Investment Officer
John Kim, Investment Officer
Terra Elijah, Senior Investment Analyst
(Memo dated February 28, 2023)

B. **OPEB Quarterly Performance Book**
Jude Pérez, Principal Investment Officer
(For Information Only) (Memo dated March 1, 2023)

C. **Securities Lending Program—2022 Annual Review**
Vache Mahseredjian, Principal Investment Officer
(For Information Only) (Memo dated February 28, 2023)

D. **Legal Projects**
Christine Roseland, Senior Staff Counsel
(For Information Only) (Memo dated February 27, 2023)

E. **Monthly and Quarterly Trustee Travel & Education Reports**
Ted Granger, Interim Chief Financial Officer
(For Information Only) (Memos dated February 21, 2023)
Monthly Trustee Travel & Education Report – January 2023
Comprehensive Monthly Trustee Travel & Education Report – January 2023 (Confidential memo dated February 21, 2023– Includes Pending Travel)
FY 2022-2023 2nd Quarter Staff Travel Report
FY 2022-2023 2nd Quarter Trustee Travel & Education Expenditure Reports

F. **February 2023 Fiduciary Counsel Contact and Billing Report**
Steven P. Rice, Chief Counsel
(For Information Only) (Memo dated February 21, 2023)
(Privileged and Confidential/Attorney-Client Communication/Attorney Work Product)

X. ITEMS FOR STAFF REVIEW

(This item summarizes requests and suggestions by individual trustees during the meeting for consideration by staff. These requests and suggestions do not constitute approval or formal action by the Board, which can only be made separately by motion on an agendized item at a future meeting.)

XI. ITEMS FOR FUTURE AGENDAS

(This item provides an opportunity for trustees to identify items to be included on a future agenda as permitted under the Board's Regulations.)

XII. GOOD OF THE ORDER

(For Information Purposes Only)

XIII. EXECUTIVE SESSION

A. Conference with Staff and Legal Counsel to Consider the Purchase or Sale of Particular, Specific Pension Fund Investments (Pursuant to California Government Code Section 54956.81)

1. **CBRE U.S. Core Partners Fund (Open–End)**
   James Rice, Principal Investment Officer
   Amit Aggarwal, Investment Officer
   Mel Tsao, Senior Investment Analyst
   (Memo dated February 22, 2023)

2. **Montefiore Investment VI S.L.P. AND Montefiore Investment Expansion S.L.P.**
   Christopher J. Wagner, Principal Investment Officer
   Derek Kong, Investment Officer
   (Memo dated February 13, 2023)

3. **Alpine Investors IX, L.P.**
   Christopher J. Wagner, Principal Investment Officer
   Calvin Chang, Senior Investment Analyst
   (Memo dated February 23, 2023)

XVI. ADJOURNMENT

Documents subject to public disclosure that relate to an agenda item for an open session of the Board of Retirement that are distributed to members of the Board of Retirement less than 72 hours prior to the meeting will be available for public inspection at the time they are distributed to a majority of the Board of Retirement Trustees at LACERA's offices at 300 N. Lake Avenue, Suite 820, Pasadena, CA 91101, during normal business hours of 9:00 a.m. to 5:00 p.m. Monday through Friday and will also be posted on lacera.com at the same time, *Board Meetings | LACERA*.

Requests for reasonable modification or accommodation of the telephone public access and Public Comments procedures stated in this agenda from individuals with disabilities, consistent with the Americans with Disabilities Act of 1990, may call the Board Offices at (626) 564-6000, Ext. 4401/4402 from 8:30 a.m. to 5:00 p.m. Monday through Friday or email PublicComment@lacera.com, but no later than 48 hours prior to the time the meeting is to commence.

LACERA

February 23, 2023

TO: Each Trustee,
Board of Retirement
Board of Investments

FROM: Steven P. Rice, SPR
Chief Counsel

FOR: March 1, 2023 Board of Retirement & Committee Meetings
March 8, 2023 Board of Investments & Committee Meetings

SUBJECT: Procedure for Teleconference Meeting Attendance under AB 2449

At their February 2023 meetings, the Board of Retirement and Board of Retirement adopted the attached AB 2449 Teleconference Policy setting forth the procedures and limitations applicable to requests by Trustees for teleconference attendance at Board and Committee meetings based on Just Cause or Emergency Circumstances. All requests will be considered in accordance with the Policy after review by the applicable Chair. A public statement will be made at each meeting as to those Trustees who are granted attendance for Just Cause; such requests do not require Board or Committee approval. All requests based on Emergency Circumstances will be presented to the Board or Committee for approval at the beginning of each meeting. Trustees who teleconference under AB 2449 will be required to make a public statement at the beginning of the meeting disclosing all individuals 18 years or older who are present in the room with them and the general nature of each such person's relationship with the Trustee. All Trustees who teleconference under AB 2449 are required to participate by both video and audio throughout the meeting.

Meetings under AB 2449 can only proceed if there is a physical quorum of the Board or Committee in the noticed location for the entire duration of the meeting.

Trustees requested a summary comparing the AB 2449, traditional, and COVID emergency rules. A summary is also attached.

Attachments

c: Santos H. Kreimann
Jonathan Grabel
Luis Lugo
JJ Popowich
Laura Guglielmo

SUMMARY AND COMPARISON OF TELECONFERENCE METHODS[1]

	Traditional Method Gov't Code §54953(b)	COVID/Other Declared Public Health Emergency Gov't Code §54953(e)	Just Cause and Emergency Circumstances Gov't Code §54953(f)
Grounds	None	Declared public health emergency under state law	Just cause or emergency circumstances as defined in statute; brief explanation of reasons must be provided
Location of Quorum	Quorum in LA County, in person or by teleconference	No limits	Physical quorum must be present
Agenda	Teleconference locations must be stated on agenda; agenda must be posted at all teleconference locations	Agendized action required every 30 days to find that (1) emergency affects ability to meet safely in public, and (2) state or local officials continue to impose/recommend social distancing	Request can be made up to the start of the meeting; action required to approve emergency circumstance requests, but not just cause
Limitation on Number of Times Trustees Can Teleconference	None	None	No more than two per calendar year for LACERA Boards and Committees; other forms of teleconference do not count for limit
Trustee Participation	Audio or visual	Audio or visual	Audio and visual
Public Comment; Public Participation	Available at all teleconference locations, which must be open to the public and ADA compliant	Audiovisual or telephonic public comment or internet-based option	Audiovisual or telephonic public comment and livestream
Additional Requirements	None	None	Teleconference participants must identify those 18 years or over who are present and state relationship
Expiration	None	January 1, 2024	January 1, 2026

[1] As of February 23, 2023. Statutory citations are current and will change in 2024 and 2026. More than one method can be used at a meeting, provided requirements of each are met. Consult with the Executive Board Assistants or Legal Office for full explanation of current legal requirements and implementation details.

AB 2449 TELECONFERENCE POLICY

Authorizing Manager: Chief Counsel

Effective Date: February 8, 2023 **Last Updated:** Not Applicable

Mandatory Review: Before January 1, 2026 **Policy Type:** Joint Board Policy

Approval Level: Board of Retirement and Board of Investments

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1. PURPOSE

The purpose of this AB 2449 Teleconference Policy (Policy) is to establish a process (1) for Trustees to request Teleconference attendance at a publicly noticed Board and Committee meeting under the Act for Just Cause or Emergency Circumstances, and (2) to select Trustees who shall be permitted under the Act to attend a meeting by Teleconference, including when more than the maximum number of Trustees (which is one less than the number constituting a quorum allowed of the Board or any Committee) make a request for the same meeting.

2. SCOPE

This Policy applies only to Teleconference attendance at publicly noticed Board and Committee meetings for Trustees who request it based on a showing of Just Cause or Emergency Circumstances under AB 2449 (which enacted California Government Code Section 54953(f) for meetings until January 1, 2024, and Section 54953(e) for meetings from January 1, 2024 until January 1, 2026). This Policy expires and has no effect for meetings on and after January 1, 2026, unless extended.

The Policy does not apply to (1) teleconference meetings when the Board or Committee makes the findings required under California Government Code Section 54953(e) (applicable for meetings until January 1, 2024 during a proclaimed state of emergency), (2) teleconference meetings agendized under Section 54953(b) (which requires that all teleconference locations be identified on the agenda, open to the public, and ADA-compliant), or (3) to meetings that are not publicly noticed under the Brown Act. The Board of Retirement and Board of Investments' separate Teleconference Meeting Policies previously adopted shall continue to apply to requests for teleconference meetings under Government Code Section 54953(b).

To the extent that state law or federal law provides for additional restrictions or conflicts with this Policy, the law shall prevail over this Policy.

3. LEGAL AUTHORITY

This Policy is adopted pursuant to the plenary authority of the Board of Retirement and Boards of Investments over the administration of the system (Cal. Const., art. XVI, sec 17), the County Employees Retirement Law of 1937 (CERL), including California

Government Code Sections 31520, 31520.1, 31520.2, and 31595, and other governing law. The authority of both Boards includes the ability to establish policies to implement the Brown Act (California Government Code Section 54950 *et seq.*), including AB 2449.

4. DEFINITIONS

4.1 Just Cause means any of the following:

(A) Childcare or caregiving needs of a child, parent, grandparent, grandchild, sibling, spouse, or domestic partner that requires a Trustee to participate remotely. "Child," "parent," "grandparent," "grandchild," and "sibling" have the same meaning as those terms do in Government Code Section 12945.2;
(B) A contagious illness that prevents a Trustee from attending in person;
(C) A need related to a physical or mental disability as defined in California Government Code Sections 12926 and 12926.1, to the extent not otherwise accommodated under this Policy; or
(D) Travel while on official business of LACERA or another state or local agency.

4.2 Emergency Circumstances means a physical or family medical emergency that prevents a Trustee from attending a meeting in person.

4.3 Teleconference means both audio and on camera visual participation throughout a meeting.

5. LEGAL REQUIREMENTS AND PROCESS FOR TELECONFERENCE MEETING ATTENDANCE UNDER AB 2449

5.1 Teleconference Meeting Requests

Subject to the other requirements of this Policy, a Trustee shall be eligible to attend a meeting by Teleconference if one of the following circumstances apply:

(A) A Trustee submits an email request to attend by Teleconference for Just Cause to the Executive Board Assistants, at boardoffices@lacera.com, as soon as possible prior to a Board or Committee meeting, but no later than the start of a meeting. The request must include a general description that need not exceed 20 words relating to their Just Cause. No action by the Board or Committee is required to approve a request based on Just Cause; or
(B) A Trustee submits an email request to attend by Teleconference due to Emergency Circumstances to the Executive Board Assistants, at boardoffices@lacera.com, as soon as possible prior to a Board or Committee meeting, but no later than the start of a meeting. The request must include an email statement that need not exceed 20 words of the Emergency Circumstances. The Board or Committee must take action to approve the

request. If a request is not submitted in time for it to be placed on the noticed agenda, a Board or Committee may take action at the beginning of the meeting under Government Code Section 54954.2(b).

The required email statement of Just Cause or Emergency Circumstance shall not disclose any medical diagnosis or disability, or any medical or private information exempt under applicable law, including the Confidentiality of Medical Information Act (California Civil Code Section 56 *et seq.*). However, it shall provide sufficient non-confidential information to provide a general description of the basis for the Just Cause or Emergency Circumstances and allow the request to be evaluated for compliance with the definitions of Just Cause or Emergency Circumstances.

5.2 Process for Deciding and Allocating Teleconference Requests

In conjunction with the Board or Committee Chair, the Executive Board Assistants shall advise Trustees as soon as possible upon completion of the process described in this Section 5.2 as to whether their Teleconference request is allowed or denied or, in the case of a request based on Emergency Circumstances, recommended for approval or denial to a Board or Committee.

When less than a quorum of a Board or Committee request to attend a meeting via Teleconference, all requests shall be allowed if they are based on Just Cause and comply with this Policy, and all requests shall be recommended for approval by the Board or Committee if they are based on Emergency Circumstances and comply with this Policy.

When a quorum or more of a Board or Committee request to attend a meeting via Teleconference, attendance for Trustees whose requests comply with this Policy shall be allowed in the case of Just Cause or recommended in the case of Emergency Circumstances on a first come, first served basis based on the time the requests were first received by the Executive Board Assistants, including the statement describing Just Cause or Emergency Circumstances. Requests based on the Americans with Disabilities Act of 1990 (42 U.S.C. § 12132) (ADA) shall be given priority, notwithstanding when submitted.

In all cases, the Executive Board Secretaries shall review Teleconference requests for compliance with this Policy. They shall then submit all requests to the Chair of the Board or Committee and include information regarding compliance of each request with this Policy and recommendations as to which requests are proposed to be granted or denied. The Chair of the Board or Committee shall oversee the allocation process, including the final decision as to which requests are granted or denied, or recommended to be granted or denied in the case of Emergency Circumstances which require Board or Committee

approval, and to ensure that requests based on the ADA are given proper accommodation and priority.

As a condition of Teleconference meeting attendance that is allowed, at the beginning of a Teleconference meeting and, for requests based on Emergency Circumstances, before a Teleconference request is approved or acted upon, the Trustee shall publicly disclose whether any other individuals 18 years of age or older are present in the room from which the Trustee remotely attends, and the general nature of the Trustee's relationship with any such individuals. This information must be updated by each Trustee attending by Teleconference as needed during the meeting if other such individuals join the Trustee's meeting room.

Board and Committee agendas will include, at the beginning of each agenda, an item where those participating for Just Cause will be identified, for action regarding those requesting to attend for Emergency Circumstances, and the required statement as to other persons present in the room with Teleconference participants may be made.

If a Teleconference request is granted, the Trustee must participate by audio and on camera visual technology throughout a meeting.

5.3 A Quorum Must be Physically Present for the Entire Meeting

A quorum of Trustees of a Board or Committee must be physically present together for the entire Teleconference meeting at the same single location in the County of Los Angeles stated in the meeting agenda and open to the public in order for Teleconference attendance under this Policy to be allowed. A physical quorum can be established through the in-person attendance of alternate members of a Board or Committee. No action can be taken by a Board or Committee if there is not a physical quorum or if the quorum is lost during the meeting.

5.4 Public Participation

At any meeting of a Board or Committee at which Teleconference attendance is permitted under the Policy, the meeting must provide in-person attendance at the noticed location and one of the following means for the public to remotely hear and visually observe the meeting, and remotely address the meeting:

(A) A two-way audiovisual platform; or
(B) A two-way telephonic service and a live webcasting of the meeting.

The meeting agenda shall state the in-person and remote methods for the public to observe and participate in the meeting and provide instructions. Public comments must be allowed in real time up until the end of the Public Comment

section on the meeting agenda in the case of oral comment or until the end of the meeting in the case of written comment. If there is a technological disruption in the method for the public to remotely observe and participate, no further action may be taken by the Board or Committee until remote access is fully restored.

5.5 Limitation on Trustee Teleconference Attendance

No more than two requests based on Just Cause may be granted per calendar year, whether the meetings are regular or special.

As to requests based on either Just Cause or Emergency Circumstances, the following limitations apply and will be monitored by the Executive Board Assistants:

(A) Subject to (B) and (C), no more than three consecutive meetings, whether regular or special, of a Board or Committee within a calendar year, of which no more than two may be regular or special meetings for Just Cause;
(B) Subject to (C), no more than 20% of the regular meetings of a Board or Committee within a calendar year, of which no more than two may be regular or special meetings for Just Cause; and
(C) If a body meets regularly less than 10 times per calendar year, no more than two meetings, regular and special, per calendar year.

6. REFERENCES

Ralph M. Brown Act (California Government Code Section 54950 *et seq.*)
AB 2449 California Government Code Section 54953(f) for meetings until January 1, 2024 and Section 54953(e) for meetings from January 1, 2024 until January 1, 2026).

Americans With Disabilities Act of 1990 (42 U.S.C. § 12132).

Confidentiality of Medical Information Act (California Civil Code Section 56 *et seq.*) and other applicable privacy and medical confidentiality laws.

Board of Retirement Teleconference Meeting Policy.

Board of Investments Teleconference Meeting Policy.

7. VERSION HISTORY

First approved by the Board of Retirement on February 1 , 2023, and by the Board of Investments on February 8, 2023.

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8. EFFECTIVE DATE AND REVIEW

This Policy is effective on the day adopted by the Board of Retirement and Board of Investments. This Policy shall expire on January 1, 2026 and shall be reviewed by the Boards by that date in order to address legislative changes.

MINUTES OF THE REGULAR MEETING OF THE BOARD OF INVESTMENTS

LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

300 N. LAKE AVENUE, SUITE 810, PASADENA, CA 91101

9:00 A.M., WEDNESDAY, FEBRUARY 08, 2023

This meeting was conducted by the Board of Investments as hybrid meeting both in person and by teleconference under California Government Code Section 54953(e).

TRUSTEES PRESENT

Gina Sanchez, Chair (Teleconference)

Herman Santos, Vice Chair (In-Person)

Keith Knox, Ex-Officio Trustee (In-Person)

David Green (Teleconference)

Jason Green (Teleconference)

Elizabeth Greenwood (Teleconference)

Onyx Jones (In-Person)

Patrick Jones (In-Person)

TRUSTEES ABSENT

Joseph Kelly

STAFF ADVISORS AND PARTICIPANTS

Jonathan Grabel, Chief Investment Officer

Steven P. Rice, Chief Counsel

Luis Lugo, Deputy Chief Executive Officer

Christine Roseland, Senior Staff Counsel

STAFF ADVISORS AND PARTICIPANTS (Continued)

Ted Granger, Interim Chief Financial Officer

Jude Pérez, Principal Investment Officer

James Rice, Principal Investment Officer

Esmeralda Del Bosque, Acting Principal Investment Officer

Amit Aggarwal, Investment Officer

Mike Romero, Senior Investment Analyst

John Kim, Investment Officer

Terra Elijah, Senior Investment Analyst

Carly Ntoya, Human Resources Director

Richard P. Bendall, Chief Audit Executive

Christina Logan, Principal Internal Auditor

Meketa Investment Group (General Investment Consultants)
Aysun Kilic, Managing Principal
Tim Filla, Managing Principal

StepStone Group LP (Real Assets Consultants)
Tom Hester, Partner
James Maina, Vice President

I. CALL TO ORDER

The meeting was called to order by Chair Sanchez at 9:00 a.m.

II. APPROVAL OF MINUTES

A. Approval of the Minutes of the Regular Meeting of January 11, 2023

II. APPROVAL OF MINUTES (Continued)

A motion was made by Trustee David Green, seconded by Trustee Jason Green, to approve the Regular Meeting Minutes of January 11, 2023. The motion passed by the following roll call vote:

Yes: Knox, Green, Santos, J. Green, Greenwood, P. Jones, O. Jones, Sanchez

No: None

Absent: Kelly

III. PUBLIC COMMENT

There were no requests from the public to speak.

IV. EXECUTIVE UPDATE

A. Chief Executive Officer's Report

Mr. Lugo provided a brief presentation on the Chief Executive Officer's Report and answered questions from the Board.

B. Chief Investment Officer's Report

Mr. Grabel provided a brief presentation on the Chief Investment Officer's Report and answered questions from the Board.

V. CONSENT ITEMS

A. **Approval of the Use of Teleconference Meeting**
Recommendation as submitted by Steven P. Rice, Chief Counsel: That, under AB 361 and Government Code Section 54953(e)(3) of the Brown Act, the Board of Retirement and Board of Investments separately consider whether to find that the Governor's COVID-19 State of Emergency continues to directly impact the ability of each Board and its Committees to meet safely in person and that other public agencies still recommend social distancing such that each Board and its Committees shall hold teleconference meetings for the next 30 days as part of hybrid meetings also in person, so long as the State of Emergency remains in effect, and direct staff to comply with

V. CONSENT ITEMS (Continued)

the agenda and public comment requirements of Section 54953(e)(3). Action taken by each Board will only apply to that Board and its Committees. (Memo dated January 23, 2023)

B. **Approval of AB 2449 Teleconference Policy**
Recommendation as submitted by Steven P. Rice, Chief Counsel: That the Board approve the proposed AB 2449 Teleconference Policy. (Memo dated January 23, 2023)

A motion was made by Trustee Knox, seconded by Trustee Santos, to approve Consent Items V.A. and V.B. The motion passed by the following roll call vote:

Yes: Knox, D. Green, Santos, J. Green, P. Jones, O. Jones, Sanchez

No: None

Absent: Greenwood, Kelly

VI. EXCLUDED FROM CONSENT ITEMS

VII. NON-CONSENT ITEMS

A. **OPEB Master Trust Public Markets Passive Investment Management Services Request for Proposal – Search Criteria**
Recommendation as submitted by Jude Pérez, Principal Investment Officer, Esmeralda Del Bosque, Acting Principal Investment Officer, John Kim, Investment Officer and Terra Elijah, Senior Investment Analyst: That Board Approve the proposed search criteria for an OPEB Master Trust ("OPEB") public markets passive investment management services Request for Proposal ("RFP"). (Memo dated February 1, 2023)

Messrs. Pérez, Kim, and Mses. del Bosque and Elijah provided a presentation and answered questions from the Board.

A motion was made by Trustee Knox, seconded by Trustee P. Jones, to approve staff recommendation. The motion passed by the following roll call vote.

VII. NON-CONSENT ITEMS (Continued)

Yes: Knox, D. Green, Santos, J. Green, Greenwood, P. Jones, O. Jones, Sanchez

No: None

Absent: Kelly

B. **LACERA 2023 Election for Second and Eighth Members: Statement of Powers and Duties of Investments Board Trustees**
Recommendation as submitted by Steven. P. Rice: That the Board approve the attached document entitled "Powers and Duties of Investments Board Trustees," which will be included with the ballot materials for the 2023 election of the Second and Eighth Members of the Board of Investments and posted on lacera.com. (Memo dated January 23, 2023)

Mr. Steven P. Rice was present and answered questions from the Board.

A motion was made by Trustee Santos, seconded by Trustee D. Green, to approve staff recommendation with Trustee suggested changes. The motion passed by the following roll call vote:

Yes: Knox, D. Green, Santos, J. Green, Greenwood, P. Jones, O. Jones, Sanchez

No: None

Absent: Kelly

VIII. REPORTS

A. **2023 General Member, Retired Member, and Retired Alternate** Trustee Election Update
JJ Popowich, Assistant Executive Officer
(Verbal Update) (Memo dated January 24, 2023)

This item was received and filed.

VIII. REPORTS (Continued)

B. **Board Officers: Revised Slate for 2023 Calendar Year (Chair & Secretary**)
Santos H. Kreimann, Chief Executive Officer
(For Information Only) (Memo dated January 23, 2023)

This item was received and filed.

C. **Semi-Annual Interest Crediting for Reserves as of December 31, 2022 (UNAUDITED)**
Ted Granger, Interim Chief Financial Officer
(For Information Only) (Memo dated January 25, 2023)

Mr. Granger was present and answered questions from the Board.

This item was received and filed.

D. **Cost-of-Living Adjustments Effective April 1, 2023**
Ted Granger, Interim Chief Financial Officer
(For Information Only) (Memo dated January 24, 2023)

This item was received and filed.

E. **Legal Projects**
Christine Roseland, Senior Staff Counsel
(For Information Only) (Memo dated January 31, 2023)

This item was received and filed.

F. **Trustee Travel & Education Reports – December 2022**
Ted Granger, Interim Chief Financial Officer
(For Information Only)
Monthly Trustee Travel & Education Report – December 2022 (Memo dated January 19, 2023)
Comprehensive Monthly Trustee Travel & Education Report – December 2022 (Confidential memo dated January 19, 2023 – Includes Pending Travel)

This item was received and filed.

VIII. REPORTS (Continued)

G. **January 2023 Fiduciary Counsel Contact and Billing Report**
Steven P. Rice, Chief Counsel
(For Information Only) (Memo dated January 23, 2023)
(Privileged and Confidential/Attorney-Client Communication/Attorney Work Product)

This item was received and filed.

IX. ITEMS FOR STAFF REVIEW

There were no Items for Staff Review.

X. ITEMS FOR FUTURE AGENDAS

There was nothing to report.

XI. GOOD OF THE ORDER
(For Information Purposes Only)

The Board and Staff thanked Ms. Greenwood for her service on the Board of Investments.

XII. EXECUTIVE SESSION

A. Conference with Staff and Legal Counsel to Consider the Purchase or Sale of Particular, Specific Pension Fund Investments
(Pursuant to California Government Code Section 54956.81)

1. **Clarion Lion Property Fund**
James Rice, Principal Investment Officer
Amit Aggarwal, Investment Officer
Mike Romero, Senior Investment Analyst
(Memo dated January 22, 2023)

Messrs. J. Rice, Aggarwal, Romero, and Mr. Maina of StepStone Group provide a presentation and answered questions from the Board.

XII. EXECUTIVE SESSION (Continued)

Trustee Santos made a motion, seconded by Trustee Knox, to approve a commitment of up to $600 million to Lion Properties Fund (which is the correct name), an open-end core real estate fund focusing on investments in industrial, multifamily, office, and retail and in the life sciences sector in the United States.

Yes: D. Green, J. Green, P. Jones, Knox, Santos, Greenwood, O. Jones, Sanchez

No: None

Absent: Kelly

B. Conference with Legal Counsel—Anticipated Litigation Significant Exposure to Litigation (Pursuant to Paragraph (2) of Subdivision (d) of California Government Code Section 54956.9)

1. One Matter

There was nothing to report.

XIII. ADJOURNMENT

There being no further business to come before the Board, the meeting was adjourned at 11:00 a.m.

JOSEPH KELLY, SECRETARY

GINA SANCHEZ, CHAIR

February 21, 2023

TO: Each Trustee,
Board of Retirement
Board of Investments

FROM: Santos H. Kreimann SHK
Chief Executive Officer

SUBJECT: **CHIEF EXECUTIVE OFFICER'S REPORT – MARCH 2023**

The following Chief Executive Officer's Report highlights key operational and administrative activities that have taken place during the past month.

Strategic Plan Update

Upon the conclusion of the February Board of Retirement (BOR) offsite on February 22 and 23, 2023, LACERA staff will now compile and finalize the Strategic Planning document incorporating trustee feedback. The Strategic Plan will then be presented for the BOR's formal approval and adoption during its April 2023 public meeting.

Member Services Update

On February 15, 2023, Allan Cochran, Division Manager for Member Services retired. Mr. Cochran has been an integral part of our efforts to provide service to our members. Over the last seven years he has worked tirelessly to improve the member experience. During his tenure he was responsible for helping to standardize the level of service provided in the Call Center and Member Service Center, created the new Member Care Unit to handle the more difficult and longer member requests including escalations, active death counseling, and hardships, and of course, helped Member Services navigate through the COVID-19 Pandemic and the complete modernization of our Call Centers. These are just a few of his accomplishments, and we will sorely miss him and wish him an enjoyable retirement with his wife and new dog Sparky.

In his stead, the three Section Heads, Kelly Puga (Contact Center), Vanessa Gonzalez (Outreach-Member Service Center), and David Bayha (Member Services Quality Control) will work with AEO JJ Popowich to provide oversight and direction for Member Services. We will be launching a search for a permanent Division Manager in the very near future.

Member Services Call Center

We continue to focus on improving the performance of the Member Services Call Center as measured by our Call Center's Key Performance Indicator. As reported in the last CEO Report, we have seen a five (5) point increase since September. However, this month we experienced a spike in calls which caused a slight decrease in our Grade of Service (GOS) (one of four metrics that factor into our overall KPI score), which in turn caused a slight dip in our efforts to improve our KPI. The GOS measures our speed of answering the call, and the target is to answer 80% of calls in 60 seconds or less. In January, there was a slight decrease in the GOS which resulted in approximately 39% of calls being answered within 60 seconds.

The decrease in the GOS was due to a combination of factors including:

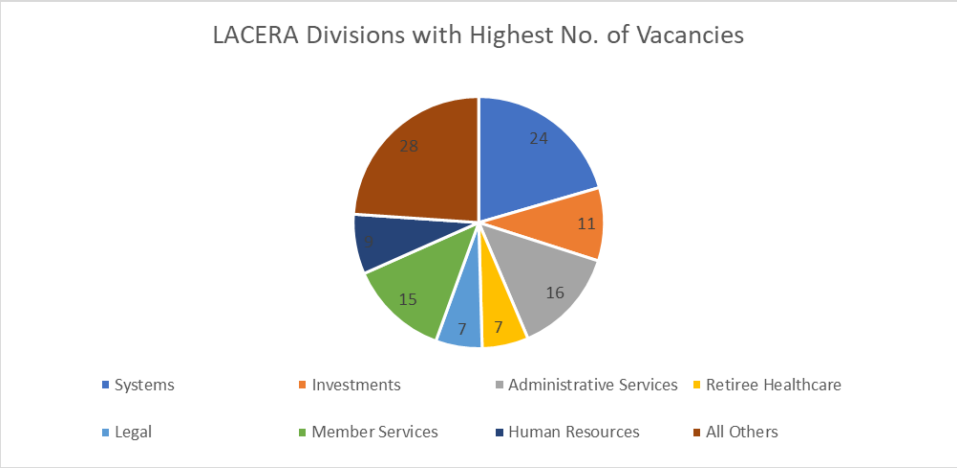
- 30% increase in calls
- 54% increase in calls through the MY LACERA Support Queue due to the rollout of Multi Factor Authorization
- Significant increase in the calls the last week in January regarding 1099-R inquiries

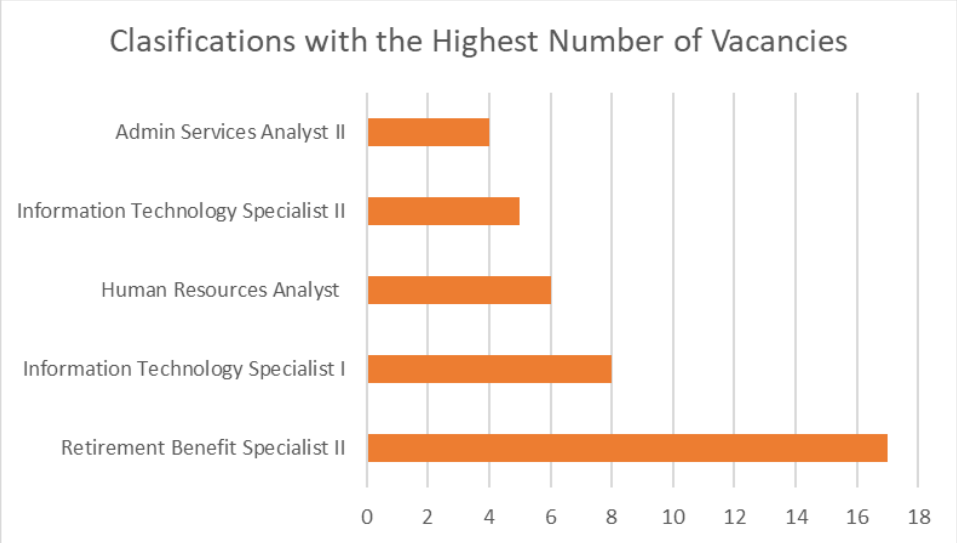
We are pleased to announce that trainees from Class I began to take calls on their own while Class II was still in training. This was just in time for our March Madness retirement counseling season. This will make the members experience better during March Madness.

The increase in calls regarding 1099-R is an annual event. Many members call to find out when we are mailing the 1099-R as many companies make the year-end tax forms available earlier in January. We are working with Systems to move up the 1099-R availability date and mail date for next year to improve the Member Experience. Additionally, this year was complicated by a severe winter storm in Texas, where our mail print and mail vendor is located. This led to delays as the storm halted all transportation in the area for several days. The weather delay also caused the spike in calls to continue into February, possibly impacting our February GOS as well.

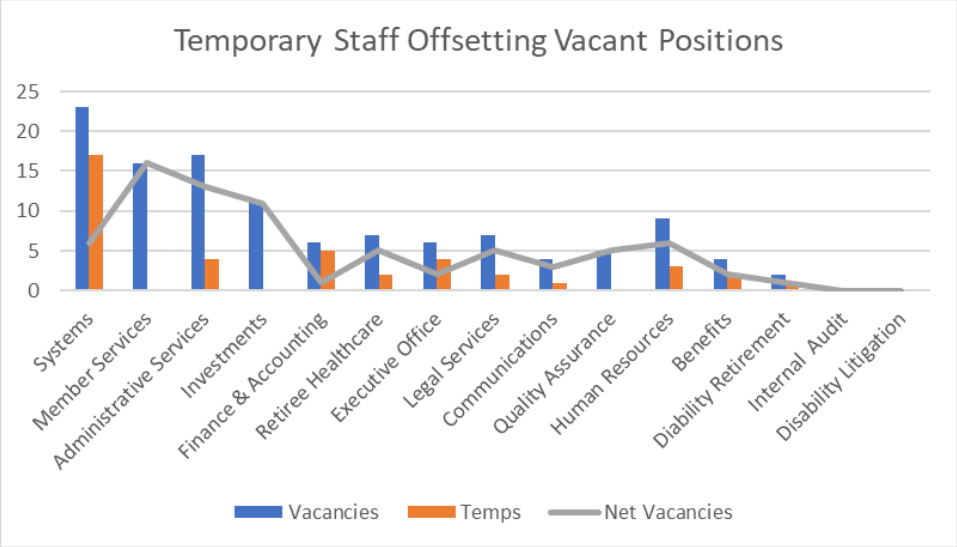
Recruitment Updates

LACERA has 530 budgeted positions, of which 117 are vacant (22% vacancy rate). The Divisions with the highest number of vacancies, and the classifications with the highest number of vacancies, are shown below.





The chart below highlights temporary hires across divisions to address critical vacancy needs in the short term.



Investment Recruitment and Hiring

LACERA is actively collaborating with EFL Associates to secure a pool of qualified and diverse candidates for the Deputy Chief Investment Officer position. EFL continues to narrow the pool of interested candidates. LACERA is exploring the use of EFL to target very well qualified candidates with experience in specific asset classes that have proven difficult to attract using traditional methods.

Other External Recruitments

The Chief, Information Technology, and Information Security Officer positions closed on January 27, 2023. Candidate interviews are being scheduled in in March.

Development

The recruitments/assessments for the following classifications are currently in development in partnership with the various hiring divisions:

- Retirement Systems Specialist
- Division Manager
- Senior Writer

Investments

The Finance Analyst II bulletin was posted. Applications will be accepted on a continuous basis. Candidates will be screened and scored to be placed on the eligible register to be available for selection interviews.

Legal Services Recruitments

A two-week promotional recruitment for the Legal Analyst position started on February 9, 2023 to fill one vacancy. The RFQ selection process continues for a legal recruiting firm to fill vacancies in the following positions:

- Senior Staff Counsel (Investments)
- Staff Counsel (Investments)
- Staff Counsel (Benefits)

Human Resources R*ecruitments*

The examinations for the Human Resources Analyst, Senior Human Resources Analyst, and Senior Human Resources Assistant assessments continue. The Senior Human Resources Assistant written examination is being scored. The interviews for the Senior Human Resources Analyst position are pending. The Human Resources Analyst applications review is completed.

New Lists Promulgated, Hiring and Promotions

Eleven (11) members of the February 2022 Retirement Benefits Specialist II Trainee Class were appointed effective February 1, 2023. A Procurement and Supply Clerk was hired effective February 1, 2023, in Administrative Services.

Selection interviews for Retirement Benefits Specialist I took place in January and February. Candidate selections have been made with 26 pending offers. Interviews will continue once additional candidates are reachable to hire.

Retiree Healthcare

2023 Medicare Part B Verification Process Status Update

In September 2022, CMS announced the Medicare Part B 2023 premium cost would be decreasing. Accordingly. LACERA staff were able to automatically reduce the Medicare Part B premium reimbursements issued to over 21,330 retirees/dependents who received the 2022 standard Part B premium. In LACERA's annual member notification, members were informed if they were receiving the standard reimbursement in 2022, no actions were needed on their part, all others were instructed to submit their verification. Since December 2022, LACERA staff has received over 8700 Part B verifications, many of which have already been auto processed. RHC staff currently has a little over 1,700 verifications to be processed. This is a significant decrease from prior years.

SHK
CEO report March 2023.doc

Attachments

CEO DASHBOARD

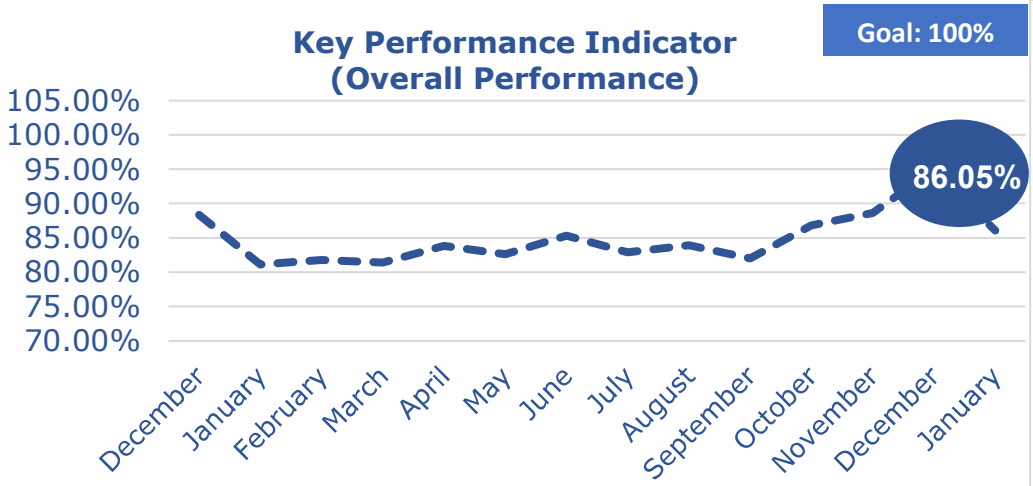
March 1, 2023

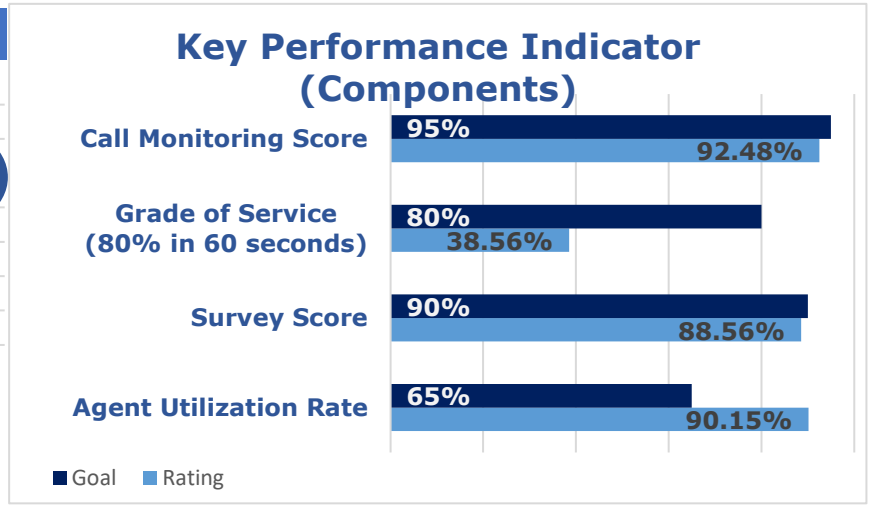
Striving for Excellence

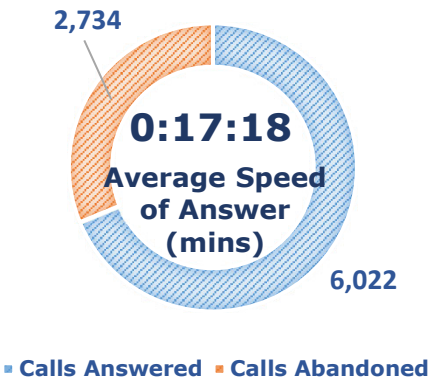
Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023

WORKSHOP ATTENDANCE		OUTREACH EVENTS		WORKSHOP SATISFACTION		MSC OVERALL SATISFACTION		MEMBER SERVICES CALL CENTER	
643		14		0		98.03%		11,609	
Year-to-Date:	4,680	Year-to-Date:	112	Resp. Rate	Change	Resp. Rate	Change	3 Month Average	9,663
				0.0%	0	21.6%	1.48%		

Member Services







Top Calls

1. Retirement Counseling: Process Overview
2. Retirement Counseling: Estimate
3. Retirement Counseling: Plan Overview

Emails

574

Avg. Response Time (ART)

4:00 hours

Secure Message

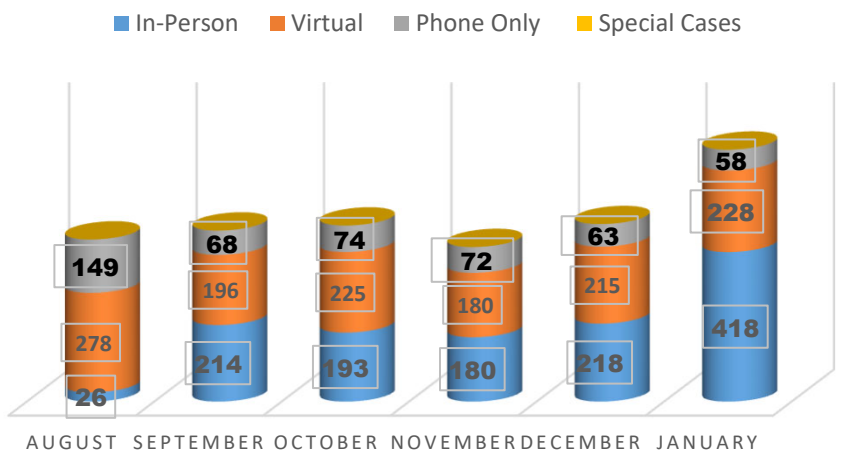
1,081

Striving for Excellence

Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023

Member Services

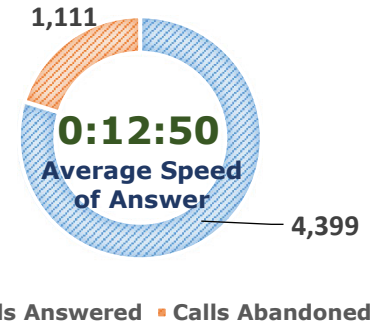
Member Service Center Appointments



COMING SOON

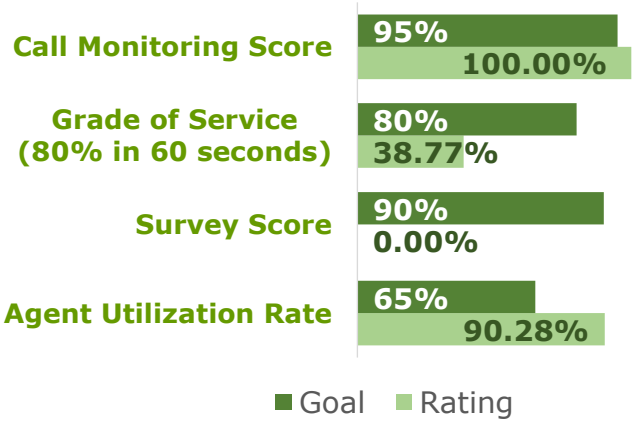
Retiree Healthcare

Total RHC Calls: 6,895



Top Calls

1. Medical/Dental Enrollments
2. Medical Inquiries
3. General Inquiries



Emails 472

Avg. Response Time (ART) 5 Days

Secure Messages 427

Striving for Excellence

Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023

Disability

Applications 968

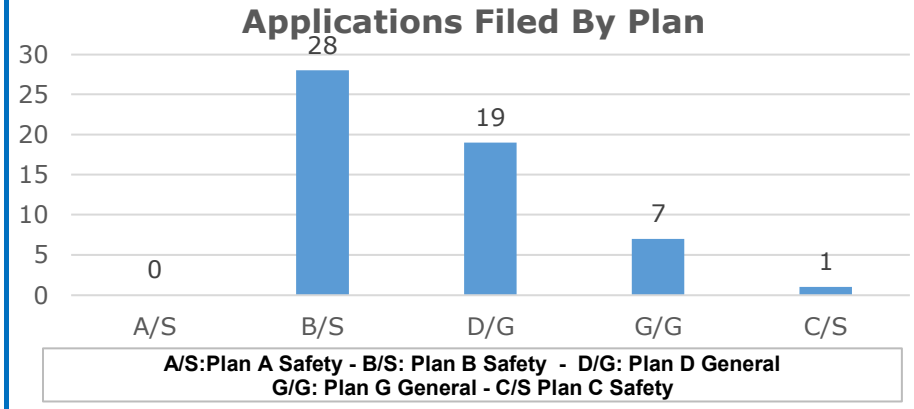
In Process As Of 1/31/2023

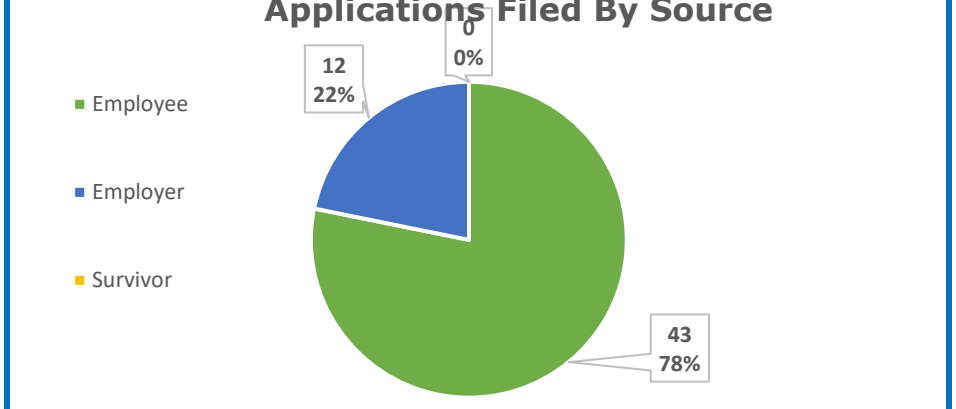
990 Pending on: 12/31/2022
55 Received
484 Year-to-Date
0 Re-Opened
0 Year-to-Date
59 To Board - Initial
370 Year-to-Date
18 Closed
41 Year-to-Date

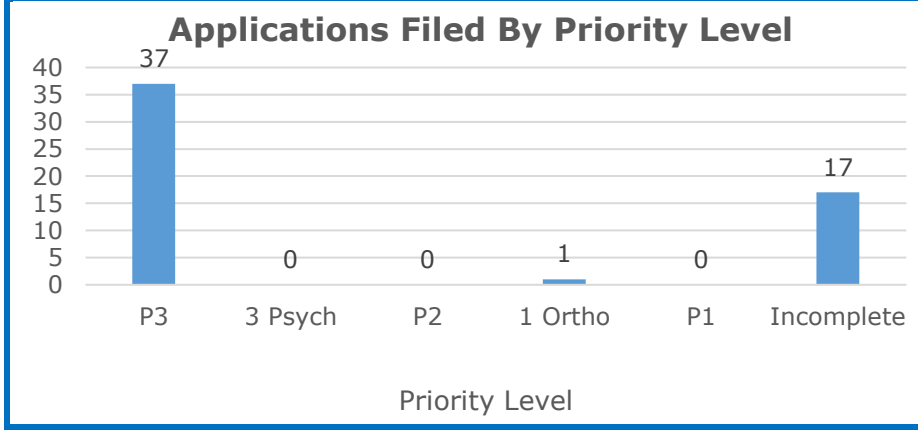
Appeals 70

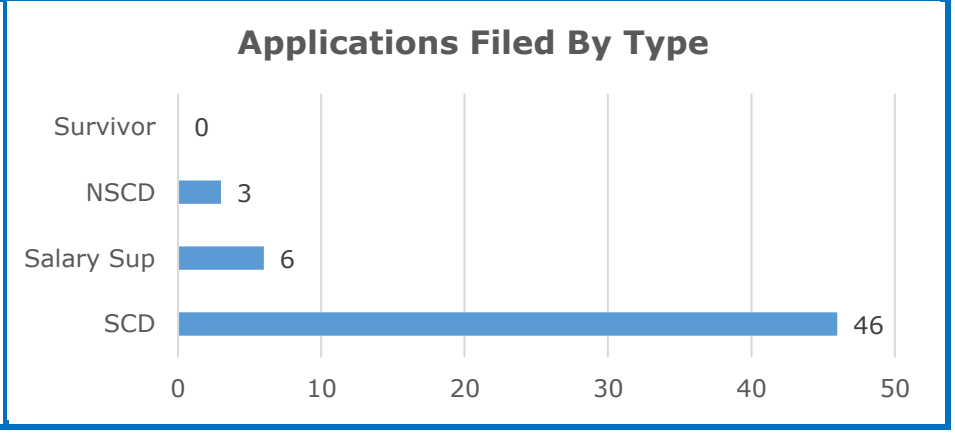
In Process As Of 1/31/2023

72 Pending on: 12/31/2022
1 Received
7 Year-to-Date
2 Admin Closed/Rule 32
8 Year-to-Date
1 Referee Recommended
4 Year-to-Date
0 Revised/Reconsidered for Granting
2 Year-to-Date



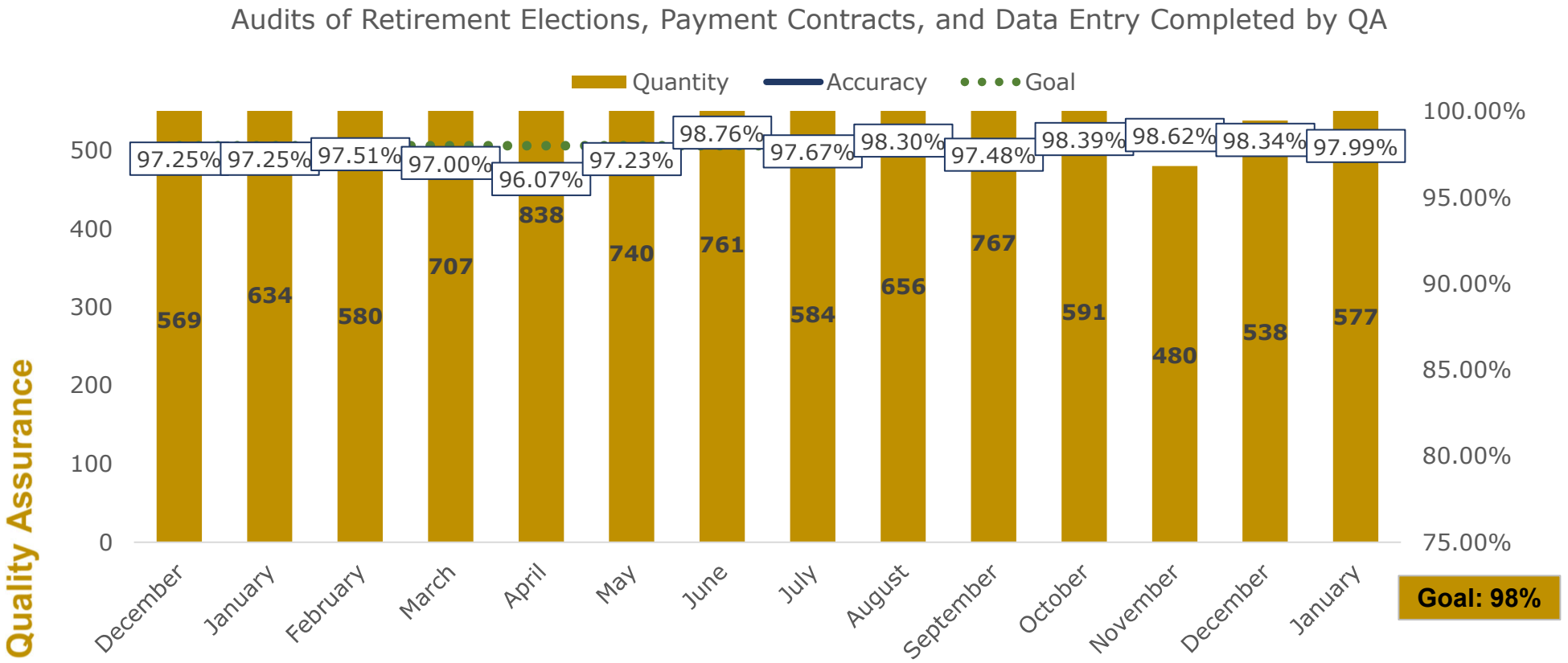






Striving for Excellence in Quality

Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023



January

97.99%

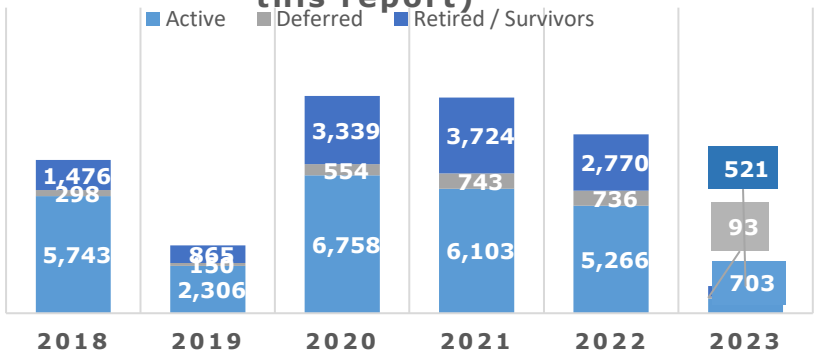
Retirement Elections		Payment Contracts		Data Entry	
251	Samples	236	Samples	90	Samples
97.82%	Accuracy	98.08%	Accuracy	98.08%	Accuracy

Service On-Line for All

Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023

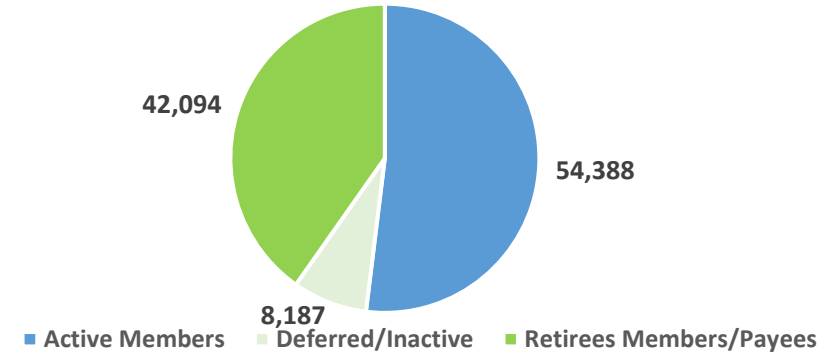
Serving Members Through LACERA.com and MyLACERA

MyLACERA Annual Registration (as of the 15th of the month prior to this report)

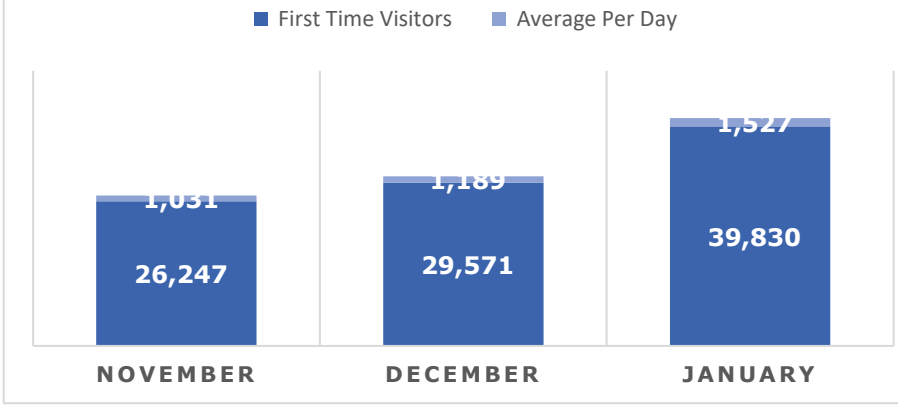


Total Registered Members	104,669	56%

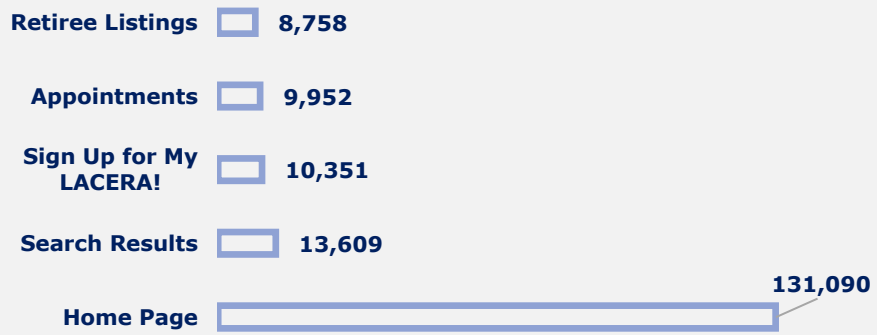
Total Registrations By Member Type



LACERA.com User Traffic



Top Five LACERA.com Page Views



Home Page "I Would Like To" View	Views	% of Change
See my retirement options	5,401	45%
View Pre-Retirement Workshops	3,026	15%
Start my retirement planning	3,996	-7%
Add or update my beneficiary	1,747	23%
View job opportunities	3,324	37%
Busiest Day of the Month:	Monday, 1/30/2023	

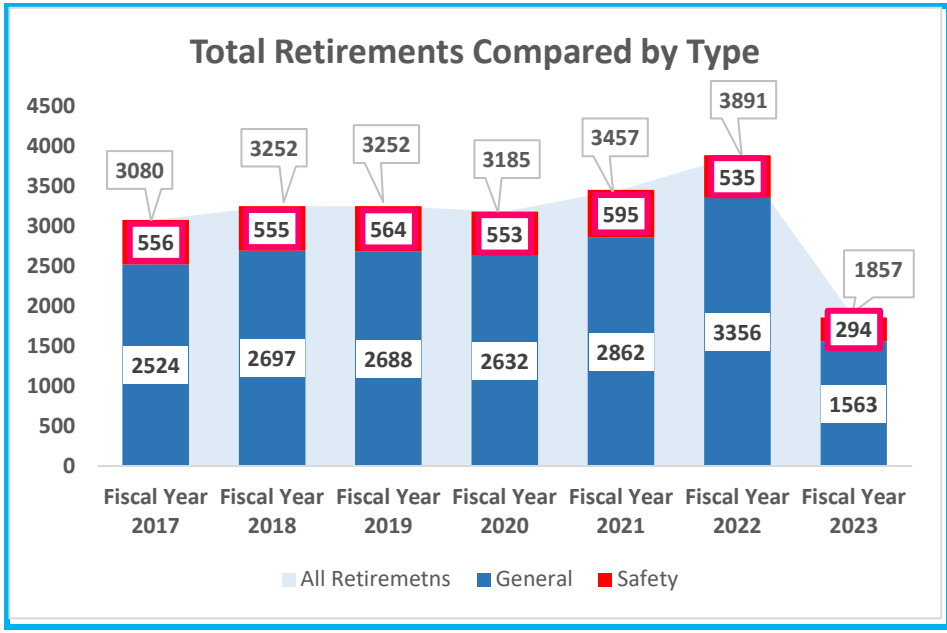
Home Page Tile Views	Views	% of Change
My LACERA	10,351	48%
Pre-Retirement Workshops	3,520	27%
Careers	2,571	16%
Investments	2,331	37%
Annual Reports	1,129	6%
Forms and Publications	337	29%

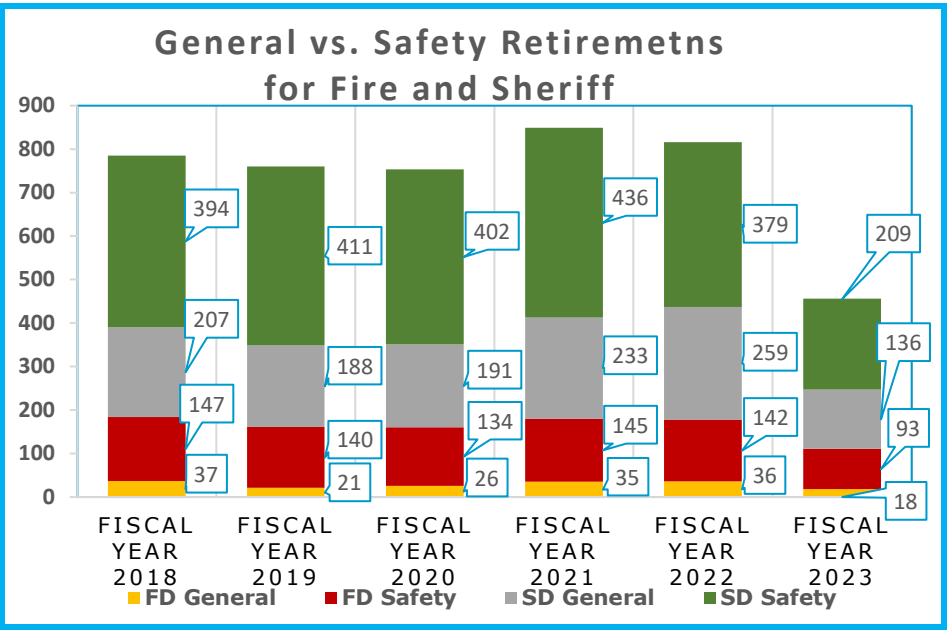
Member Snapshot

Service Metrics Reported on a Fiscal Year Basis (July 1) Through: January 2023

Membership Count as of: 02/15/23

	PLAN	ACTIVE Vested	ACTIVE Non-Vested	INACTIVE Vested	INACTIVE Non-Vested	RETIRED Service	RETIRED SCD - Disability	RETIRED NSCD - Disability	RETIRED Survivors	Totals by Plan/Type
General	PLAN A	52	-	16	32	12,221	983	173	4,104	**17,581**
	PLAN B	14	-	5	3	577	42	8	71	**720**
	PLAN C	16	-	5	8	365	40	8	66	**508**
	PLAN D	34,743	140	4,567	3,355	18,109	1,939	440	1,918	**65,211**
	PLAN E	13,443	24	2,964	100	15,103	-	-	1,585	**33,219**
	PLAN G	17,156	18,368	1,432	6,242	217	23	5	19	**43,462**
	TOTAL GENERAL	**65,424**	**18,532**	**8,989**	**9,740**	**46,592**	**3,027**	**634**	**7,763**	**160,701**
Safety	PLAN A	1	-	2	2	1,862	2,476	26	1,641	**6,010**
	PLAN B	7,767	77	598	233	3,267	4,320	55	396	**16,713**
	PLAN C	2,303	2,606	111	478	11	14	-	2	**5,525**
	TOTAL SAFETY	**10,071**	**2,683**	**711**	**713**	**5,140**	**6,810**	**81**	**2,039**	**28,248**
	TOTAL ALL TYPES	**75,495**	**21,215**	**9,700**	**10,453**	**51,732**	**9,837**	**715**	**9,802**	**188,949**





Member Snapshot

Average Monthly Benefit Allowance Distribution 02/18/2023	General	Safety	Total	%
$0 to $3,999	30,176	1,495	31,671	50.9%
$4,000 to $7,999	14,302	3,447	17,749	28.5%
$8,000 to $11,999	4,069	4,295	8,364	13.4%
$12,000 to $15,999	1,124	2,165	3,289	5.3%
$16,000 to $19,999	378	447	825	1.3%
$20,000 to $23,999	109	140	249	0.4%
$24,000 to $27,999	31	40	71	0.1%
> $28,000	21	6	27	0.0%
Totals	50,210	12,035	62,245	100%

Average Monthly Benefit Amount: $ 4,720.00

Healthcare Program
(Mo. Ending:01/31/2023)

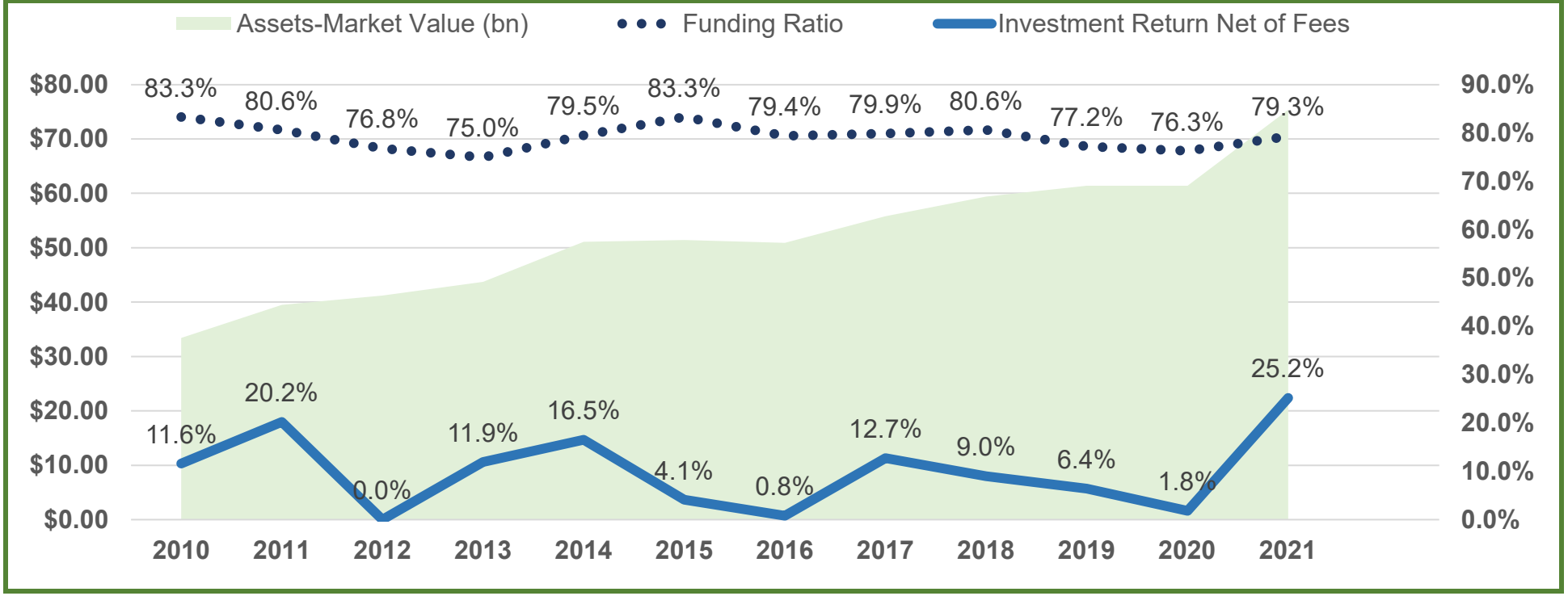
	Employer	Member
Medical	$349.0	$25.5
Dental	$27.5	$2.6
Part B	$54.5	$0.0
Total	**$431.0**	**$28.1**

Health Care Enrollments
(Mo. Ending:01/31/2023)

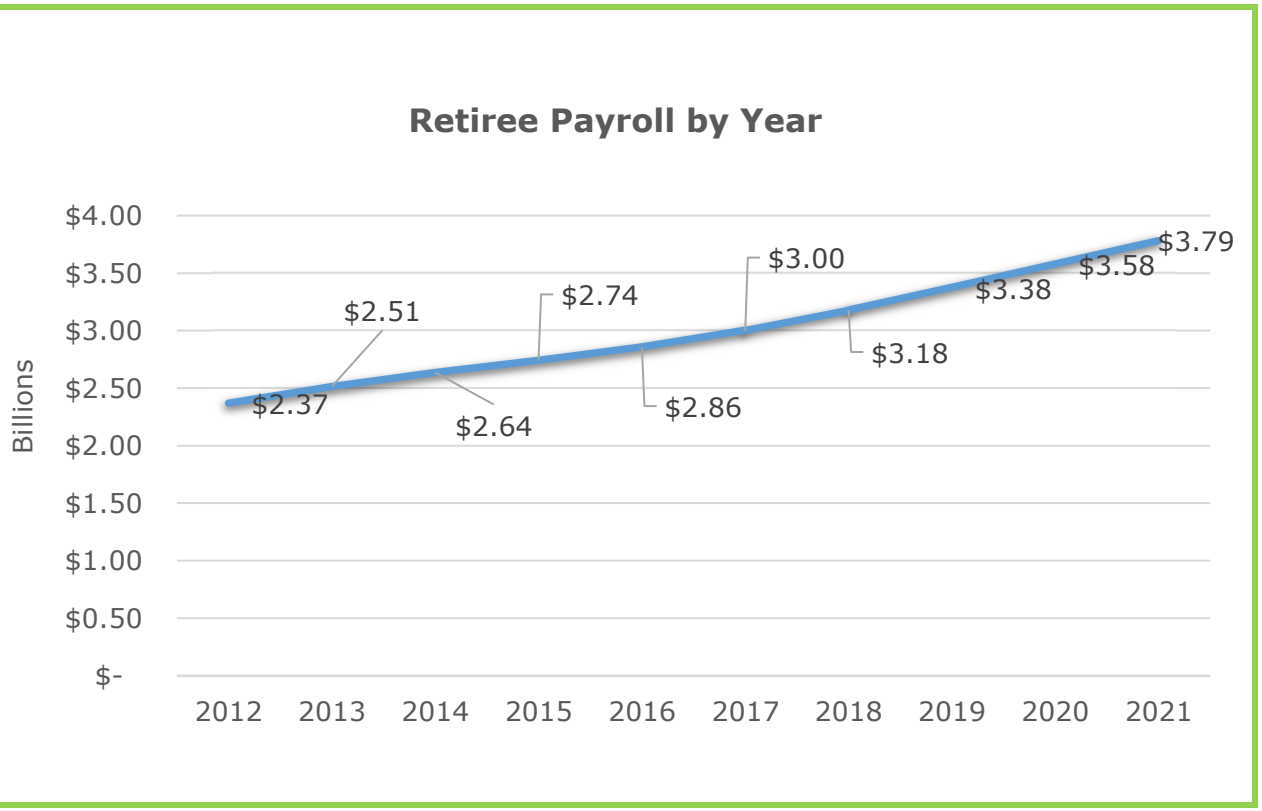
Medical	54,600
Dental	56,378
Part B	37,232
LTC	505
Total	**148,715**

KEY FINANCIAL METRICS

Fiscal Year End Financial Update (as of 06/30/2021)



Key Financial Metrics



FUNDING METRICS (as of 6/30/21)

Employer NC	10.88%
UAAL	13.58%
Assumed Rate	7.00%
Star Reserve	$614m
Total Assets	$73.0b

Contirbutions (as of 6/30/21)

	Employer	Member
Annual Add	$2.0b	$761.0m
% of Payroll	24.46%	7.87%

Contirbutions (as of 6/30/21)

(Net of Fees)

5 YR: 10.8% **10 YR:** 8.6%

Retired Members Payroll

(As of 01/31/2023)

Monthly Payroll	$353.46m
Payroll YTD	$2.5b
New Retired Payees Added	328
Seamless %	97.56%
New Seamless Payees Added	2,109
Seamless YTD	96.02%
By Check %	2.00%
By Direct Deposit %	98.00%

LACERA

QUIET PERIOD LIST

Last Update 02/28/2023

ADMINISTRATIVE/OPERATIONS

RFP/RFQ/RFI Name	Issuing Division	Date Issued	Status*	Quiet Period for Respondents*
Search for Classification & Compensation Study Services (HR)	Human Resources	5/24/2021	Bid Review	• Grant Thornton • Koff and Associates • Magnova Consultant • Reward Strategy Group
Search for Classification & Compensation Study Services (RHC)	Human Resources	5/24/2021	Selection Process	• Grant Thornton • Koff and Associates • Magnova Consultant • Reward Strategy Group
Specialized Legal Recruitment	Human Resources	12/15/2022	Selection Process	• Major Lindsay & Africa • Gennard and Potratz
External Financial Auditor	Internal Audit	11/03/2022	Selection Process	• Clifton Larson Allen • Crowe • Eide Bailey • Plante Moran • Moss Adams • RSM
Prepaid Debit Card Services	Benefits	6/15/2022 Posted on ISD's solicitation website 08/ 2022	Vendor selection in process; reviewing references	• Conduent • US Bank
Federal Legislative Advocacy Services	Legal Division	11/09/2022	Solicitation Process	• Williams & Jensen / Doucet Consulting Solutions
State Legislative Advocacy Services	Legal Division	11/09/2022	Solicitation Process	• McHugh Koepke & Associates

RFP/RFQ/RFI Name	Issuing Division	Date Issued	Status*	Quiet Period for Respondents*
Securities Litigation Monitoring and Approved Counsel	Legal Division	11/14/2022	Selection Process	• Barack Rodos • Berman Tabacco • Bernstein, Litowitz, Berger & Grossmann • Bleichmar Fonti Auld • Cohen Milstein • Dividex • Grant & Eisenhofer • Kaplan Fox • Kessler Topaz • Kirby McInerny • Labaton • Lieff Cabraser • Motley Rice • Pomerantz • Quinn Emanuel • Robbins Geller Rudman & Dowd • Rosen • Saxena White

*Subject to change

INVESTMENTS QUIET PERIOD FOR SEARCH RESPONDENTS

INVESTMENTS

RFP/RFQ/RFI Name	Date Issued	Status*	Quiet Period for Respondents*
Real Assets Emerging Manager Program Discretionary Separate Account Manager	1/30/2023	Solicitation Process	• ACRES Capital • Aether Investment Partners • ORG Portfolio Management • Barings • Belay Investment Group • Encore Enterprises, Inc. • Stable • Cambridge Associates • GCM Grosvenor • The Townsend Group • Cypress Creek Partners • Hamilton Lane Advisors • Neuberger Berman Group • Wafra Inc. • Artemis Real Estate Partners • Hawkeye Partners, LP • BlackRock • Astarte Capital Partners • Bentall Green Oak • Clear Sky Advisers • Clear Investment Group • Poverni Sheikh Group • Trilogy • Stepstone • Oak Street • White Deer

*Subject to change

Date	Conference
March, 2023	
1-3	Pacific Pension Institute (PPI) Winter Roundtable La Jolla, CA
4-7	CALAPRS (California Association of Public Retirement Systems) General Assembly Meeting Monterey, CA
6-8	Council of Institutional Investors (CII) Spring Conference Washington D.C.
7-8	20 Year Legacy – The Montgomery Summit 2023 presented by March Capital Santa Monica, CA
14-16	AHIP (America's Health Insurance Plans) Health Policy and Markets Forum Washington D.C.
20-23	2023 Infrastructure Investor Global Summit Berlin, Germany
22-23	PREA (Pension Real Estate Association) Spring Conference Seattle, WA
23-24	National Association of Corporate Directors (NACD) Master Class *(Cyber-Risk Oversight)* Washington D.C.
29-31	CALAPRS (California Association of Public Retirement Systems) Advanced Principles of Pension Governance for Trustees at UCLA Los Angeles, CA
April, 2023	
17-21	Investment Strategies & Portfolio Management Wharton School, University of Pennsylvania
21	CALAPRS (California Association of Public Retirement Systems) Round Table – Trustees Virtual
23-26	CRCEA (California Retired County Employees Association) Spring Conference Ontario, CA
24-25	IFEBP (International Foundation of Employment Benefit Plans) Health Care Mgmt. Conference Miami, FL
24-25	IFEBP (International Foundation of Employment Benefit Plans) Investments Institute New Orleans, LA
30-May 3	Milken Institute Global Conference Los Angeles, CA

Date	Conference
May, 2023	
9-12	SACRS Spring Conference San Diego, CA
20-21	NCPERS (National Conference on Public Employee Retirement Systems) Trustee Educational Seminar (TEDS) New Orleans, LA
20-21	NCPERS (National Conference on Public Employee Retirement Systems) Accredited Fiduciary (NAF) Program New Orleans, LA
21-24	NCPERS (National Conference on Public Employee Retirement Systems) Annual Conference & Exhibition (ACE) New Orleans, LA
21-24	Government Finance Officers Association (GFOA) Annual Conference Portland, OR
22-23	IFEBP (International Foundation of Employment Benefit Plans) Washington Legislative Update Washington D.C.
22-26	Pacific Pension Institute - PPI in Residence Montreal, Quebec, Canada
24	Pacific Pension Institute (PPI) Salon Montreal, Quebec, Canada – In-Person and Videoconference
June, 2023	
5-9	2023 SuperReturn International Berlin, Germany
13-15	AHIP (America's Health Insurance Plans) 2023 Portland, OR
19-21	ICGN (International Corporate Governance Network) 2023 Annual Conference Toronto, Ontario, Canada
22	CALAPRS (California Association of Public Retirement Systems) Round Table – Benefits Virtual
July, 2023	
19-21	Pacific Pension Institute (PPI) Summer Roundtable San Francisco, CA
24-26	National Association of Securities Professionals (NASP) Annual Financial Services Conference Philadelphia, PA

Date	Conference
August, 2023	
20-22	NCPERS (National Conference on Public Employee Retirement Systems) Public Pension Funding Forum Chicago, IL
28-31	CALAPRS (California Association of Public Retirement Systems) Principles of Pension Governance for Trustees Malibu, CA *(Pepperdine University)*
September, 2023	
11-13	Council of Institutional Investors (CII) Fall Conference Long Beach, CA
October, 2023	
1-4	IFEBP (International Foundation of Employment Benefit Plans) Annual Employee Benefits Conference Boston, MA
8-11	National Association of Corporate Directors (NACD) Summit 2023 Fort Washington, MD
16-20	Investment Strategies & Portfolio Management Wharton School, University of Pennsylvania
18-20	PREA (Pension Real Estate Association) Annual Institutional Investor Conference Boston, MA
22-25	NCPERS (National Conference on Public Employee Retirement Systems) FALL (Financial, Actuarial, Legislative & Legal) Conference Las Vegas, NV
22-24	Pacific Pension Institute (PPI) Executive Seminar-Japan at a Crossroads Tokyo, Japan
25-27	Pacific Pension Institute (PPI) Asia Pacific Roundtable Tokyo, Japan
27	CALAPRS (California Association of Public Retirement Systems) Round Table – Trustees Virtual
November, 2023	
7-9	Institutional Limited Partners Association (ILPA) General Partner Summit New York, NY
7-10	SACRS Fall Conference Rancho Mirage, CA

Date	Conference
December, 2023	
1	CALAPRS (California Association of Public Retirement Systems) Round Table – Benefits Virtual

Chief Investment Officer Monthly Report

Jonathan Grabel – Chief Investment Officer

Board of Investments Meeting
March 8, 2023

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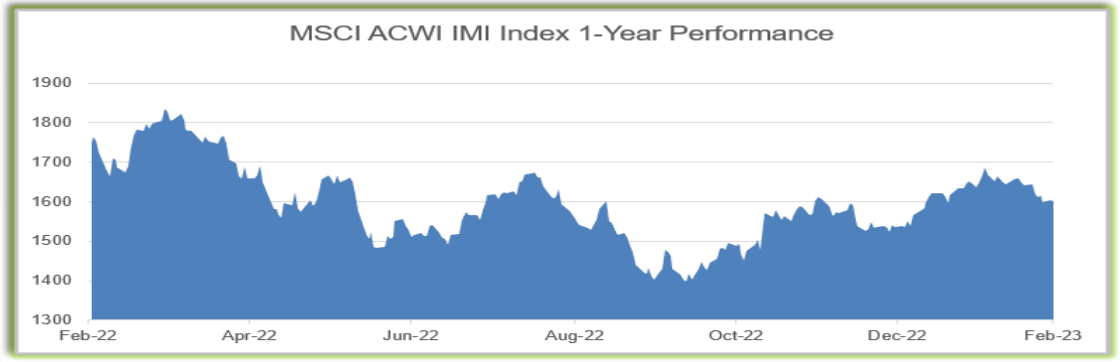
01 Market Environment

Global Market Performance as of February 28, 2023

MSCI ACWI IMI Index (Global Equity Market)*

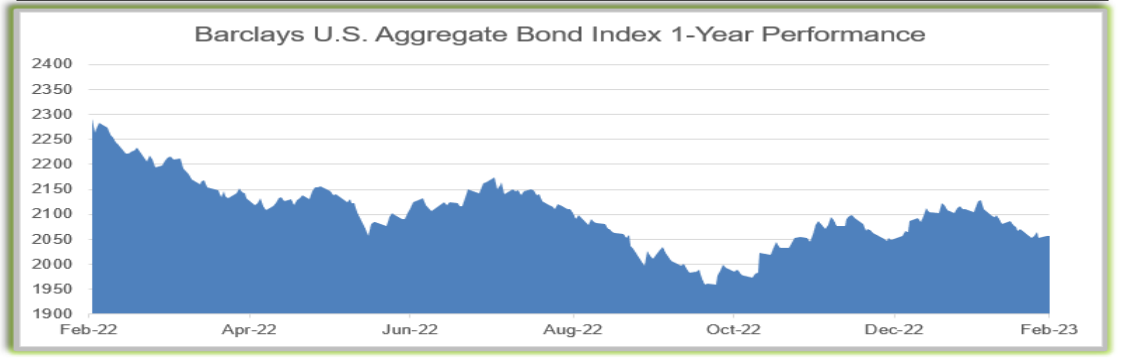
Trailing Returns (%)				Annualized Returns (%)			
1-Month	3-Month	FYTD	YTD	1Y	3Y	5Y	10Y
-2.8	0.4	7.0	4.4	-8.1	8.9	5.7	7.9



*Global Equity Policy Benchmark - MSCI ACWI IMI Index

Barclays U.S. Aggregate Bond Index**

Trailing Returns (%)				Annualized Returns (%)			
1-Month	3-Month	FYTD	YTD	1Y	3Y	5Y	10Y
-2.6	0.0	-2.6	0.4	-9.7	-3.8	0.5	1.1



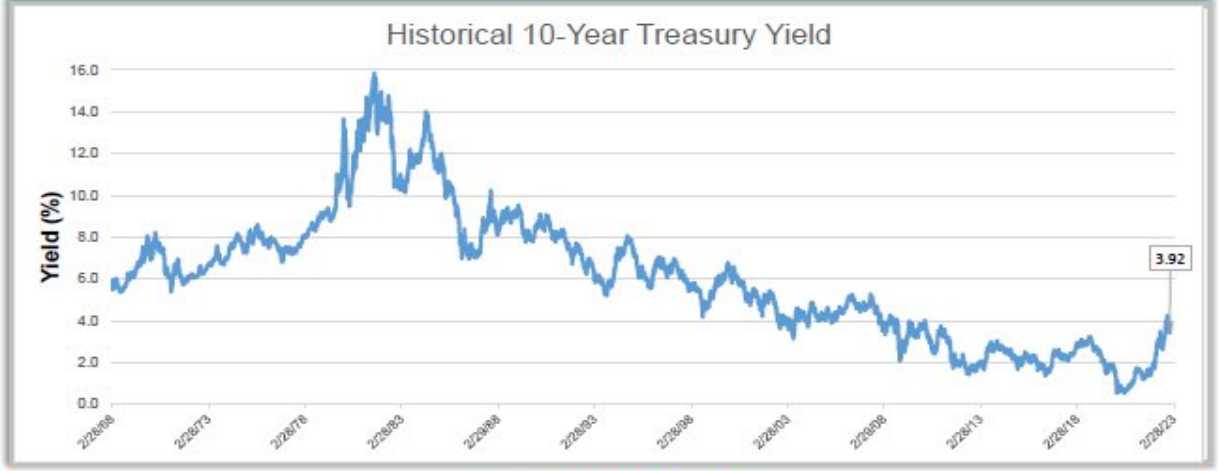
**Investment Grade Bonds Policy Benchmark - Barclays U.S. Aggregate Bond Index

Market	Sub-Category	Index Name	1-Month	3-Month	FYTD	YTD	1 Y	3 Y	5 Y	10 Y
Equity	Global All Cap	MSCI ACWI IMI Total Return	-2.8	0.4	7.0	4.4	-8.1	8.9	5.7	7.9
	U.S. All Cap	Russell 3000 Total Return	-2.3	-1.7	6.9	4.4	-8.1	11.8	9.4	11.9
	U.S. Large Cap	S&P 500 Total Return	-2.4	-2.3	6.1	3.7	-7.7	12.1	9.8	12.2
	U.S. Small Cap	Russell 2000 Total Return	-1.7	0.9	12.1	7.9	-6.0	10.1	6.0	9.1
	Non-U.S. All Cap	MSCI ACWI-ex U.S. IMI Total Return	-3.4	3.7	7.6	4.3	-7.5	5.5	1.6	4.1
	Emerging Markets	MSCI Emerging Markets Total Return	-6.5	-0.5	-2.1	0.9	-15.3	1.0	-1.9	1.5
Private Equity	Private Equity Buyout	Thomson Reuters PE Buyout Index	-7.2	-9.4	4.1	-5.6	-20.5	8.5	5.0	11.5
Fixed Income	U.S. Investment Grade Bonds	Bloomberg U.S. Aggregate Index	-2.6	0.0	-2.6	0.4	-9.7	-3.8	0.5	1.1
	U.S. Corporate High Yield Bonds	Bloomberg U.S. Corporate High Yield Total Return	-1.3	1.8	6.1	2.5	-5.5	1.3	2.9	4.1
	Developed Markets Leveraged Loans	Credit Suisse Leveraged Loan Total Return	0.6	3.6	6.9	3.2	2.3	3.7	3.6	4.0
	U.S. Treasury Inflation Protected Securities	Bloomberg U.S. Treasury TIPS Total Return Index	-1.4	-0.6	-2.8	0.4	-10.4	0.2	2.6	1.2
	U.S. 3 Month Treasury Bill	FTSE 3 Month Treasury Bill	0.3	1.1	2.1	0.7	2.2	0.9	1.3	0.8
Commodity	Commodity Prices Index	Bloomberg Commodity Index Total Return	-4.7	-7.5	-7.0	-5.2	-4.7	15.5	5.3	-1.6
	Natural Resources	S&P Global LargeMidCap Commodity & Resources Index	-6.5	-4.6	11.4	-0.9	1.8	21.7	9.8	4.8
Infrastracture	Global Infrastructure	Dow Jones Brookfield Global Infrastructure Composite Index	-4.5	-2.4	-0.8	1.0	-2.1	4.1	5.2	5.3
Real Estate	U.S. REITs	MSCI U.S. REIT Index	-4.8	-0.1	-0.2	5.3	-11.7	4.2	7.4	6.5

Key Macro Indicators*

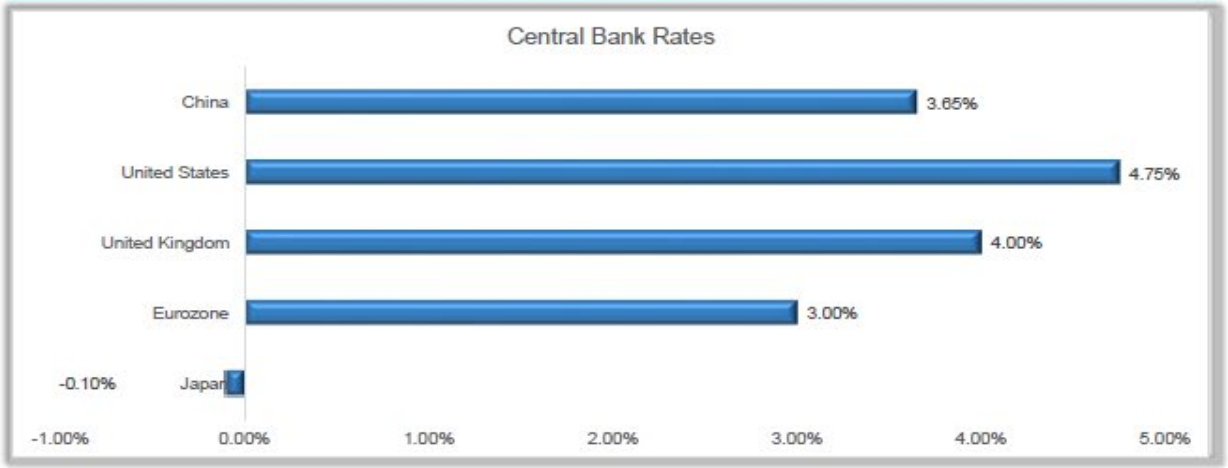
GDP Growth of Major Economies[1]

10-Year Treasury Yield[2]



World Equity Valuation[3]

Central Bank Rates[4]
(as of 2/28/2023)

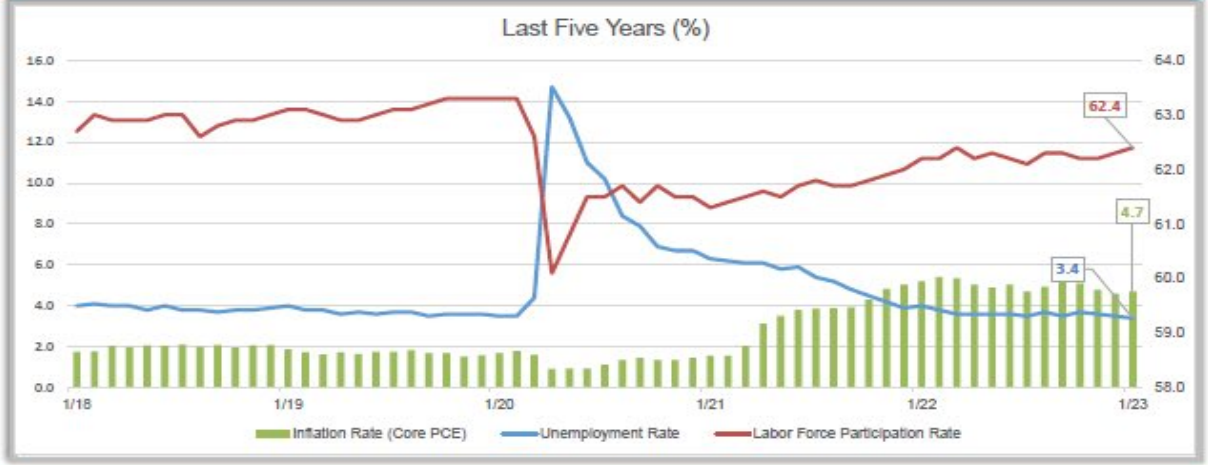


*The information on the "Key Macro Indicators" charts is the best available data as of 2/28/23 and may not reflect the current market and economic environment

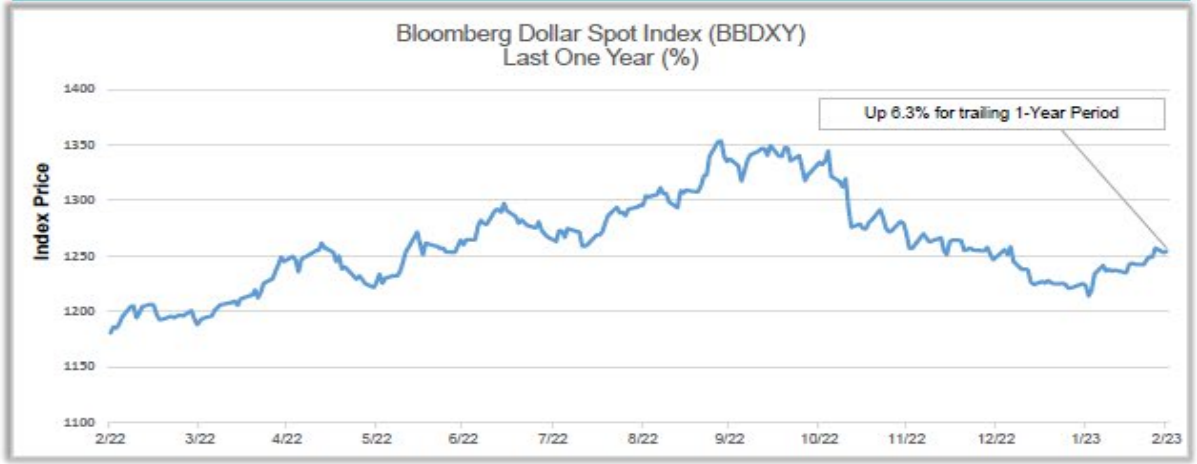
Key Macro Indicators*

Consumer Confidence & ISM Manufacturing[1]

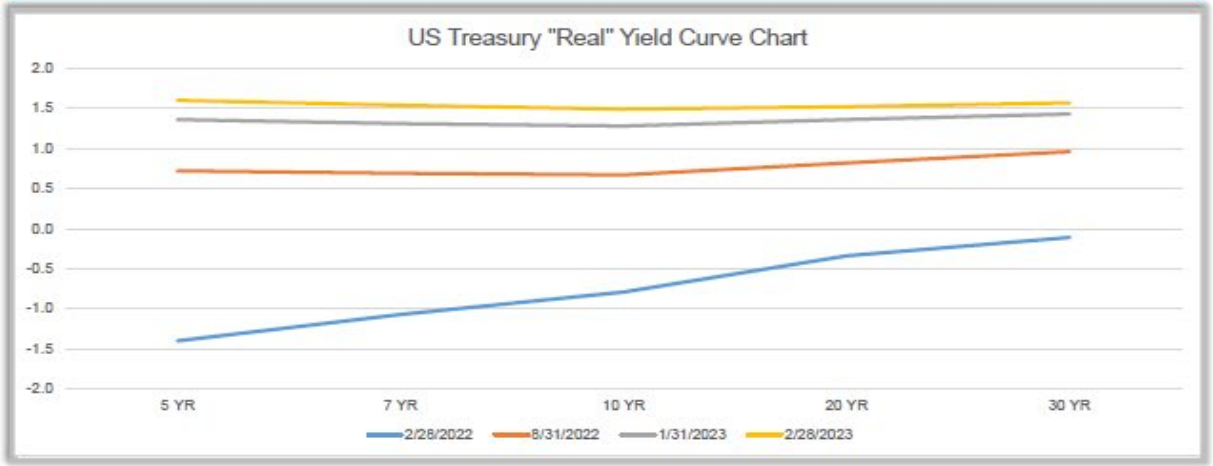
U.S. Inflation, Unemployment, & Labor Force Participation[2]



Performance of US Dollar vs. Leading Global Currencies[3]



U.S. Treasury "Real" Yield Curve[4]



*The information on the "Key Macro Indicators" charts is the best available data as of 2/28/23 and may not reflect the current market and economic environment

Market Themes and Notable Items to Watch

Recent Themes

- Asset markets declined in February across most geographies as economic, inflation, and interest rate uncertainty elevated
- In early February, the Federal Reserve increased its benchmark interest rate by 0.25% to a target range of 4.5% - 4.75%, the highest level since October 2007
- The degree to which inflation is or is not cooling remains integral to the Federal Reserve being able to downshift its pace of interest rate increases
- The U.S. 10-year Treasury yield ended February at 3.92%, after being 3.88% at the end of 2022, 1.52% at the end of 2021 and 0.93% at the end of 2020
- Global equities (MSCI All Country World Investable Market Index) declined 2.8% in February

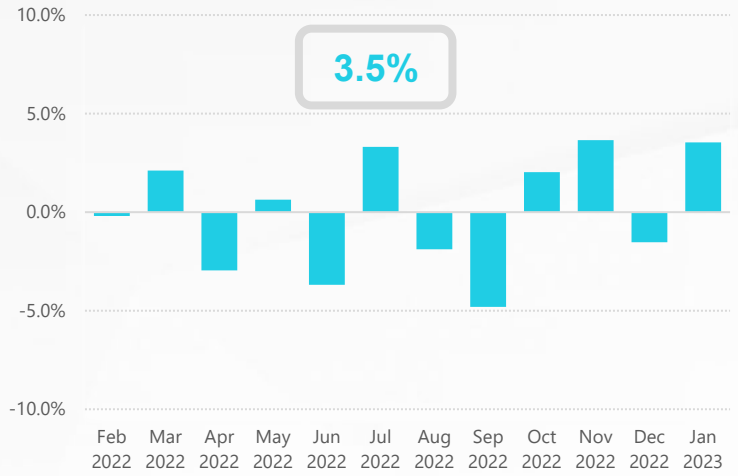
What to Watch

- Interest rates and central bank actions
- Economic data and trends
  - Inflation, supply chains, and labor developments
- Macro conditions and geopolitical risks
- Environmental, social, and governance
  - Securities and Exchange Commission shortens settlement from two to one day after trade date, in part to address 2021 meme stock episode
  - Institutional Shareholder Services (ISS) study finds women and people of color represent 20% of board seats at Russell 3000 Index companies, up from less than 13% in 2019

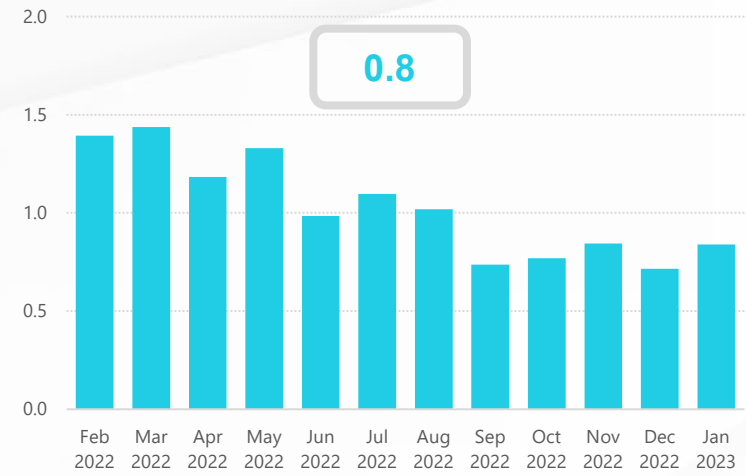
02 Portfolio Performance & Risk Updates

Total Fund Summary as of January 2023

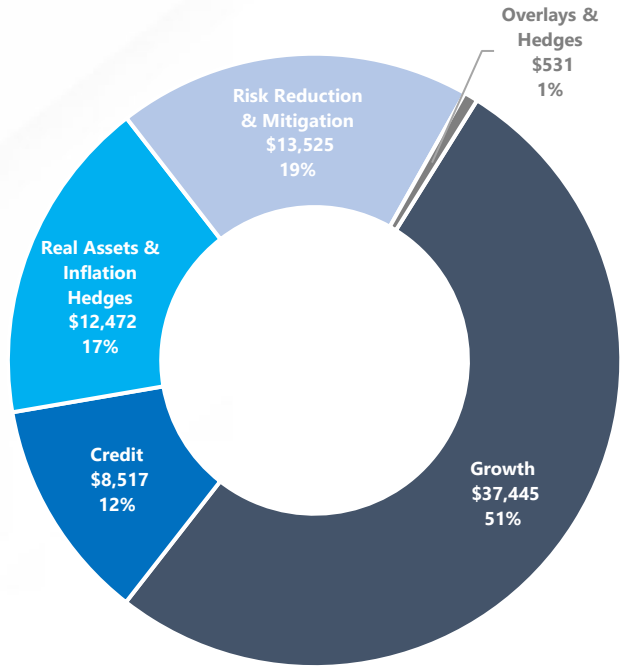
Monthly Return (net)



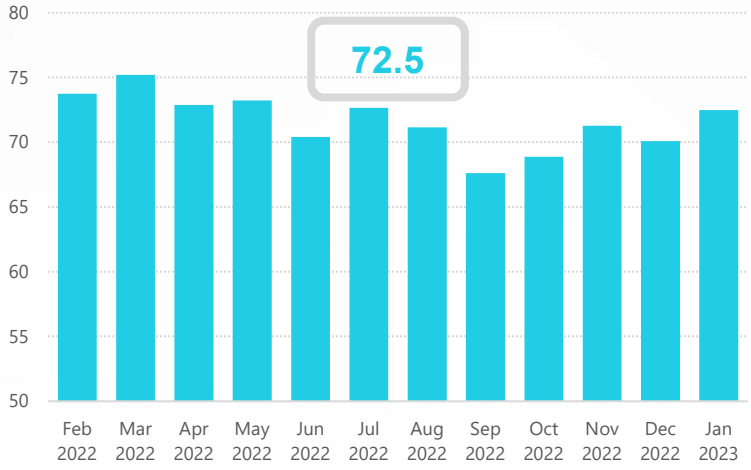
Sharpe Ratio (3-year annualized)



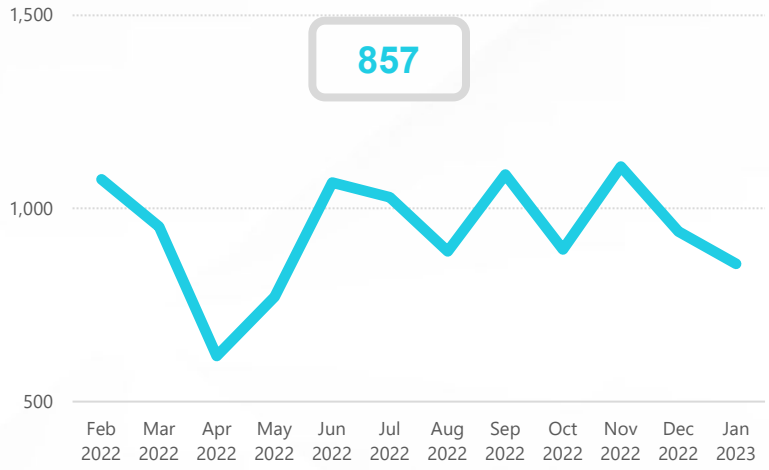
Asset Allocation ($ millions)



Total Market Value ($ billions)



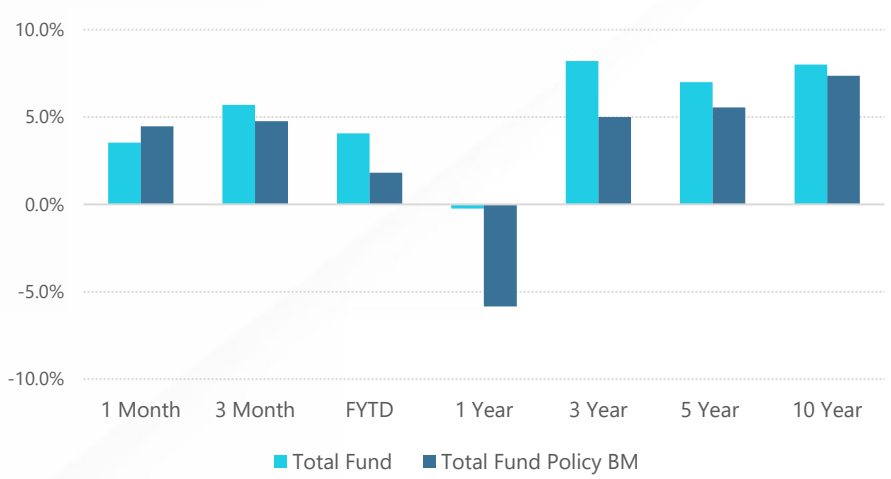
Cash ($ millions)



Historical Net Performance as of January 2023

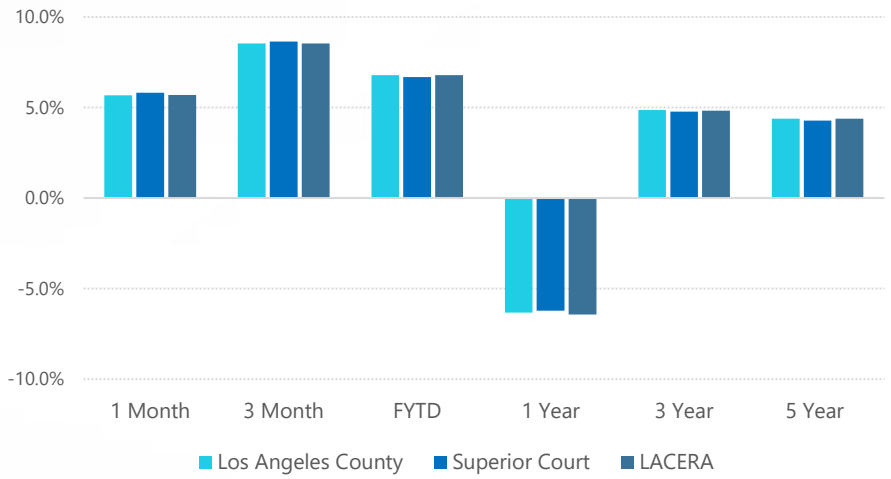
LACERA Pension Fund

	Market Value ($ millions)	% of Total Fund	Interim Target	1 Month	3 Month	FYTD	1 Year	3 Year	5 Year	10 Year
Total Fund	**72,490**	**100.0%**	**100.0%**	**3.5%**	**5.7%**	**4.1%**	**-0.2%**	**8.2%**	**7.0%**	**8.0%**
Total Fund Policy BM				4.5%	4.8%	1.8%	-5.9%	5.0%	5.6%	7.4%
7% Annual Hurdle Rate				0.6%	1.7%	4.0%	7.0%	7.0%	7.0%	7.0%
Growth	**37,445**	**51.7%**	**53.0%**	**4.6%**	**6.9%**	**5.4%**	**-2.2%**	**12.0%**		
Growth Policy BM				6.4%	4.2%	1.2%	-10.0%	7.5%		
Credit	**8,517**	**11.7%**	**11.0%**	**2.4%**	**4.4%**	**4.0%**	**-2.6%**	**3.3%**		
Credit Policy BM				1.3%	5.1%	2.3%	-6.1%	0.6%		
Real Assets & Inflation Hedges	**12,472**	**17.2%**	**17.0%**	**1.6%**	**4.0%**	**3.3%**	**9.2%**	**9.0%**		
Real Assets & Inflation Hedges Policy BM				2.3%	4.5%	4.4%	7.3%	9.4%		
Risk Reduction & Mitigation	**13,525**	**18.7%**	**19.0%**	**3.2%**	**6.0%**	**0.4%**	**-5.5%**	**-0.5%**		
Risk Reduction & Mitigation Policy BM				3.0%	6.0%	0.0%	-6.7%	-1.5%		
Overlays & Hedges	**531**	**0.7%**		**9.2%**	**-19.4%**					



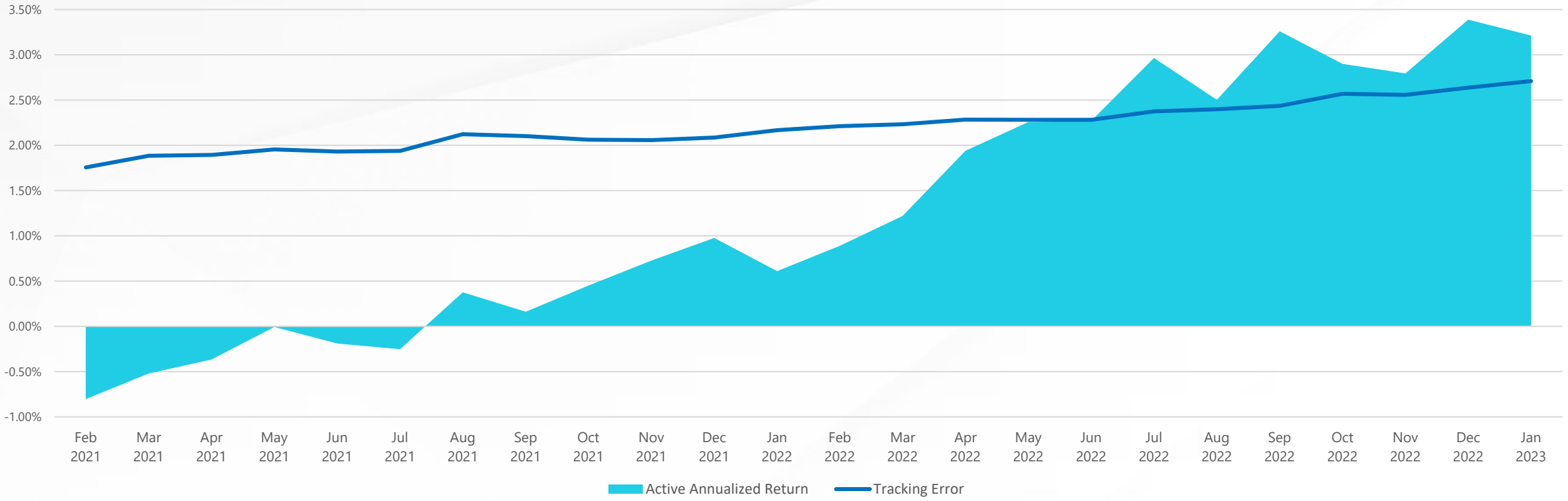
OPEB Master Trust

	Market Value ($ millions)	% of Master Trust	Interim Target	1 Month	3 Month	FYTD	1 Year	3 Year	5 Year
OPEB Master Trust	**2,791**			**5.7%**	**8.5%**	**6.8%**	**-6.3%**	**4.9%**	**4.4%**
Los Angeles County	2,719	97.4%	—	5.7%	8.5%	6.8%	-6.3%	4.9%	4.4%
Superior Court	60	2.1%	—	5.8%	8.6%	6.7%	-6.2%	4.8%	4.3%
LACERA	12	0.4%	—	5.7%	8.5%	6.8%	-6.4%	4.8%	4.4%
LACERA Master OPEB Trust Fund	**2,790**		**100.0%**	**5.6%**	**8.5%**	**6.5%**	**-6.4%**	**4.9%**	**4.4%**
OPEB Master Trust Policy Benchmark				5.0%	7.7%	5.7%	-7.2%	4.3%	3.9%
OPEB Growth	**1,343**	**48.1%**	**47.5%**	**7.2%**	**11.0%**	**10.1%**	**-7.5%**	**7.1%**	**5.6%**
OPEB Growth Policy Benchmark				7.3%	10.1%	8.7%	-8.8%	6.4%	5.1%
OPEB Credit	**520**	**18.6%**	**19.0%**	**3.2%**	**6.5%**	**7.6%**	**-2.2%**	**0.7%**	--
OPEB Credit Policy Benchmark				2.8%	5.6%	5.9%	-3.8%	0.6%	--
OPEB Real Assets & Inflation Hedges	**560**	**20.1%**	**20.0%**	**6.1%**	**6.5%**	**1.3%**	**-6.7%**	**5.2%**	--
OPEB RA & IH Policy Benchmark				2.4%	3.4%	2.8%	-5.8%	5.5%	--
OPEB Risk Reduction & Mitigation	**367**	**13.2%**	**13.5%**	**3.4%**	**6.0%**	**1.0%**	**-5.7%**	**-1.4%**	**1.4%**
OPEB RR & M Policy Benchmark				3.3%	6.6%	-0.5%	-7.2%	-2.0%	1.0%



Performance Based Risk as of January 2023

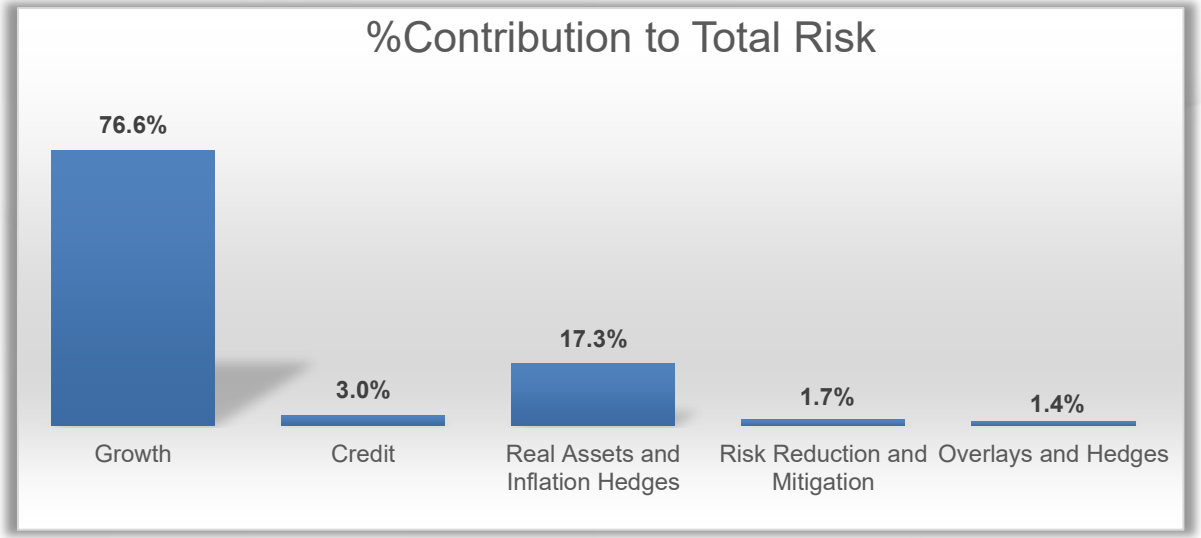
Active Return vs. Tracking Error[1,2,3]

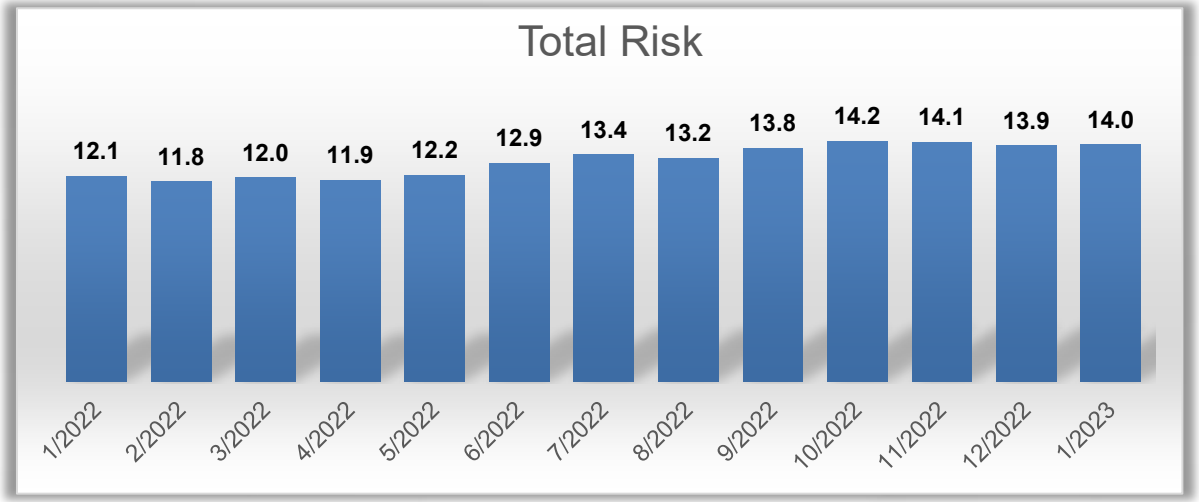


Period Ending	Annualized Return	Annualized Benchmark Return	Annualized Active Return	Tracking Error
Jan 2023	8.2%	5.0%	3.2%	2.7%

[1] Rolling 36 months
[2] Active return equals the difference in return between a portfolio and its benchmark
[3] Tracking error (or active risk) measures the volatility of active returns

Total Fund Forecast Risk*
as of January 2023



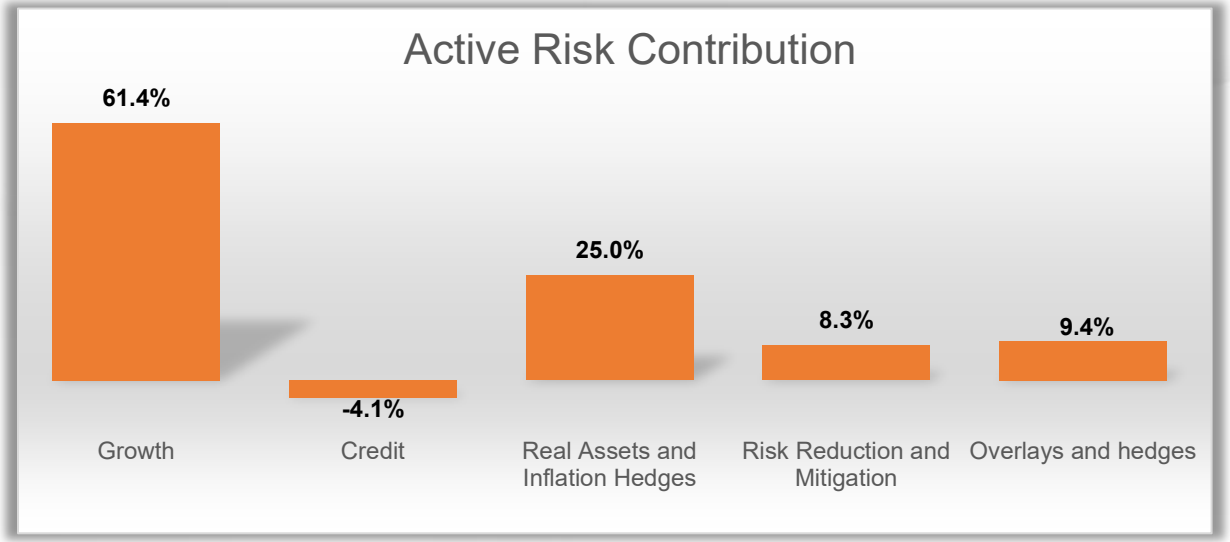


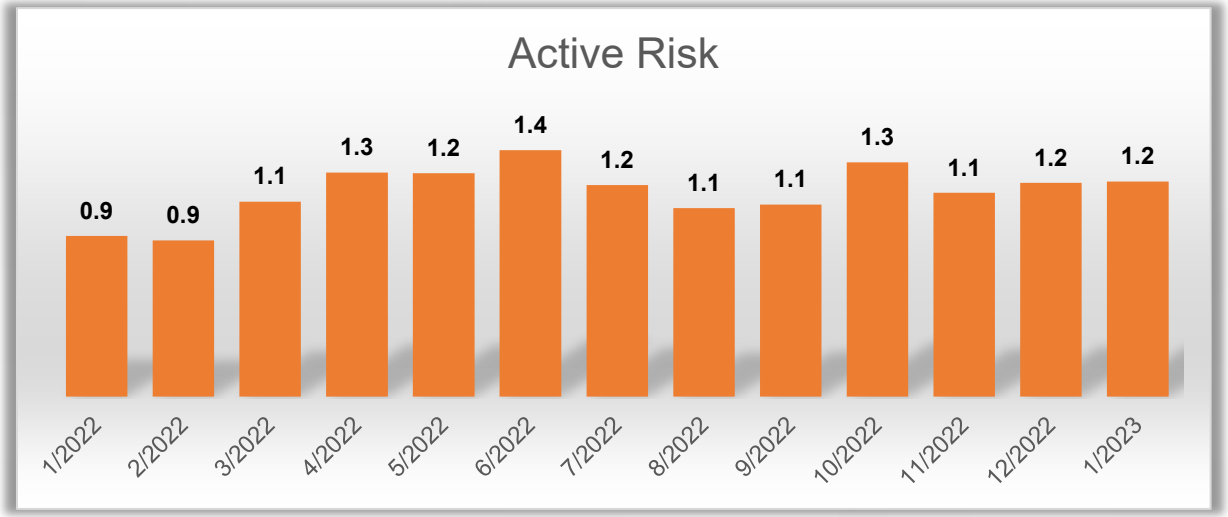
	%Weight	% Cont. to Total Risk	Standalone Total Risk	Standalone BMK Risk**
Total Fund			**14.0**	**13.2**
Growth	**51.8%**	**76.6%**	**20.9**	**19.8**
Global Equity	33.1%	42.3%	18.7	18.8
Private Equity	17.3%	31.1%	28.6	27.3
Non-Core Private Real Estate	1.4%	3.2%	44.4	19.9
Credit	**11.6%**	**3.0%**	**4.7**	**5.7**
Liquid Credit	6.3%	2.2%	6.3	5.7
Illiquid Credit	5.3%	0.8%	3.9	5.7
Real Assets & Inflation Hedges	**17.5%**	**17.3%**	**15.2**	**14.3**
Core Private Real Estate	6.1%	6.9%	22.3	19.9
Natural Resources & Commodities	3.2%	3.3%	18.5	20.4
Infrastructure	5.5%	6.6%	18.2	18.3
TIPS	2.7%	0.6%	6.9	6.7
Risk Reduction and Mitigation	**18.5%**	**1.7%**	**6.5**	**6.2**
Investment Grade Bonds	7.1%	0.8%	6.5	6.5
Diversified Hedge Funds	5.9%	0.5%	3.9	0.2
Long-Term Government Bonds	4.3%	0.5%	14.9	14.9
Cash	1.2%	0.0%	-	-
Overlays and Hedges	**0.7%**	**1.4%**	**-**	**-**

*Implementation of the MSCI Risk Platform is ongoing; reconciliation and refinement of the data is progressing and subject to change. Real estate and private equity data used is as of 9/30/2022
**BMK Risk stands for Benchmark Risk

SOURCE: MSCI BarraOne

Total Fund Forecast Active Risk*
as of January 2023



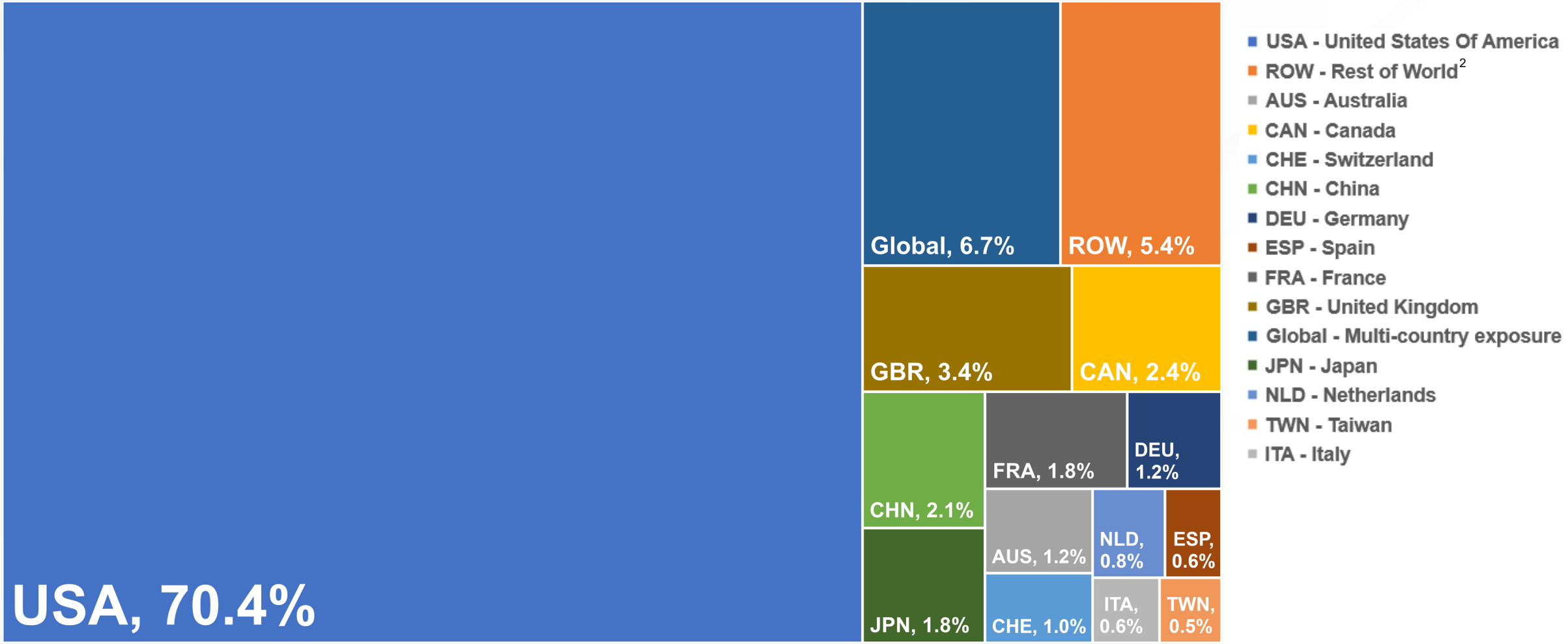


	%Weight	Active Weight%	Active Risk	Active Risk Allocation	Active Risk Selection
Total Fund			**1.20**	**0.05**	**1.16**
Growth	**51.8%**	**-1.21%**	**0.74**	**-0.06**	**0.80**
Global Equity	33.1%				
Private Equity	17.3%				
Non-Core Private Real Estate	1.4%				
Credit	**11.6%**	**0.60%**	**-0.05**	**-0.04**	**-0.01**
Liquid Credit	6.3%				
Illiquid Credit	5.3%				
Real Assets & Inflation Hedges	**17.5%**	**0.46%**	**0.30**	**-0.01**	**0.31**
Core Private Real Estate	6.1%				
Natural Resources & Commodities	3.2%				
Infrastructure	5.5%				
TIPS	2.7%				
Risk Reduction and Mitigation	**18.5%**	**-0.51%**	**0.10**	**0.04**	**0.06**
Investment Grade Bonds	7.1%				
Diversified Hedge Funds	5.9%				
Long-Term Government Bonds	4.3%				
Cash	1.2%				
Overlays and Hedges	**0.7%**	**0.66%**	**0.11**	**0.11**	**-**

*Implementation of the MSCI Risk Platform is ongoing; reconciliation and refinement of the data is progressing and subject to change. Real estate and private equity data used is as of 9/30/2022

SOURCE: MSCI BarraOne

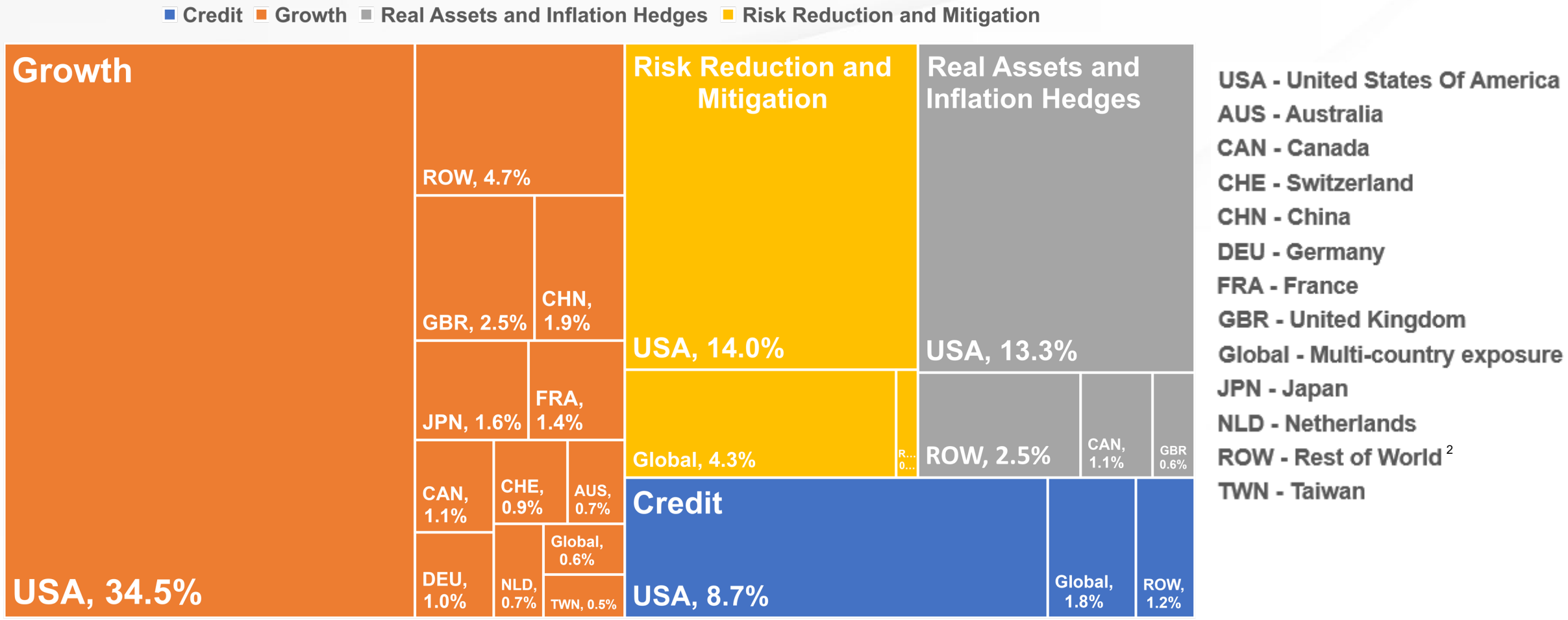
Geographic Exposures by AUM* - Total Fund
as of January 2023 ex-overlays & hedges



*AUM = assets under management
[1] *Implementation of the MSCI Risk Platform is ongoing; reconciliation and refinement of the data is progressing and subject to change. Real estate and private equity data used is as of 9/30/2022
[2] "ROW - Rest of World" is sum of countries with weight below 0.5%
[3] Geographic exposure is based on the domicile country of a given security/asset

SOURCE: MSCI BarraOne

Geographic Exposures by AUM* - Asset Categories
as of January 2023 ex-overlays & hedges



*AUM = assets under management

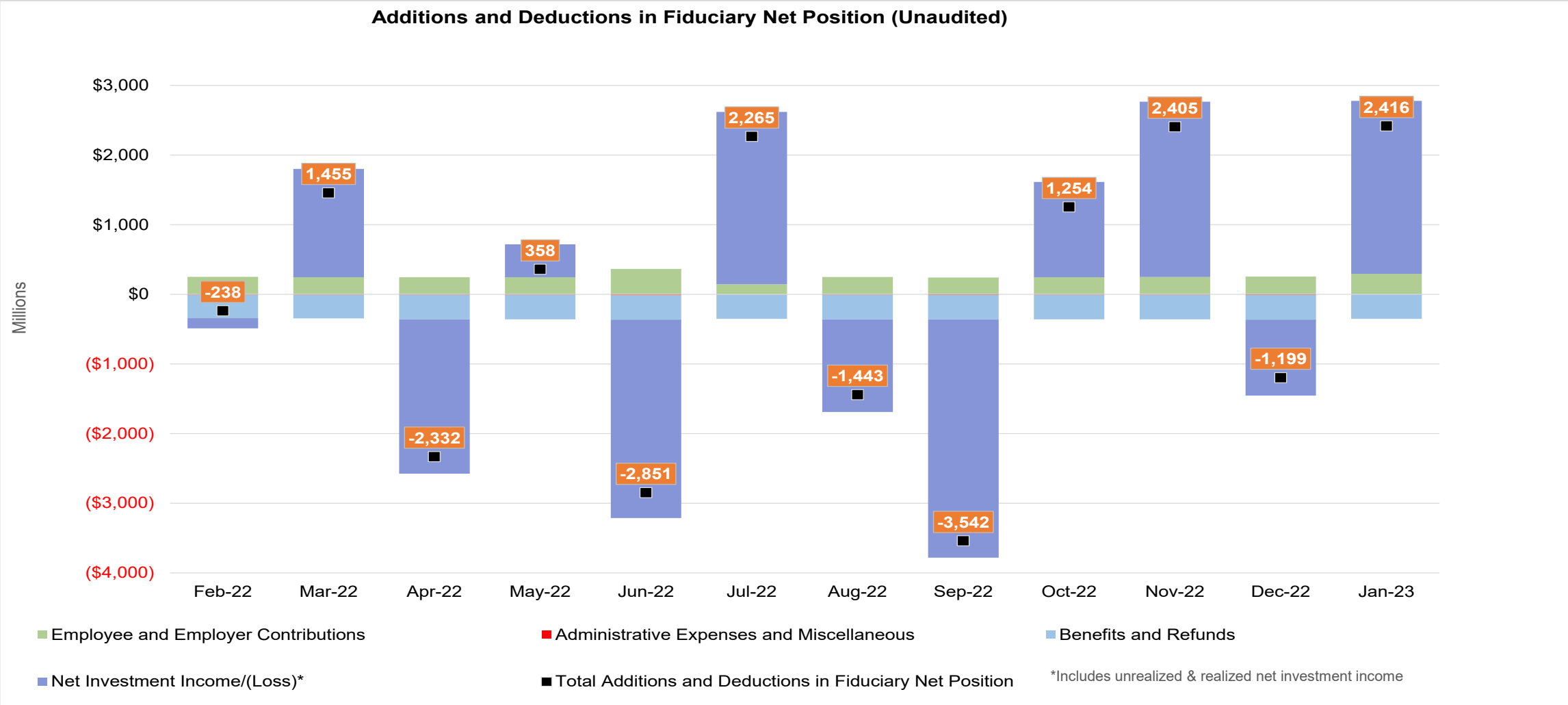
[1] *Implementation of the MSCI Risk Platform is ongoing; reconciliation and refinement of the data is progressing and subject to change. Real estate and private equity data used is as of 9/30/2022

[2] "ROW - Rest of World" is sum of countries with weight below 0.5%

[3] Geographic exposure is based on the domicile country of a given security/asset

SOURCE: MSCI BarraOne

Change In Fiduciary Net Position



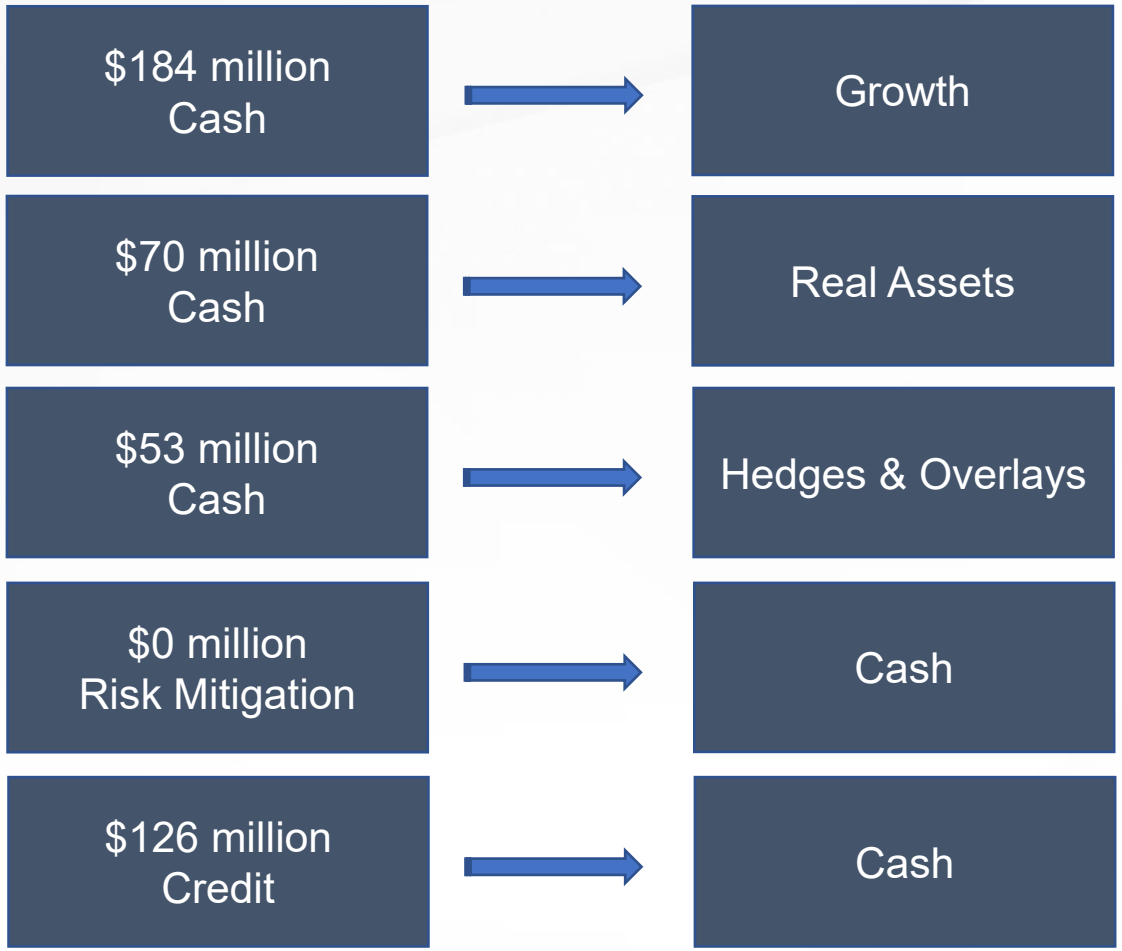
Fiscal Year	Negative Months	Positive Months	Total Net Position Change $
FY-21	2	10	$13.8 billion
FY-22	7	5	($2.5 billion)
FY-23	3	4	$2.2 billion

03 Portfolio Structural Updates

Portfolio Structural Updates

Portfolio Movements

Rebalancing Activity



Hedges & Overlays

Monthly Activity

Program	January Return	January Gain/(Loss)	Inception[1] Gain/(Loss)
Currency Hedge[2]	-0.7%	$52.7 Million	$1.4 Billion
Cash/Rebalance Overlay[3]	3.9%	$90.4 Million	$313.9 Million

[1] Currency and overlay program inception dates are 8/2010 & 7/2019, respectively.
[2] LACERA's currency hedge program's 1-month return is calculated monthly whereas the monthly gain/loss amount for the same period is the net realized dollar amount at contract settlement over three monthly tranches.
[3] LACERA's overlay program's 1-month return includes interest earned on the cash that supports the futures contracts.

Current Search Activity

Status of Active Searches – Subject to Change

Name	RFP Issued	Due Diligence	BOI Review
Real Assets Emerging Manager Program Search	✓		Anticipated Q3 2023
OPEB Public Markets Passive Investment Management Search	✓		Anticipated Q3 2023

04 Key Initiatives & Operational Updates

Notable Initiatives and Operational Updates

Key Initiative Updates

- The 2024 Strategic asset allocation study will begin in the Q3 of this year
- The Investment Division is adhering to the 2023 Work Plan and Strategic Initiatives approved at the January 2023 BOI

Operational Updates

- Annual contract compliance review is complete
- Operational due diligence review in progress

Manager/Consultant Updates

No material updates this month

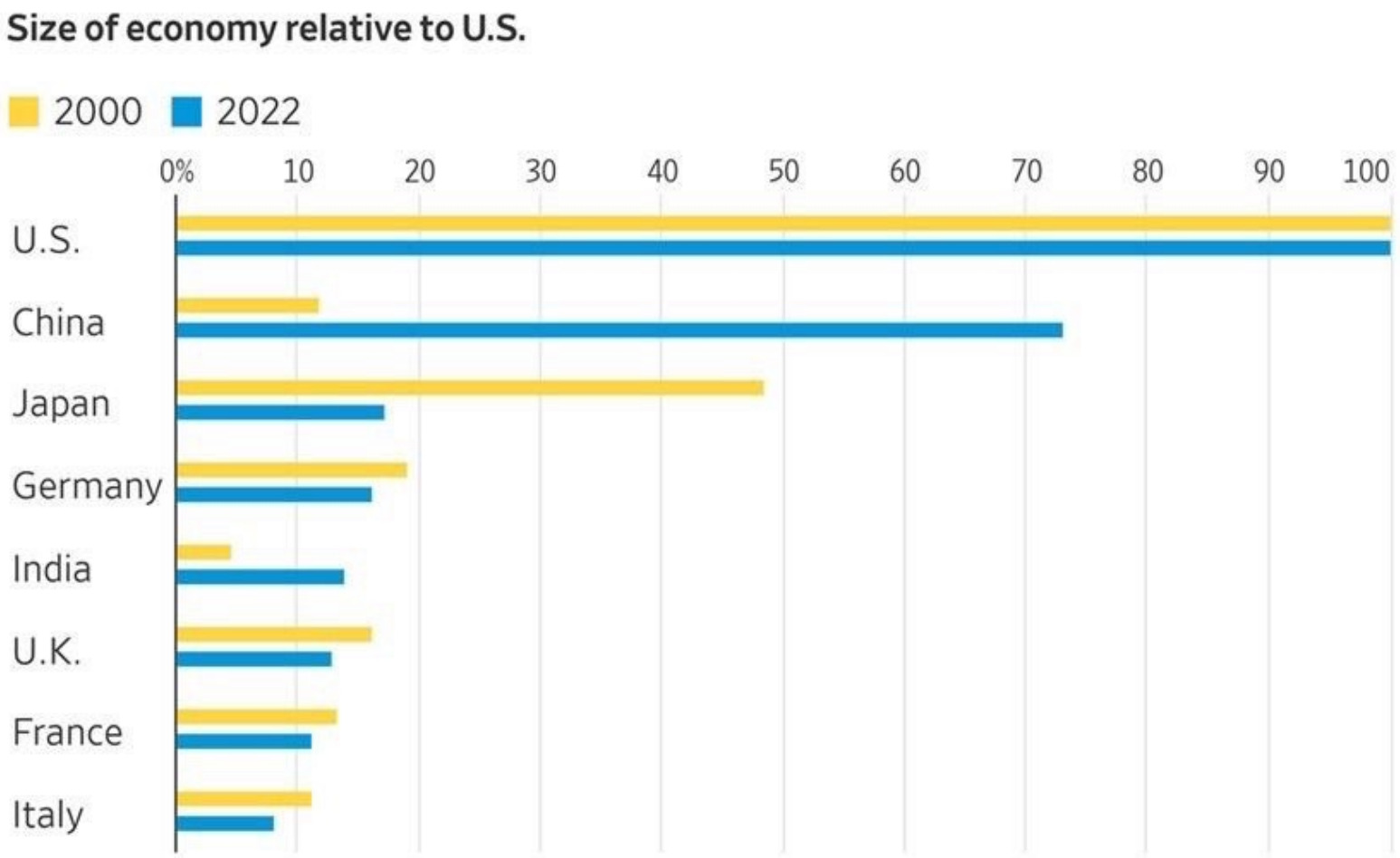
Team Searches and Vacancies

- Working on launching new searches
  - 1 – Deputy Chief Investment Officer
    - Search in progress
  - 1 – Principal Investment Officer
  - 2 – Senior Investment Officer
    - 1 search in progress
  - 2 – Financial Analyst-III
    - 2 searches in progress
  - 3 – Financial Analyst-II
    - 3 searches in progress
  - 1 – Financial Analyst-I

05 Commentary

Staff Chart of the Month

Size of Major Economies Relative to the U.S. Over the Past Two Decades

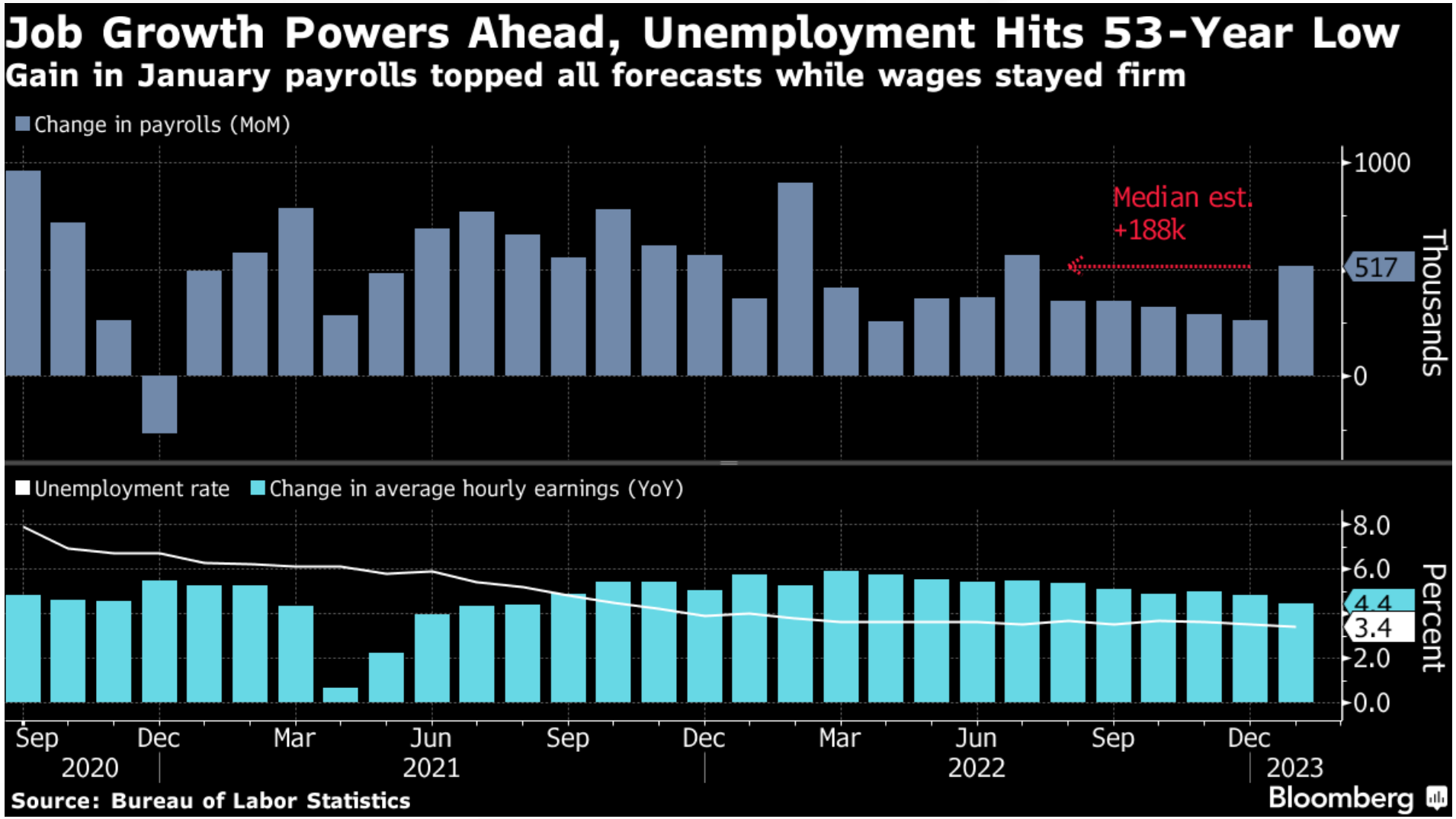


Source: International Monetary Fund

Via Wall Street Journal

Staff Chart of the Month

U.S. Unemployment Rate Hits 53-Year Low



LACERA

February 21, 2023

TO: Each Trustee,
Board of Investments

FOR: Board of Investments Meeting of March 8, 2023

SUBJECT: 2023 Annual AVCA Conference in Cairo, Egypt on May 1 – 5, 2023

The 2023 Annual AVCA Conference will be held in Cairo, Egypt on May 1 – 5, 2023. The annual AVCA Conference and VC Summit is the largest Africa focused private capital gathering globally, attracting investors who collectively manage over $1.5 trillion in assets. The conference will focus on unlocking lasting, transformative change in Africa through private capital. The objective for the conference is to think ambitiously about how private capital can build and contribute to a prosperous African future.

The main conference highlights include the following:

- Fund Manager Pitch Clinics
- PE Sessions
- Fund Manager Pitch Clinics

Following are approximate conference and travel costs:

Registration: $1,000.00

Hotel: $350.00 daily rate (plus taxes and fees) **Additional Travel Days**: 3

Airfare: $7,000.00 - $10,000.00 **Ground Transportation:** $150.00 per day

Per Diem & Incidentals: $98.00 per day
(The registration fee includes most meals)

Approximate Cost Per Traveler: $12,500.00- $14,500.00

If the registration fee is insufficient to pay the cost of the meals provided by the conference sponsor, LACERA must reimburse the sponsor for the actual cost of the meals, less any registration fee paid. Otherwise, the attendee will be deemed to have received a gift equal to the value of the meals, less any registration fee paid, under California's Political Reform Act.

IT IS THEREFORE RECOMMENDED THAT YOUR BOARD:

Approve attendance of Trustees at the 2023 Annual AVCA Conference held in Egypt, Cairo on May 1 – 5, 2023, and approve reimbursement of all travel costs incurred in accordance with LACERA's Trustee Education and Trustee Travel Policies.

Attachment

LE

Annual AVCA Conference 2023

1 - 5 May 2023
Four Seasons Hotel Cairo at Nile Plaza, Egypt

What's on at the 2023 Conference

Partner Events

Registration 12:00 am - 12:00 am

5:00 pm - onwards
PEWIN & AVCA Senior Women Investors Dinner

Apply for a complimentary qualified FREE LP* pass FIND OUT MORE

The AVCA Conference is **complimentary for qualified Limited Partners (LPs), classified as non-retail investors in private equity funds, **limited to 3 complimentary passes per organisation.** This includes full-time employees of development finance institutions (DFIs), endowments, single-family offices, insurance companies, public and private pension funds, and sovereign wealth funds.*

Registered in England & Wales No. 7877196.
Registered Office: 37 North Row (Third Floor), London W1K 6DH, United Kingdom

Site by IC Design London

+44 (0)20 3874 7008
conference@avca-africa.org

AVCA Head Office:
37 North Row
London W1K 6DH
United Kingdom

Annual AVCA Conference 2023

PE Agenda – Monday, May 1, 2023

PE Agenda

May 1 May 2 May 3

Formats

☐ GP Only ☐ LP Only ☐ Roundtable

PE Conference

Registration 9:00 am - 5:00 pm

12:00 pm - 1:00 pm

Infrastructure Roundtable

Read less

Africa's infrastructure financing deficit is a persistent bottleneck to the continent's economic development and pathway to progress. This roundtable is a closed-door section to discuss Africa's current infrastructural needs, the role of private capital in meeting the need for e sustainable infrastructure in Africa; the unique challenges infrastructure investors encounter on the ground; and what returns, and growth projections can be expected of the asset class.

1:30 pm - 2:30 pm

GP Only Session

1:30 pm - 2:30 pm

LP Only Session

3:00 pm - 4:30 pm

GP-LP Summit

4:30 pm - 5:30 pm

PE Pitch Clinics

6:30 pm - onwards

PE Welcome Reception

PE Agenda – Tuesday, May 2, 2023

PE Conference

Registration 7:00 am - 6:00 pm

9:00 am - 9:10 am
Opening Remarks

9:10 am - 9:15 am
Welcome Remarks

9:15 am - 9:25 am
Opening Keynote Address

9:25 am - 9:30 am
Morning Chair Introduction

9:30 am - 9:45 am
Global Macro Presentation

9:45 am - 10:30 am
Panel 1: Unlocking Opportunities for Private Capital in Africa: Navigating Global Uncertainty

Read less

2022 was a year of unprecedented global uncertainty: the Russia-Ukraine war, Sino-American tensions, supply chain disruptions and a global macroeconomic downturn upended the investment landscape both globally and in Africa. This panel explores how private capital investors in Africa are navigating this storm to unlock opportunities on the continent and maintain a competitive portfolio amidst a threatening global recession.

10:30 am - 10:50 am
Network Network Network!!!

10:50 am - 11:30 am
Panel 2: Exploring the Timeless Treasures and Investment Opportunities in North Africa

Read less

North Africa's private capital landscape has evolved significantly in the last two decades, with over $12 billion worth of private capital deals being executed in the period. Now on the other side of a series of geopolitical crises in the mid-2010s, private capital in North Africa remained resilient under the expert tutelage of local investors with deep local expertise and presence on the ground who continued to explore and invest in the timeless treasures and investment opportunities the region had to offer. This panel explores the rise of North Africa as an investment destination of interest in Africa; the markets currently attracting the most private capital deal activity and investor interest; and prospects for the region's future economic development.

11:30 am - 11:45 am
60 Seconds with...

PE Agenda – Tuesday, May 2, 2023 (Continued)

11:45 am - 12:30 pm

Panel 3: One the Other Side – Life After Your Maiden Fund

Read less

This panel profiles second and third-generation fund managers, an often-overlooked subset of fund managers in Africa's private capital landscape. Having successfully raised and deployed their maiden funds, this panel evaluates life after exit at the genesis of another round of fundraising. Panellists will share lessons learned from their maiden funds, portfolio management and positioning, institutionalisation and operational growth and best practices from this experience that can be incorporated into subsequent fundraising cycles.

12:30 pm - 1:30 pm

Networking Lunch

1:30 pm - 2:15 pm

Panel 4: Allocate, Allocate, Allocate – LPs at the Core of Private Capital in Africa

Read less

This panel draws on the views and expectations of emerging and longstanding limited partners in Africa's private capital ecosystem to discuss appetite for, performance and impact of private capital in Africa. In particular, this panel makes the case for the diversification of capital generation sources for Africa's private capital funds, exploring alternative financing routes and ways to galvanise commercial capital to alternative asset classes on the continent.

2:15 pm - 3:00 pm

Panel 5: Frontier Markets – Outside the Big 4

Read less

Frontier markets present significant investment potential due to their pre-emerging status and the possibility of generating higher long-term returns, especially once fully developed. This panel observes the emerging and frontier markets outside of Africa's leading quartet exhibiting growth and the drivers for their development, while analysing the investment opportunities they present and the risks involved in harnessing them. Convening fund managers and investors focused on exploring opportunities in frontier markets on the continent to give a practical, holistic view on the most promising opportunities for private capital in their markets of expertise.

3:00 pm - 3:20 pm

Network Network Network!!!

3:20 pm - 3:40 pm

Fireside chat: Global Investor Lens - Opportunities in Private Capital

3:40 pm - 4:25 pm

Panel 6: Transitioning to a Green Economy

Read less

Transitioning to a green economy globally requires a complete reconfiguration of current production and consumption processes to increase material and energy efficiency. Even more pressing, however, is the need for technological innovation in green value chain development across industries. This panel examines the avenues for funding climate resilience and adaptation, zeroing in on the role the private sector has to play in the transition to a greener economy.

PE Agenda – Tuesday, May 2, 2023 (Continued)

4:25 pm - 5:10 pm
Panel 7: Creating Value for Successful Exits

Read less

Private equity fund managers have characteristically been driven by a mandate to add value to a company, over and above what could have been achieved without their investment. This panel explores the challenges and best practices of executing vision and creating value amidst global uncertainty. What value creation and management strategies can fund managers leverage to support their portfolio and to improve corporate governance and transparency? When and how should exits be conceptualised in the lifecycle of a fund, particularly in the current environment?

5:10 pm - 5:15 pm
Closing

6:30 pm - 7:30 pm
Pre-gala dinner drinks

7:30 pm - onwards
Gala Dinner

PE Agenda – Wednesday, May 3, 2023

PE Conference

Registration 8:00 am - 11:00 am

8:30 am - 10:00 am
Breakfast Roundtable

Read less

Impact Measurement

10:00 am - 10:30 am
Network Network Network!!!

10:30 am - 10:35 am
Opening Remarks

PE Agenda – Wednesday, May 3, 2023 (Continued)

10:35 am - 10:45 am
Keynote Address

10:45 am - 10:50 am
Chair introduction

10:50 am - 11:35 am
Panel 8: Diversity, Equality & Inclusion in Private Capital

Read less

This panel builds a case for the mainstreaming of Diversity, Equality & Inclusion (DEI) in Africa's private capital industry. While DEI is now recognised as a strategic objective in private capital globally, its active practice by investors outside those with a specific gender-lens mandate remains inconsistent. This panel focuses on the avenues for generalist fund managers to improve their performance from an inclusivity perspective, discussing the benefits and barriers to a more comprehensive integration of DEI at the fund and portfolio levels.

11:35 am - 12:20 pm
Panel 9: Leveraging Private Credit to support growth in Africa

Read less

On the back of tenfold growth in the past decade, growth forecasts for global private debt assets are estimated to reach nearly US$2.7 trillion by 2026, surpassing real estate to become the second-largest private capital asset class. Reflecting on the rise of private debt strategies globally, this panel discusses the growth drivers for the asset class in Africa and the upward trend of private debt funds raising capital on the continent. More specifically, this panel examines the particularities of private credit as an engine for growth in Africa including its different best-use cases, its varying utility as an instrument throughout a company's development lifecycle, and its complementarity with other asset classes in Africa's private capital ecosystem.

12:20 pm - 1:00 pm
Networking Lunch

1:00 pm - 1:45 pm
Stream 1: Maximising Return on Investment in Healthcare

Read less

This stream takes a deep dive into healthcare in Africa, discussing emerging investment opportunities in the sector and the role of private capital in supporting dynamic, innovative businesses working to improve access to affordable healthcare on the continent. In particular, the scope for commercial return in healthcare service provision will be discussed, including where on the health value chain these opportunities are presenting themselves.

1:00 pm - 1:45 pm
Stream 2: Impact & Profit: Mutually Exclusive?

Read less

The topic of debate in this stream is the relationship between impact and profit, in particular at the very early stages of the impact capital continuum. Patient, risk-tolerant, concessionary, and flexible capital is an essential tool to support impact-driven businesses that lack financing on suitable terms through the conventional marketplace. In view of the funding gap faced by these companies, where and how can philanthropic capital sources plug the gap for catalytic capital critically needed by some companies on the continent?

PE Agenda – Wednesday, May 3, 2023 (Continued)

1:45 pm - 2:30 pm

Stream 3: Feeding the Pipeline: Emerging Managers

Read less

The perspectives and experiences of emerging managers are the focus of this stream. Drawing on the empirical knowledge of first-time private capital fund managers on the continent, we discuss the unique challenges they encountered and their best-practice suggestions for how to secure capital commitments in a competitive environment. What changes could, and should, be made to fund terms and fundraising practices to support the growth of private capital markets in Africa? Finally, this panel discusses how managers should think through their team composition, investment thesis and strategy to differentiate themselves in a sea of others chasing the same pools of capital.

1:45 pm - 2:30 pm

Stream 4: Growing Up: Secondaries and New Stages of Maturity for Private Capital in Africa

Read less

While nascent, there are several attractive opportunities in Africa's secondaries market that position it to play an important role in the industry. This stream adopts an exploratory lens to determine what is necessary to build a robust secondaries market in Africa, including strategies to make secondary investments and funds more appealing to both commercial and institutional investors. Specifically, what measures can be taken to de-risk the prospect of investing in Africa's secondaries market, minimising its drawbacks and maximising its appeal?

2:30 pm - 3:15 pm

Stream 5: Investing for a Secure and Sustainable Food Future

Read less

Investing in a secure and a sustainable food future is therefore essential for a thriving global economy - according to the Global Report on Food Crisis 2022 Mid-year Update, up to 205 million people are expected to face acute food insecurity and to be in need of urgent assistance in 45 countries. This panel will explore the opportunities within and effective strategies for leveraging capital and integrating innovative solutions to achieve a more secure food system on the continent. The panellists will discuss the opportunities and challenges in investing in this sector of the economy, the risks and how these are mitigated, finance structures that are fit for purpose and potential for scaling solutions.

2:30 pm - 3:15 pm

Stream 6: Creativity and Capital: Investment Opportunities in Africa's Creative Economy

Read less

Often overlooked and underestimated, the creative economy presents a lucrative opportunity for private capital investment. In Nigeria alone, creative industries contributed approximately US$18 billion to GDP in 2020, according to the World Bank 2020. This panel goes beyond the conventional to examine how creative industries such as fashion, film, music, design and sport can be sources of growth, job creation, and commercial return for private investors, as well as the innovators and changemakers advancing creativity and culture across the continent.

3:15 pm - 3:45 pm

Network Network Network!!!

3:45 pm - 4:30 pm

Stream 6: Laying Foundations for the Future: real Estate Development in Africa

Read less

Africa's Real Estate market has grown by leaps and bounds alongside the rapidly rising demand for housing, commercial properties, and infrastructure projects catering to the continent's shifting demographics and urbanising middle class. This stream convenes leading managers and allocators in African real estate to discuss the evolution of the sector, where budding opportunities in the market lie, the benefits of developing vs. acquiring real estate assets, and finally the practicalities and challenges that come with investing in this asset class.

3:45 pm - 4:30 pm

Stream 7: Accelerating Sustainable Private Capital in Renewable Energy

Read less

The necessity for clean and renewable energy solutions in Africa is at an all-time high. The demand for reliable and affordable energy has grown concomitantly to the continent's economic growth, industrialisation, increasing urbanisation and rapid population growth in recent years. The already compelling case for the adoption of modern renewable energy in Africa is compounded given the sheer breadth of Africa's renewable resources. The final stream discusses the regions prime for investing in renewables, the advancements in CleanTech and ClimateTech reducing the productive costs of renewable energy, and the full spectrum of investment opportunity for clean energy beyond solar in Africa, spanning bioenergy, hydropower, wind and geothermal sources.

PE Agenda – Wednesday, May 3, 2023 (Continued)

4:30 pm - 5:15 pm
Free Flow LP Reflection

5:15 pm - 5:25 pm
Closing Remarks

VC Summit – Wednesday, May 3, 2023

VC Summit

Registration 8:30 am - 6:00 pm

9:00 am - 12:00 pm
Morning Activity

1:00 pm - 2:00 pm
Roundtable Discussion: Talent & Competitiveness

2:00 pm - 2:30 pm
Network Network Network!!!

2:30 pm - 3:30 pm
Roundtable Discussion: Fundraising & Exits

4:00 pm - 5:00 pm
Fund Manager Pitch Clinics

6:30 pm - onwards
Welcome Reception

VC Summit – Thursday, May 4, 2023

VC Summit

Registration 7:00 am - 6:00 pm

8:55 am - 9:00 am
Opening Remarks

9:00 am - 9:15 am
Opening Keynote

9:15 am - 9:20 am
Morning Chair Introduction

9:20 am - 10:05 am
Panel 1: On the Rise – Venture Capital and Early-stage investing in Africa Catapulting

Read less

Africa's early-stage investment landscape has proven bullish despite surging inflation, an unfavourable macroeconomic climate, and contractions in startup funding within the global venture market. This panel chronicles the maturation of Africa's entrepreneurial space, investigating the catalysts for its exponential growth and what changes can be expected as the asset class continues to take off. It also explores the rise of venture capital investing in Africa and the role of managers in supporting the entrepreneurial ecosystem on the continent.

10:05 am - 10:50 am
Panel 2: The Giant that is Fintech

Read less

FinTech is the biggest buzzword in Africa's innovation ecosystem, continually assuming the lion's share of the volume and value of venture capital being channelled to the continent. This panel discusses the history and evolution of financial technology in Africa to contextualise its prominence and understand the underlying market fundamentals fuelling its continued growth. In particular, this panel highlights the breadth of opportunities the sector has to offer outside of digital payments, including digital banks, cryptocurrency, international remittances and peer to peer lending. Finally, this panel explores how FinTech is disrupting established traditional banking and payment practices and how these innovative uses of technology are transforming Africa's informal sector.

10:50 am - 11:20 am
Network Network Network!!!

11:20 am - 11:35 am
60 Seconds With.....

VC Summit – Thursday, May 4, 2023 (Continued)

11:35 am - 12:20 pm

Panel 3: Africa to the World – A look at the Global Managers Expanding Africa's Innovation Ecosystem

Read less

African startups are transforming the continent's economic landscape and creating new market opportunities, and global managers and capital allocators are taking notice. Several multi-billion-dollar VC fund managers from around the world have participated with increasing frequency in late-stage venture rounds in recent years, and these commitments will be inspected over the course of the panel. This panel addresses the market drivers for Africa's continued attractiveness to international investors; the increasing diversification of actors (by both investor type and location) active in Africa's VC ecosystem; and prospects for further attracting global managers to Africa's shores.

12:20 pm - 1:00 pm

Workshop: ESG for early-stage businesses

1:00 pm - 1:45 pm

Networking Lunch

1:45 pm - 2:00 pm

Fireside Chat

2:00 pm - 2:45 pm

Stream 1: Trailblazing Beyond Fintech

Read less

Picking up from Panel 2, this stream looks beyond the giant of Africa's silicon savannah to explore alternate sectors prime for growth and investment in Africa. Which sectors and verticals are bringing commercial opportunity, and who are the notable investors and innovators trailblazing in these spaces? Will we see opportunities for unicorns outside of FinTech in the near term?

2:00 pm - 2:45 pm

Stream 2: Leveraging Venture Debt to unlock financing for startups in Africa

Read less

Venture debt has emerged from the periphery to become a key component of the African investment ecosystem as startups opt to remain private longer and seek creative forms of financing that minimize dilution. This stream takes a look at the players that are actively providing venture debt. the role of venture debt and mezzanine financing as a complement to equity; how and when African investors should deploy this tool; and how to raise awareness of these alternative financing products to entrepreneurs and companies unfamiliar with these investment strategies.

2:45 pm - 3:30 pm

Stream 3: Adaptation & Mitigation – Climate Tech to Rescue

Read more

2:45 pm - 3:30 pm

Stream 4: Plugging the Gap from Idea to IPO

Read more

3:30 pm - 4:00 pm

Networking Network Network!!!

4:00 pm - 4:45 pm

Stream 5: From Cape to Cairo: Bridging Pan African Opportunities

Read less

This stream zeroes in on the growth capacity of start-ups in Africa and the avenues available for market expansion, either by direct, organic business expansion in new markets, or via the use of mergers and acquisitions. The benefits and bottlenecks of each approach will be evaluated, giving a detailed picture into the practicalities of venture scaling on the continent from both the entrepreneurial and investor perspective. The panel will also explore the role of fund managers and other investors in positioning their portfolio for Africa expansion.

4:00 pm - 4:45 pm

Stream 6: A Call for Governance: Principles for Corporate Responsibility

Read less

Although the ESG framework takes the holistic view that sustainability extends beyond just environmental issues, governance considerations are often overshadowed by the environmental and social. Headlines detailing corporate governance deficiencies wracked Africa's startup ecosystem in 2022, illustrating the real-world implications of this long-term marginalisation of governance criteria and bringing to the fore the need for appropriate governance practices. This stream adopts an exploratory lens to determine practical principles that both entrepreneurs and investors should be aware of to ensure good corporate governance. How can venture capital investors add governance to their value creation strategies at the portfolio level, and how should these be tailored to suit the infancy and size of startups receiving funding in Africa?

4:45 pm - 5:15 pm

Panel 4: Straight From The Source: LP Perspectives on Venture Capital in Africa

Read more

5:15 pm - 5:20 pm

Closing

Training - Friday, May 5, 2023

Training

Registration 7:30 am - 8:30 am

8:30 am - 5:30 pm

Training

Read less

LP Training | GP Training | Legal Agreements

February 22, 2023

TO: Each Trustee,
Board of Investments

FROM: Santos H. Kreimann SHK
Chief Executive Officer

Ted Granger TG
Interim Chief Financial Officer

FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **2022 ACTUARIAL VALUATION OF RETIREMENT BENEFITS**

RECOMMENDATION

It is recommended that the Board of Investments:

1. Accept the June 30, 2022 Actuarial Valuation of Retirement Benefits as submitted by the plan actuary, Milliman.

2. Adopt recommended employer contribution rates (all plan tiers) and employee contribution rates (all contributory plan tiers).

3. Delegate authority to the Chief Executive Officer to communicate the results of the 2022 Actuarial Valuation of Retirement Benefits to the Board of Supervisors on or before May 15, 2023, with a recommendation to implement the employer and employee rates no later than September 29, 2023.

EXECUTIVE SUMMARY

The June 30, 2022 Actuarial Valuation of Retirement Benefits ("2022 Actuarial Valuation") report (Attachment I) has been prepared by Milliman to determine the employer and certain employee[1] contribution rates, which will be effective July 1, 2023. The 2022 Actuarial Valuation results include increases in employer contribution rates, increases in nearly all member contribution rates, an increase in the Unfunded Actuarial Accrued Liability (UAAL), and an improvement in the Plan's funded ratio. LACERA is required to

[1] Government Code Section 7522.30 of the California Public Employees' Pension Reform Act (PEPRA) requires annual adjustments to contribution rates for members entering the retirement system beginning January 1, 2013. PEPRA applies to LACERA members enrolled in General Plan G and Safety Plan C. Contribution rates for all other members who participate in contributory plans are updated every three years; the rates effective July 1, 2023 will be implemented as a result of the June 30, 2022 Actuarial Valuation report. This schedule of contribution rate updates is confirmed in LACERA's Retirement Benefit Funding Policy.

communicate the results to Los Angeles County (County) so the new contribution rates can be implemented by the beginning of the upcoming fiscal year.

SUMMARY OF KEY VALUATION RESULTS

The key valuation results for the past three years are presented in the table below.

Significant Valuation Results			
	FISCAL YEAR ENDED		
	2022	2021	2020
($ in Millions)			
Actuarial Accrued Liability	$86,320	$81,898	$78,275
Valuation Assets	$68,712	$64,909	$59,763
Unfunded Actuarial Accrued Liability	$17,608	$16,989	$18,512
Funded Ratio	79.6%	79.3%	76.3%
Assumed Investment Return	7.00%	7.00%	7.00%
Actual Investment Return	0.10%	25.20%	1.80%
Retired Members (count)	71,571	69,497	68,012
Average Monthly Benefit	$4,832	$4,679	$4,541

Since the June 30, 2021 Actuarial Valuation, the Actuarial Accrued Liability (AAL) increased 5.4% to $86.32 billion, and the Valuation Assets increased 5.9% to $68.71 billion.

The UAAL as of June 30, 2022, is $17.61 billion which means the Plan is less than 100% funded and requires employers to make additional payments to the Plan using closed 20-year layered amortization periods.

The actuary is recommending changes to the employer and member contribution rates. The estimated annual employer contributions for the upcoming fiscal year 2023-2024 is $2.41 billion, which includes approximately $1.04 billion in employer normal cost contributions and $1.37 billion in employer UAAL contributions. Recent changes to the employer and member contribution rates are shown below.

A valuation report is often described as a snapshot of a retirement Plan's funded status at point in time. This year's picture finds LACERA with a funded ratio of 79.6%. That is, the estimated benefit liability is greater than the actuarial value of assets. However, this analysis reflects the actuarial asset smoothing method which recognizes previous

investment gains and losses over a five-year period. Based on the market value of assets (excluding non-valuation reserves), LACERA's funded ratio is 79.9%.

The key factors affecting the 2022 valuation results compared to the 2021 valuation were as follows:

- **Funded Ratio:** The increase in the Funded Ratio (based on the smoothed Valuation Assets) from 79.3% to 79.6% was primarily due to the recognition of deferred investment gains from prior years (primarily the strong return for fiscal year 2020-2021) and contributions made to pay down the UAAL. These positive factors were offset by other factors such as the assumption and method changes adopted as part of the 2022 Investigation of Experience Study completed in December 2022, which increased liabilities.
- **Employer Contribution Rate:** The increase in the aggregate employer contribution rate from 24.46% of payroll to 25.84% was primarily attributable to the assumption and method changes, the less-than-assumed investment return for fiscal year 2021-2022, and payroll growth less than expected.
- **Member Contribution Rates:** Increases in member contribution rates are recommended for all contributory plans reflecting the assumptions adopted and year-to-year changes that affected General Plan G and Safety Plan C.

Plan demographics reported in the 2022 Actuarial Valuation indicate a 2.6% decrease in the size of the active member population that totals 96,539, with an overall average age of 46.8 years. The retired population increased by 3.0% and equals 71,571 members. The average benefit payment increased by 3.3% to $4,832 per month. The retired members' average age remained at 73 years.

EMPLOYER AND EMPLOYEE CONTRIBUTIONS	FISCAL YEAR BEGINNING		
	July 1, 2023	**July 1, 2022**	**July 1, 2021**
($ in millions / rates shown as a percentage of payroll)			
Total Employer Contribution Rate	25.84%	24.46%	24.64%
Sample Legacy Plans (entry age 25):			
Employee General Plan D	7.22%	6.95%	6.95%
Employee Safety Plan B	13.04%	12.61%	12.61%
PEPRA Plans (all ages):			
Employee Safety Plan C	14.76%	14.33%	14.42%
Employee General Plan G	9.24%	9.08%	9.10%
Estimated Employer Contributions	$2,414	$2,293	$2,244

Annual valuations reset the employer contribution rates each year. For members of General Plan G and Safety Plan C, employee contribution rates are also recalculated annually based on one-half of the Plan's normal cost rate. Member contribution rates for all contributory legacy plans (General Plans A, B, C, and D and Safety Plans A and B) are updated every three years following a change in actuarial methods and assumptions. Generally, this occurs following the completion of an investigation of experience study, which was completed as of June 30, 2022.

LEGAL AUTHORITY

Provisions contained in the County Employees Retirement Law of 1937 (California Government Code, Sections 31450-31899.1) (CERL), the California Public Employees' Pension Reform Act of 2013 (California Government Code, Section 7522-7522.74) (PEPRA), and the California Constitution (Article XVI, Section 17) govern the actuarial process at LACERA.

Section 31453 of the CERL requires LACERA to obtain an actuarial valuation at least once every three years. The valuation shall be conducted under the supervision of an actuary, shall cover the mortality, service, and compensation experience of the members and beneficiaries, and shall evaluate the assets and liabilities of the retirement fund. Government Code Section 7504(a) additionally provides, for all California public pension systems, not less than every three years, the fund actuary "shall perform a valuation of the system utilizing actuarial assumptions and techniques established by the agency that are, in the aggregate, reasonably related to the experience and the actuary's best estimate of anticipated experience under the system. Any differences between the actuarial assumptions and techniques used by the actuary that differ significantly from those established by the agency shall be disclosed in the actuary's report and the effect of the differences on the actuary's statement of costs and obligations shall be shown." Section 7522.30 PEPRA requires annual adjustments to contribution rates for members entering the retirement system beginning January 1, 2013. PEPRA applies to LACERA members enrolled in General Plan G and Safety Plan C.

The California Constitution, Article XVI, Section 17(a) of the Constitution provides that public pension trustees "shall discharge their duties with respect to the system solely in the interest of, and for the exclusive purposes of providing benefits to, participants and their beneficiaries, minimizing employer contributions thereto, and defraying reasonable expenses of administering the system. A retirement board's duty to its participants and their beneficiaries shall take precedence over any other duty." To comply with their fiduciary duty with respect to actuarial decisions, the Constitution requires that each of these three elements be considered and evaluated with the interests of members and beneficiaries being paramount.

Article XVI, Section 17(e), assigns "the sole and exclusive power to provide for actuarial services" to the governing body of the public employees' retirement system. Such power

is given by the Constitution in order to "assure the competency of the assets of the public pension or retirement system."

Section 31453 further requires the Board of Investments to transmit its recommendations concerning assumptions, interest rates, and contributions to the Board of Supervisors at least 45 days prior to the beginning of the succeeding fiscal year. Section 31454 requires the Board of Supervisors to adjust contribution rates in accordance with LACERA's recommendations no later than 90 days following the beginning of the immediately succeeding fiscal year, which means that the adjustments must be made no later than September 29, 2023. Section 31454.1 exempts the independent assumptions and calculations of LACERA's actuary from "meet and confer" requirements. This same section also recognizes the "meet and confer" responsibility of the Board of Investments or Board of Supervisors in implementing the recommendations contained in the actuarial valuation report.

LACERA's RETIREMENT BENEFIT FUNDING POLICY

LACERA's Retirement Benefit Funding Policy's main goal is to provide benefit security for its members as well as achieving and maintaining stable employer contributions that are as low as possible. The policy requires annual actuarial valuations to review the retirement system's funding progress, and to set the employer contribution and member contribution rates according to the plan documents (CERL and PEPRA), the relevant provisions of which are described in the Legal Authority section above.

In addition to the annual valuations, LACERA requires its actuary to review the reasonableness of the economic and non-economic (demographic) actuarial assumptions every three years. This review, commonly referred to as the triennial investigation of experience or experience study, is accomplished by comparing recent actual experience to what was expected to happen according to the actuarial assumptions. Also, forecasts are considered where available, particularly for the economic assumptions. Based on this review, the actuary recommends whether any changes in the assumptions or actuarial methods would allow a more accurate projection of total benefit liabilities and asset growth. Milliman completed the most recent experience study as of June 30, 2022.

For legacy plan tiers using age-based employee contribution rates (General Plans A, B, C and D and Safety Plans A and B), LACERA's actuary will recommend adjusted member rates, as required, due to changes in the underlying assumptions and methodologies used to calculate the employee rates. Therefore, it is expected the age-based employee rates will change no more frequently than every three years when the actuary reviews the assumptions and methodologies as part of the experience study. As there was an experience study conducted in connection with the June 30, 2022 actuarial valuation, the actuary is recommending new employee rates for those age-based employee contribution rate plan tiers (i.e. legacy plan tiers).

For the plan tiers using single-rate employee contribution rates (plan tiers General Plan G and Safety Plan C), members are required to contribute at least one-half of the total normal cost rate for the plan. The actuary recommends adjustments to the PEPRA plan tier contributions annually. Effective July 1, 2023, slightly higher employee contribution rates are recommended.

ACTUARIALLY DETERMINED EMPLOYER CONTRIBUTION RATES

Liabilities not funded through employee contributions and portfolio earnings are the responsibility of the employer. The employer contributions include the cost of benefits expected to be earned in the future in excess of those funded by member contributions. These contributions are known as employer normal cost contributions. The actuary has calculated employer normal cost rates for all retirement plans. Comparing the recommended employer normal cost rates calculated in the 2022 valuation to the 2021 valuation rates currently in effect, the General plans' average rate increased by 0.21% of pay and the Safety plans' average rate increased by 0.31% of pay, for an aggregate increase of 0.24%. A comparison by plan is presented in the 2022 Actuarial Valuation report's Exhibit 10 on page 31. Based on the actuary's recommended employer contribution rates for individual plans, the overall impact is to increase the employer normal cost contribution rate from 10.88% to 11.12% of estimated payroll.

	June 30, 2022 Valuation	2021 Valuation	2020 Valuation	2019 Valuation
Employer Normal Cost Rate	**11.12%**	10.88%	10.89%	10.86%
Employer UAAL Rate	**14.72%**	13.58%	14.85%	13.92%
Calculated Contribution Rate	**25.84%**	24.46%	25.74%	24.78%
Less cost phase-in (if applicable)	**0.00%**	0.00%	-1.10%	-2.19%
Total Employer Rate with cost phase-in (if applicable)	**25.84%**	24.46%	24.64%	22.59%

The employer is also responsible to contribute for funding shortfalls related to liabilities accrued in the past (which includes changes in the economic and non-economic assumptions affecting past service, if any). This portion of the employer's contribution is known as the UAAL contribution. Under the terms of the Retirement Benefit Funding Policy, contributions to retire an unfunded liability are calculated using a closed 20-year layered amortization period method when the funded ratio is below 100%. As the funded ratio as of June 30, 2022 is 79.6%, the employer is required to contribute an additional 14.72% of covered payroll towards the unfunded liability for the fiscal year beginning July 1, 2023.

Together, the employer's 11.12% normal cost and 14.72% UAAL contribution rates equal the total employer contribution rate of 25.84% of covered payroll. For the fiscal year 2023-

2024, the annual employer contribution is projected to increase approximately $121 million compared to fiscal year 2022-2023, resulting in an approximate annual employer cost of $2.41 billion.

ACTUARIALLY DETERMINED EMPLOYEE CONTRIBUTION RATES

Members participating in the closed contributory plan tiers (General Plans A, B, C and D and Safety Plans A and B) contribute using age-based rates to fund a defined annuity at a specified age and to fund one-half the cost-of-living benefit. Employee age-based annuity contribution rates are affected by changes made in the salary, investment return, and life expectancy assumptions and will vary according to the employee's age at first membership.

Members participating in the open plan tiers (General Plan G and Safety Plan C) are required to contribute at least one-half of the plan's total normal cost rate. The actuary recommends changes to employee contribution rates in these tiers to reflect the Plan's normal cost rates.

Since new assumptions were adopted for this 2022 Actuarial Valuation, the actuary is recommending changes to the member contribution rates for the contributory General and Safety Plans. The majority of member contribution rates for closed contributory plan tiers (General Plans A, B, C and D, and Safety Plans A and B) are increasing. There are a few entry age points in General Plan A where member contribution rates decrease less than 1.0% and some member contribution rates in Safety Plan A remain the same.

Member contribution rates for all plans at every entry age can be found in the 2022 Actuarial Valuation report's Appendix D on page 109.

ACTUARIAL RISK DISCUSSION

Under Actuarial Standard of Practice (ASOP) Number 51 (ASOP 51), first effective with the June 30, 2019 valuation, the 2022 Actuarial Valuation report includes a risk discussion (see pages 43-46) in which Milliman assesses and discloses the main risks associated with measuring pension liabilities and the determination of pension plan contributions. This section is intended to identify significant risks, assess the risks, and disclose plan maturity measures and historical information necessary to understand the risks. In addition to the ASOP 51 discussion in the annual valuations, Milliman will prepare a separate ASOP 51 risk report based upon this 2022 Actuarial Valuation report, which will be placed on the Board agenda and discussed at a future meeting.

ACTUARIAL REVIEWS

An actuarial review was conducted by Cavanaugh MacDonald Consulting (CMC) on Milliman's 2022 Experience Study and Actuarial Valuation reports. CMC concluded that "We find the June 30, 2022 actuarial valuation results to be reasonable and accurate,

based on the assumptions and methods used. The valuation was performed by qualified actuaries and was performed in accordance with the principals and practices prescribed by the Actuarial Standards Board." The next triennial Experience Study and Valuation reviews will be performed as of June 30, 2025.

CONCLUSION

The LACERA Board of Investments adopted the Retirement Benefit Funding Policy to require the employer contribution rates to be adjusted annually based on the LACERA actuary's annual valuation. Member contribution rates are updated annually for plans established after January 2013 and triennially (every three years) for all other legacy plans (or at such other times that valuation assumptions change). The Plan actuary, Milliman, performed the 2022 actuarial valuation; the employer contribution rates (all tiers) will change effective July 1, 2023 due to assumption and method changes, the less-than-assumed investment return for fiscal year 2021-2022, and payroll growth less than expected. Milliman recommends increases to the employee contribution rates for nearly all members in General and Safety Plans. California State Law requires LACERA to transmit the contribution rate recommendations to the Board of Supervisors on or before May 15 and for the Board of Supervisors to implement the recommended contribution rates by July 1 but no later than September 29.

LACERA's consulting actuaries, Nick Collier and Craig Glyde with Milliman, will be attending the March 8, 2023 meeting to discuss the 2022 Actuarial Valuation report and answer any questions you may have.

Attachments

I. Milliman's 2022 Actuarial Valuation of Retirement Benefits Report
II. Milliman's 2022 Investigation of Experience for Retirement Benefit Assumptions Report
III. Cavanaugh Macdonald's Actuarial Review of the 2022 Valuation Report
IV. Cavanaugh Macdonald's Actuarial Review of the 2022 Experience Study Report
V. Milliman's presentation slides (includes Cavanaugh Macdonald's review slides)

SHK:tg
2022_Actuarial Valuation of Retirement Benefits BOI Memo Final

c: Luis A. Lugo, LACERA Laura Guglielmo, LACERA JJ Popowich, LACERA
Jonathan Grabel, LACERA Steven P. Rice, LACERA Richard Bendall, LACERA
Fesia Davenport, CEO, Los Angeles County

Attachment I

Milliman's 2022 Actuarial Valuation of Retirement Benefits Report

Los Angeles County Employees Retirement Association

Actuarial Valuation of Retirement Benefits

June 30, 2022

Prepared by:

Nick J. Collier, ASA, EA, MAAA
Consulting Actuary

Craig Glyde, ASA, EA, MAAA
Consulting Actuary

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Issued February 16, 2023

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February 16, 2023

Board of Investments
Los Angeles County Employees Retirement Association
300 North Lake Avenue, Suite 820
Pasadena, CA 91101-4199

Re: **Los Angeles County Employees Retirement Association as of June 30, 2022**

Dear Trustees of the Board:

As requested, we have performed an actuarial valuation of retirement benefits for the Los Angeles County Employees Retirement Association (LACERA) as of June 30, 2022 that is to be used in determining the contribution rates effective July 1, 2023. The major findings of the valuation are contained in this report. This report reflects the benefit provisions and contribution rates in effect as of June 30, 2022, and LACERA's Retirement Benefit Funding Policy (Funding Policy) that was adopted in December of 2009 and amended as of February 2013, and it reflects changes adopted at the Board of Investments December 2022 meeting.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by LACERA's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for LACERA have been determined on the basis of actuarial assumptions and methods that are individually reasonable (taking into account the experience of LACERA and reasonable expectations); and that, in combination, offer a reasonable estimate of anticipated experience affecting LACERA. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of the Plan and to reasonable expectations, which, in combination, represent a reasonable estimate of anticipated experience for LACERA.

The valuation results were developed using models employing standard actuarial techniques. 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. Reliance on other experts is reflected in Milliman's capital market assumptions, and in Milliman's expected return model maintained by Milliman investment consultants.

This valuation report is only an estimate of LACERA's financial condition as of a single date. It can neither predict LACERA's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of benefits, only the timing of 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, although for informational purposes we have shown valuation results at +/- 0.5% on the investment return assumption at the end of the Executive Summary.

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 or additional cost or contribution requirements based on the Plan's funded status); 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. The Board of Investments has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix A of this report.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts of LACERA. The calculations in the enclosed report have been made on a basis consistent with our understanding of LACERA's funding requirements as stated under their Funding Policy. 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. Milliman will provide LACERA financial reporting results relevant to GASB Statements No. 67 and 68 in separate reports.

Milliman's work is prepared solely for the internal business use of LACERA. 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) LACERA may provide a copy of Milliman's work, in its entirety, to LACERA'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 LACERA.

(b) LACERA 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.

The consultants who worked on this assignment are retirement actuaries. Milliman's advice is not intended to be a substitute for qualified legal, investment, or accounting counsel.

The signing actuaries are independent of the plan sponsors. We are not aware of any relationship that would impair the objectivity of our work.

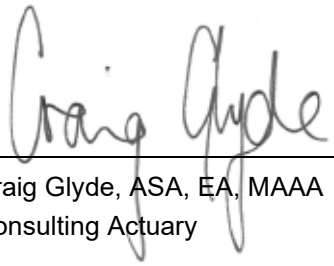
On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the 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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

We would like to express our appreciation to members of LACERA staff who gave substantial assistance in supplying the data on which this report is based.

We respectfully submit the following report, and we look forward to discussing it with you.

Sincerely,

Nick Collier, ASA, EA, MAAA
Consulting Actuary



Craig Glyde, ASA, EA, MAAA
Consulting Actuary

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Appendices

1. Summary of Findings

2022 Valuation Results

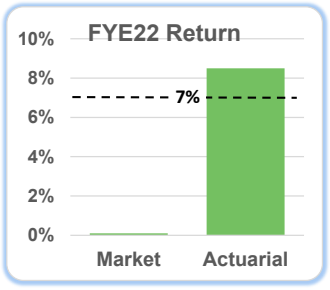
	Valuation Date	
	June 30, 2022	June 30, 2021
Employer Contribution Rate	25.84% (1)	24.46% (2)
Funded Ratio	79.6%	79.3%

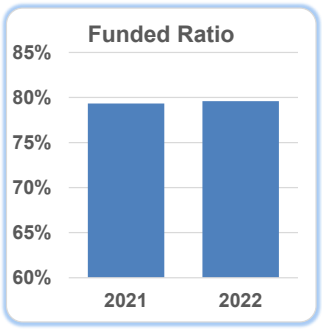
1. *The June 30, 2022 valuation calculates the employer contribution rate effective July 1, 2023.*
2. *The June 30, 2021 valuation calculates the employer contribution rate effective July 1, 2022.*

This report presents the results of the June 30, 2022 actuarial valuation. This valuation determines the member and employer contribution rates payable starting July 1, 2023. Several key points are summarized below:

Investment Returns

For the fiscal year ending in 2022, the fund returned 0.1% on a market-value basis (net of investment expenses). In total, there was a $6.7 billion loss on market assets relative to the assumed rate of return of 7.0%. The return on the actuarial value of assets was 8.5% (equivalent to a gain of $1.0 billion relative to the assumed rate) as a result of recognizing deferred investment gains from prior years. Effective June 30, 2022 there are deferred investment gains of $0.3 billion to be recognized evenly over the next three fiscal years.





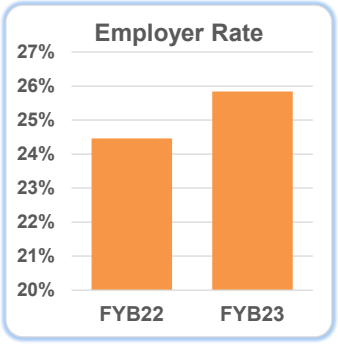
Funded Ratio

The Funded Ratio increased from 79.3% to 79.6%. The recognition of deferred investment gains from prior years (primarily the strong return for fiscal year 2020-2021) and contributions to amortize the Unfunded Actuarial Accrued Liability (UAAL) increased the Funded Ratio. The less-than-assumed investment return for fiscal year 2021-2022, assumption and method changes adopted at the December 2022 Board of Investments (BOI) meeting, and CPI / retiree COLAs greater than assumed partially offset the positive factors. On a market-value basis, the Funded Ratio decreased from 88.3% to 79.9%.

The Analysis of Change – Funded Ratio section that follows later in Section 1 provides an analysis of the sources of change in the Funded Ratio since last year.

Employer Contribution Rate

The total calculated employer contribution rate increased from the prior valuation by 1.38% of payroll, from 24.46% to 25.84%. The most significant factors causing this increase were the assumption and method changes, the less-than-assumed investment return for fiscal year 2021-2022, and payroll growth less than expected. These factors were partially offset by the rate-reducing impact of the recognition of deferred investment gains from prior years (primarily the strong return for fiscal 2020-2021).



The Analysis of Change – Employer Contribution Rate section provides an analysis of the sources of change in employer contribution rates since last year. In addition, the section "Projected Future Employer Contribution Rates" below shows a 10-year projection of employer contribution rates.

Member Contribution Rates

New member contribution rates are recommended for all Plans effective July 1, 2023 based on the new assumptions adopted with the 2022 Investigation of Experience. Member contribution rates for all plans, except General Plans E and G and Safety Plan C, vary based on a member's entry age to LACERA and the underlying actuarial assumptions. General Plan G and Safety Plan C member rates are required to be equal to 50% of the Gross Normal Cost rate of the respective plan which is dependent on the actuarial assumptions and the plan membership.

Comparing the member contribution rates calculated in this valuation with the rates members are currently paying, we have the following observations.

- Legacy plans (General A-D & Safety A-B): Member contribution rates generally increased on a relative basis in the range of 1% to 4% with younger entry ages tending to have the larger relative increases. These increases were primarily due to the new assumptions adopted.
- General Plan G: The member contribution rate increased by 0.16% of pay (a relative increase of less than 2%). This increase was primarily due to the new assumptions adopted and to changes in the demographics of the plan's active membership.
- Safety Plan C: The member contribution rate increased by 0.43% of pay (a relative increase of 3%). This increase was primarily due to the larger-than-assumed increase in the PEPRA compensation limit and lower salary increases than expected by the assumptions. Each of these factors results in an increase in the Normal Cost rate for members whose projected compensation is greater than the projected PEPRA compensation limit, based on the assumed future salary and limit increases. A significant portion of Safety Plan C active members are projected to have compensation greater than the PEPRA compensation limit (although very few are currently at the limit).

Member contribution rates are discussed in Section 5 of this report.

Economic and Demographic Assumptions

The assumptions developed as a result of the 2022 Investigation of Experience study, described in our report dated January 6, 2023 were adopted by the BOI for use in this valuation. These changes include updating the rates of assumed merit salary increases, updating the assumed rates of service retirement to reflect a member's length of service in addition to their age, and updating the mortality improvement scale to reflect the most recent improvement scale published by the Society of Actuaries Retirement Plans Experience Committee (RPEC). Of these changes, the update to the service retirement assumption had the greatest single impact on the results of this valuation.

The net effect of all the assumption changes was an increase in the Unfunded Actuarial Accrued Liability (UAAL) of approximately $750 million effective June 30, 2022, a decrease in the Funded Ratio of 0.7%, and an increase in the employer contribution rate of 0.92% of payroll.

The new assumptions generally caused increases in the member contribution rates for all Plans.

Actuarial Methods

As a result of the 2022 Investigation of Experience study, the BOI adopted changes in actuarial methods for use in this valuation. These changes include designating the Supplemental Targeted Adjustment for Retirees (STAR) Reserve as a Non-Valuation Reserve. The impact of this change is an increase in UAAL of $614 million effective June 30, 2022, a decrease in the Funded Ratio of 0.7%, and an increase in the employer contribution rate of 0.46% of payroll.

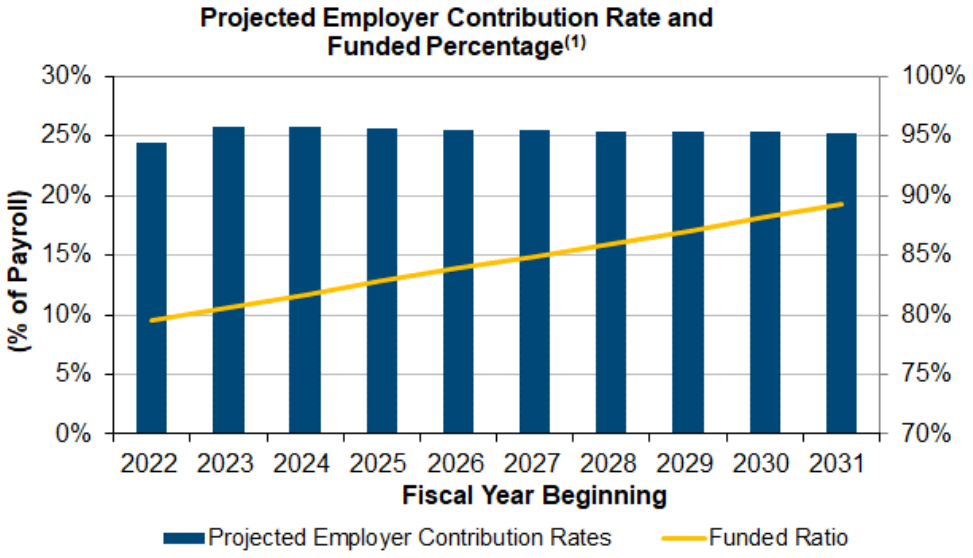
Other changes included a modification to the actuarial asset smoothing method which should result in slightly smoother employer contribution rates in the future. The modified method still smooths asset gains and losses over 5 years; however, before smoothing is applied, the current year gain (or loss) is offset against prior losses (or gains), if any. In addition to smoother employer contribution rates, the offsetting method is expected to reduce the likelihood and magnitude of spikes or dips in employer contribution rates in most cases. To implement this new method, investment gains and losses were recognized under the prior asset valuation method and the remaining deferred gains and losses were then combined and offset. As a result, effective June 30, 2022 Valuation Assets are the same under the new method as under the prior method, and there is no impact on the UAAL, Funded Ratio or employer contribution rate.

Projected Future Employer Contribution Rates

The employer contribution rate beginning July 1, 2023 is 25.84% of payroll, which is a weighted average for all LACERA plans. The actual percent of payroll to be contributed by the employers varies by plan as shown in Exhibit 11.

The calculated employer contribution rate is effective for the fiscal year beginning July 1, 2023. Employer contribution rates in future years will be largely dependent on actual experience relative to that projected by the actuarial assumptions, particularly the investment return assumption. Additionally, if the assumptions change, this could also have a material impact on future results. Even if all actuarial assumptions are met over the next few years and there are no changes in the underlying assumptions, we project additional changes in future employer contribution rates as deferred investment gains and losses are recognized. As will almost certainly be the case, actual experience will not exactly match the actuarial assumptions over those years, and a different pattern of future employer contribution rates will emerge.

To illustrate this potential variance, we have performed a 10-year projection of the employer contribution rate and Funded Ratio assuming that all actuarial assumptions are met (including 10 years of investment returns based on market value of 7.0% per year). This projection is shown in the chart below.



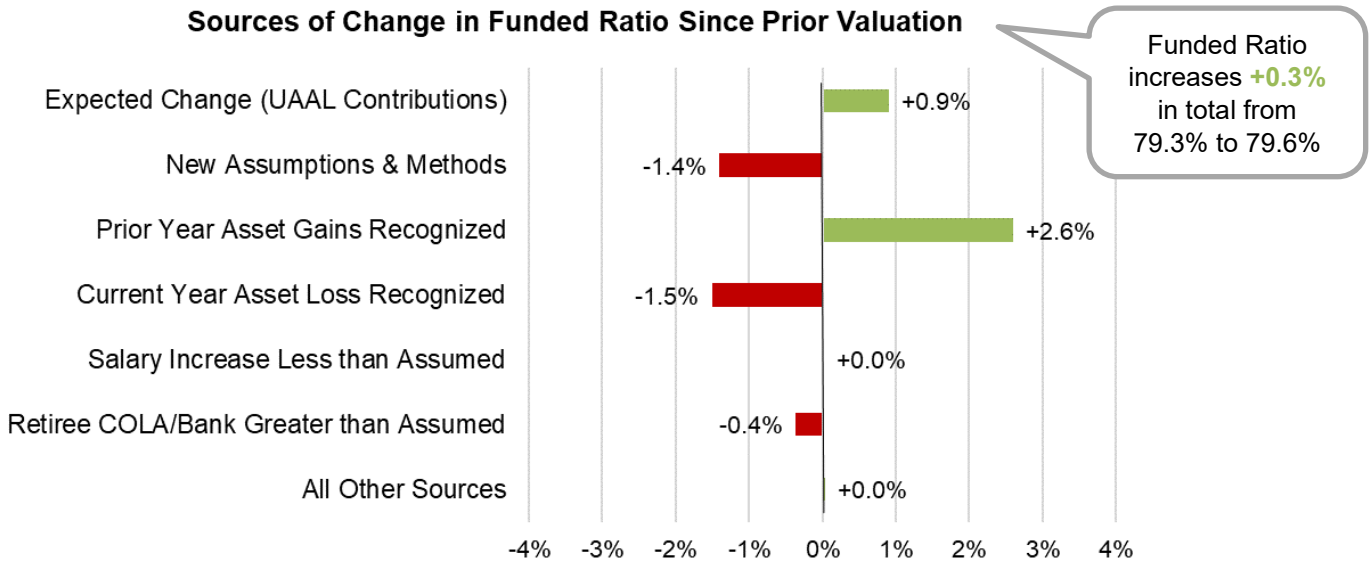
1. Projections assume that actuarial assumptions are met after June 30, 2022, and reflect the scheduled recognition of asset gains and losses currently being deferred.

As shown in the chart above, if all assumptions are met in future years, the employer contribution rate will decrease slightly from the 25.84% rate calculated in this valuation over the next few years and then stabilize at

about 25% of pay. Under the projection scenario, the Funded Ratio will be approximately 89% as of June 30, 2031 if all assumptions are met. However, future results will vary as actual experience will not exactly meet the assumptions.

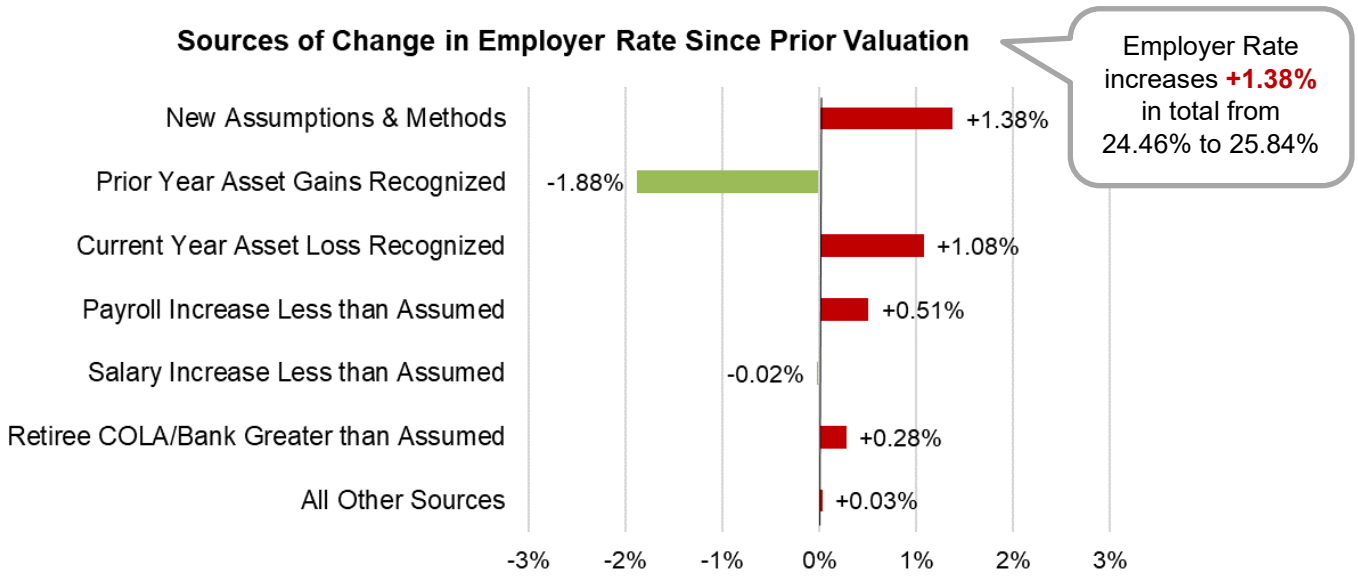
Analysis of Change – Funded Ratio

The following table shows an analysis of the primary causes of the change in the Funded Ratio since the last valuation. The recognition of a portion of the prior year's investment gains was the most significant factor causing the Funded Ratio increase, although it was most offset by a number of other factors.



Analysis of Change – Employer Contribution Rate

The following table shows an analysis of the primary causes of the change in the employer contribution rate since the last valuation. The recognition of a portion of the current year's investment loss and the new assumptions and methods were the most significant factors causing the increase in the employer contribution rate.

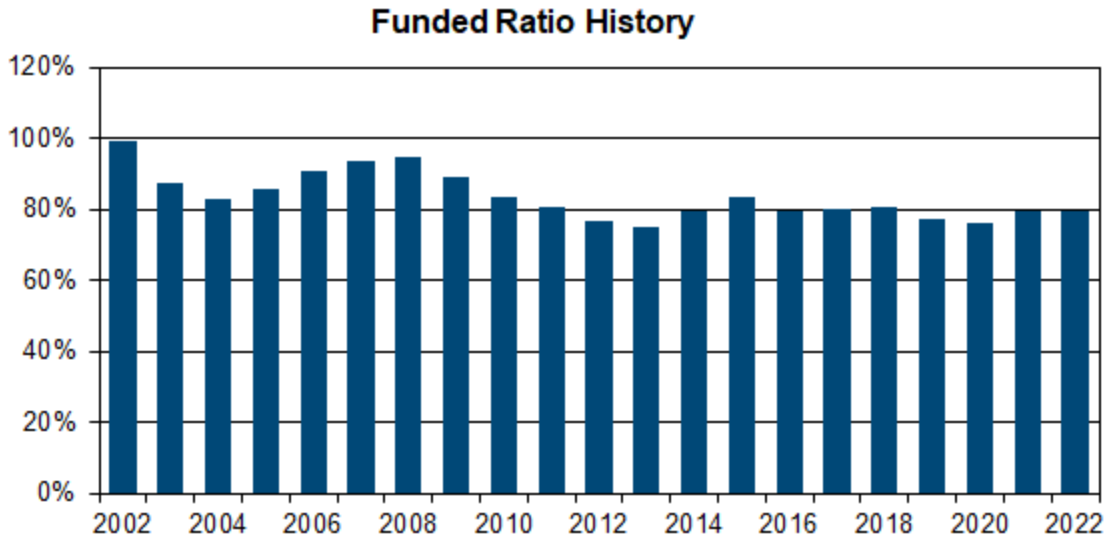


Funding Progress

One measure of the funding adequacy of the system is the Funded Ratio, which compares the Valuation Assets (the actuarial value of assets net of certain non-valuation reserves) to the Actuarial Accrued Liability (AAL). The Funded Ratio shown in this valuation is appropriate for assessing the future contributions needed. Other calculations may be necessary for other purposes, such as assessing the sufficiency of current system assets to satisfy the estimated cost of settling the system's accrued benefit obligations.

As shown in the graph that follows, the Funded Ratio was 94.5% as of June 30, 2008, but decreased steadily over the five-year period following the economic downturn to a low of 75.0% as of June 30, 2013 as asset losses were gradually recognized. The Funded Ratio has increased slightly since that time, although this increase has been slow as the actuarial assumptions have been strengthened over the period, thereby increasing the AAL and offsetting some of the increase in the Funded Ratio from other sources.

A historical perspective of the Funded Ratio is shown in the following chart.



Assets

On June 30, 2022, the market value of the fund (including non-valuation reserves) was $70.3 billion. The actuarial value of assets was $70.0 billion, split between $1.3 billion of Non-Valuation Assets and $68.7 billion of Valuation Assets. The actuarial value of assets is approximately 100% of the market value of assets.

On a market-value basis, for the fiscal year ended June 30, 2022, LACERA earned 0.1% net of investment expenses, as reported by LACERA in the June 30, 2022 Annual Comprehensive Financial Report (ACFR). The market value of assets is used in calculating the actuarial value of assets. Under the actuarial asset method, investment gains and losses are generally recognized (or smoothed in) over a five-year period . Due to the recognition of current and deferred asset gains and losses (in total a net asset gain), the return on the actuarial valuation of assets for the most recent fiscal year is 8.5% net of investment and administrative expenses, which is higher than the assumed return for the prior year of 7.0%.

Valuation Assets are used in the calculation of the UAAL contribution rate and Funded Ratio. Valuation Assets are equal to the actuarial value of assets less certain non-valuation reserves. The Valuation Assets of $68.7 billion are equal to 79.6% of the $86.3 billion AAL.

The non-valuation reserves are set aside for obligations or contingencies and are excluded from the assets used in the funding valuation. They are not used to fund the retirement benefits unless explicitly stated. As of June 30, 2022, the non-valuation reserves include:

- the Contingency Reserve, which is equal to 1% of the market value of assets, or $703 million, and
- the STAR Reserve of $614 million.

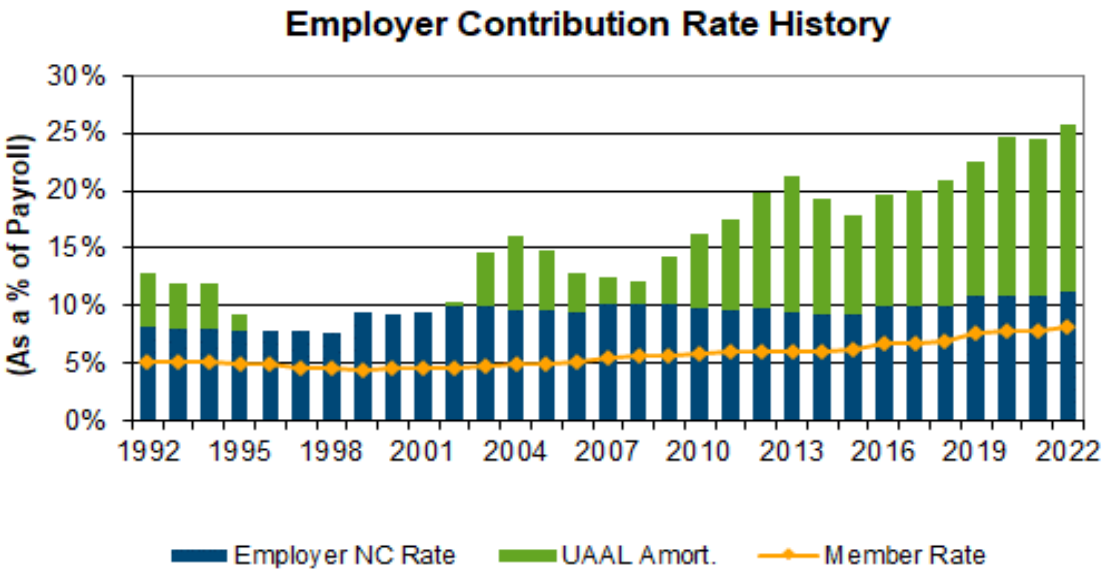
Note that this Contingency Reserve is different than the Contingency Reserve amount determined by LACERA for accounting purposes and included in the ACFR.

Future Impact of Recognition of Deferred Gains/Losses

The smoothing method is currently deferring $261 million in investment gains. As the currently deferred gains are recognized over upcoming valuations, it is projected there will be small decreases in the calculated employer contribution rate. The potential future impact of the recognition of these deferred gains on the projected employer contribution rate is included in the graph on page 3.

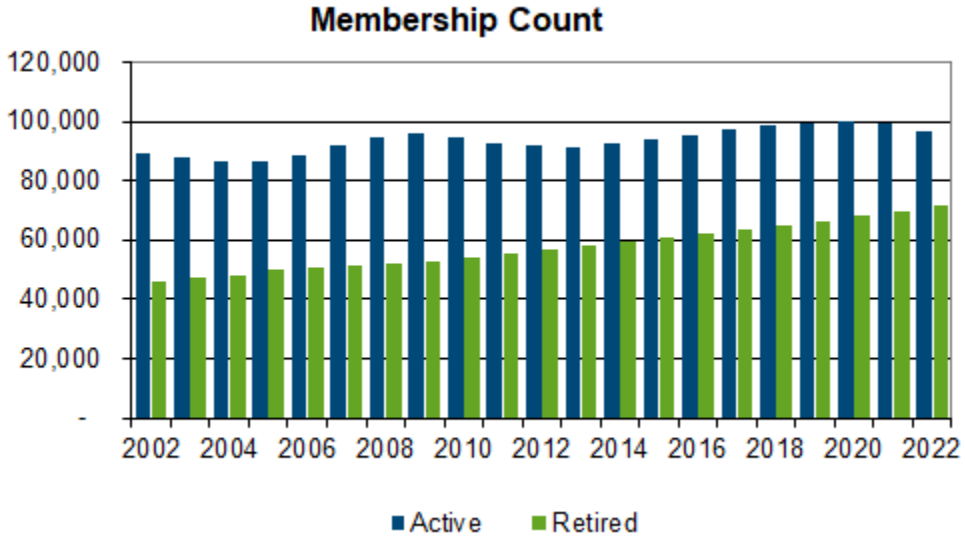
Employer Contribution Rate History

Based on the results of the valuation, the calculated employer contribution rate will increase for the fiscal year beginning in 2023 to a rate of 25.84% of pay, compared to 24.46% for the fiscal year beginning in 2022. A historical perspective of the employer contribution rates is shown in the following chart.

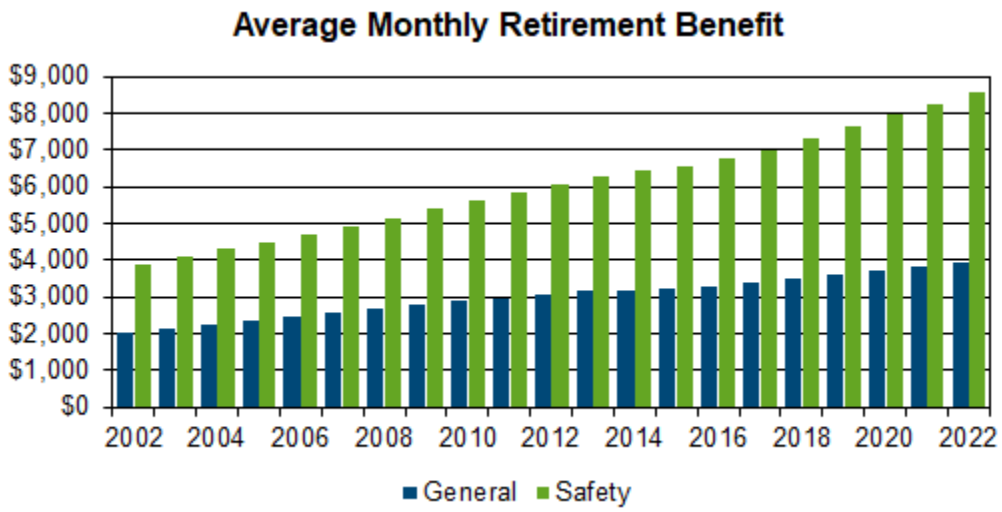


Member Information

Active payroll and active membership have both decreased since 2021. As of June 30, 2022, the annualized payroll is $9.0 billion for 96,539 active members. This reflects a 0.3% decrease in total payroll and a 2.6% decrease in the number of active members. Average member pay increased by 2.3% over the period.



Retired member counts and average retirement benefit amounts continue to increase steadily. For 2022, there were 71,571 retired members and beneficiaries with an average benefit of $4,832 per month. This represents a 3.0% increase in count and a 3.3% increase in the average monthly benefit.



The charts show that over the last 20 years the number of retired members has grown faster than the number of active members, and the average monthly benefit of retired members and beneficiaries has roughly doubled. This is typical of a maturing retirement system. The increasing number of retirees (relative to active members) and average monthly benefit is a key driver of the negative cashflows experienced over the last several years, and that are projected to continue growing. Cashflow history and projections are shown and described in more detail in Section 8.

Analysis of Change in Member Population

The following table summarizes the year-to-year change in member population.

	Active Members	Inactive Members	Service Retired Members	Disabled Retired Members	Beneficiaries in Pay	Total
As of June 30, 2021	**99,101**	**17,188**	**49,766**	**10,313**	**9,418**	**185,786**
New Members	4,096	224	7		844	5,171
Status Change:						
to Active	135	(134)	(1)			-
to Inactive	(2,666)	2,666				-
to Service Retirement	(3,276)	(416)	3,692			-
to Disabled Retirement	(242)	(11)	(241)	494		-
Refunds	(397)	(344)				(741)
Terminated non-vested	(27)					(27)
Benefits Expired			(2)		(14)	(16)
Deaths	(185)	(126)	(1,750)	(358)	(597)	(3,016)
As of June 30, 2022	**96,539**	**19,047**	**51,471**	**10,449**	**9,651**	**187,157**

Note: Inactive Members include non-vested former members who have not taken a refund of their contributions.

Sensitivity to Investment Return Assumption

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing the ultimate cost. Of the assumptions, the investment return generally has the biggest impact. The following table provides a simple analysis on how the short-term costs are affected by the investment return assumption. Note that the long-term cost of the Plan will be largely driven by actual investment returns and other experience; the assumptions used in the valuation impact the timing of the contributions over the long term.

	Investment Return Assumption		
	Current 7.00%	+0.5% 7.50%	-0.5% 6.50%
Employer Contribution Rate	25.84%	20.90%	31.01%
Change		-4.94%	5.17%
Funded Ratio	79.6%	84.5%	74.8%
Change		4.9%	-4.8%

Risk Discussion

Additional risks to the Plan are described in more detail in Section 9: Risk Disclosure. Some key points that can be seen in this report are:

- **Maturity**: As previously discussed, LACERA continues to mature as a system. One example of the impact of this maturity is that the employer contribution rate is becoming more sensitive to investment gains or losses and other experience. This sensitivity is measured by the asset and liability volatility ratios discussed in Section 9.
- **Risk Factors**: We believe investment returns are the greatest potential risk to future valuation results of LACERA. One way to measure the potential impact is using the Asset Volatility Ratio (AVR), which is a measure of the level of assets to payroll. LACERA's AVR of 7.6 implies that a 10% investment gain or loss relative to the assumed 7% investment return (that is, an investment return of -3% or +17%) will result in a 5.4% of pay increase (or decrease) in the employer contribution rate (after investment gains or losses are smoothed in).

  Payroll growth lower than assumed by the assumptions is another potential risk as it will result in increases in the employer contribution rate. Although the employer contribution rate may increase, total employer contributions may not be as significantly impacted as the higher rates would be applied to a smaller payroll base.
- **Variation**: Although we believe the actuarial assumptions provide a reasonable estimate of future experience, one thing is certain: future results will vary from those projected by the actuarial assumptions, either better or worse. One way to assess the potential future variation is to look at the past. The Funding Progress and Employer Contribution Rate History subsections above provide a historical perspective of LACERA's Funded Ratios and the employer contribution rate. These both show noticeable variation, both up and down, over the last 20 years.

Summary Valuation Results

Exhibit 1 on the following page presents a summary of key valuation elements as of June 30, 2022 and June 30, 2021 and shows the relative change over the past year. More detail on each of these elements can be found in the following sections and exhibits of this report.

Exhibit 1
Summary of Significant Valuation Results

	June 30, 2022	June 30, 2021	Percentage Change
Total Membership			
A. Active Members	96,539	99,101	(2.6)%
B. Retired Members & Beneficiaries	71,571	69,497	3.0%
C. Vested Former Members[1]	19,047	17,188	10.8%
D. Total	187,157	185,786	0.7%
Pay Rate as of valuation date			
A. Annual Total ($millions)	$ 9,048	$ 9,080	(0.3)%
B. Monthly Average per Active Member	7,811	7,635	2.3%
Average Monthly Benefit Paid to Current Retirees and Beneficiaries			
A. Service Retirement	4,707	4,577	2.8%
B. Disability Retirement	6,744	6,440	4.7%
C. Surviving Spouse and Dependents	3,429	3,289	4.3%
D. Total	4,832	4,679	3.3%
Actuarial Accrued Liability ($millions)			
A. Active Members	36,683	35,124	4.4%
B. Retired Members	48,161	45,397	6.1%
C. Vested Former Members	1,476	1,377	7.2%
D. Total	86,320	81,898	5.4%
Assets			
A. Market Value of Fund ($millions)	70,290	73,012	(3.7)%
B. Actuarial Value ($millions)			
1. Valuation Reserves	68,712	64,909	5.9%
2. Non-valuation Reserves	1,317	730	80.4%
C. Annual Investment Return			
1. Market Basis (Net Return)	0.1%	25.2%	n/a
2. Valuation (Actuarial) Basis	8.5%	10.4%	n/a
Unfunded Actuarial Accrued Liability ($ millions)	$ 17,608	$ 16,989	3.6%
Employer contribution rate for all plans combined as a percent of total payroll			
A. Gross Normal Cost	19.33%	18.75%	3.1%
B. Member Contributions[2]	(8.21)%	(7.87)%	4.3%
C. Employer Normal Cost	11.12%	10.88%	2.2%
D. UAAL Amortization	14.72%	13.58%	8.4%
E. Employer Contribution Rate	25.84%	24.46%	5.6%
Funded Ratio	79.6%	79.3%	0.4%
Results Based on Market Value (Informational Purposes Only)			
Calculated Contribution Rate	25.63%	18.57%	38.1%
Funded Ratio (excluding non-valuation reserves)	79.9%	88.3%	(9.5)%

1. Includes non-vested former members with contributions on deposit.
2. Includes non-contributory members. The average rate for contributory plans increased from 9.16% to 9.45%.

2. Scope of the Report

This report presents the actuarial valuation of the Los Angeles County Employees Retirement Association as of June 30, 2022. This valuation was requested by the Board of Investments. Section 31453 of the County Employees Retirement Law of 1937 (the CERL) requires an actuarial valuation to be performed at least every three years for the purpose of setting contribution rates. The 2022 valuation meets this requirement. Under LACERA's Funding Policy, annual valuations determine the employer contribution rates each year. Member contribution rates for all plans except General Plan G and Safety Plan C are set in years in which relevant actuarial assumptions are altered. For members of General Plan G and Safety Plan C, member contribution rates are recalculated each year, based on one-half of the Plan's normal cost rate.

A summary of the findings resulting from this valuation is presented in the previous section.

Section 3 describes the assets and investment experience of the Plan.

- The assets and investment income are presented in Exhibits 2-4.
- Exhibit 5 develops the actuarial value of assets as of June 30, 2022.
- Exhibit 6 develops the Valuation Assets used for funding benefits.

Section 4 describes the benefit obligations of LACERA.

- Exhibit 7 is the Actuarial Balance Sheet.
- Exhibit 8a analyzes the change in UAAL, and Exhibit 8b shows a history of these changes.

Section 5 discusses the member contribution rates.

Section 6 discusses the employer contributions rates.

Section 7 discloses supplemental information for use in the Annual Comprehensive Financial Report (ACFR). Milliman provides LACERA financial reporting information relevant to GASB Statements No. 67 and 68 in separate reports.

Section 8 shows the estimated cash flow of the Plan, including a projection of both contributions and benefit payments.

Section 9 provides a discussion of the risks to the Plan. A more comprehensive analysis of risks was provided in Spring of 2022 as part of Milliman's Risk Assessment based on the June 30, 2021 actuarial valuation.

This report includes several appendices:

Appendix A	A summary of the actuarial procedures and assumptions used to estimate liabilities and contributions.
Appendix B	A summary of the current benefit structure, as determined by the provisions of governing law on June 30, 2022.
Appendix C	Schedules of valuation data classified by various categories of plan members.
Appendix D	Member contribution rates by plan.
Appendix E	Historical information.
Appendix F	A glossary of actuarial terms used in this report.

3. Assets

In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2022. On that date, the assets available for the payment of retirement benefits are appraised. These assets are compared with the actuarial liabilities (both accrued and future) for current members, which are generally in excess of the actuarial assets. The purpose of the valuation is to determine what future contributions by the members and employers are needed to pay all expected future benefits.

This section of the report looks at the assets used for funding purposes. In the next section, the actuarial liabilities will be discussed. Section 6 reviews the process for determining required contributions based on the relationship between the Valuation Assets and the actuarial liabilities.

A historical summary of the Plan's assets is presented below (dollar amounts in billions).

		Actuarial Value		
	Market Value of Total Assets	Non-Valuation Reserves	Valuation Assets	Total Fund Return (%)[1]
2013	$ 41.8	0.4	39.9	11.9
2014	47.7	0.5	43.7	16.5
2015	48.8	0.5	47.3	4.1
2016	47.8	0.5	49.4	0.8
2017	52.7	0.5	52.2	12.7
2018	56.3	0.6	55.2	9.0
2019	58.3	0.6	57.6	6.4
2020	58.5	0.6	59.8	1.8
2021	73.0	0.7	64.9	25.2
2022	70.3	1.3	68.7	0.1

1. As reported in the Investment Section of LACERA's ACFR for the fiscal year ended June 30, 2022. All returns are shown net of investment expenses and calculated on a time-weighted basis.

On June 30, 2022, the total market value of the fund, less current liabilities, was $70.3 billion. The actuarial value of the fund was determined to be $70.0 billion, including the non-valuation reserves. The average total fund return for the last 10 years is 8.6% net of fees, as reported by LACERA.

Financial Exhibits

Exhibit 2 presents a Statement of Fiduciary Net Position and Exhibit 3 presents a Statement of Changes in Fiduciary Net Position. Exhibit 4 describes the allocation of LACERA's assets by the various reserve values determined for accounting purposes as disclosed in the audited financial statements.

Exhibits 2-4 are taken directly from data furnished to us by LACERA in its annual financial report. We have accepted these tables for use in this report without audit, but we have reviewed them both for the prior year and the current year for reasonableness and consistency with previous reports.

Actuarial Asset Method

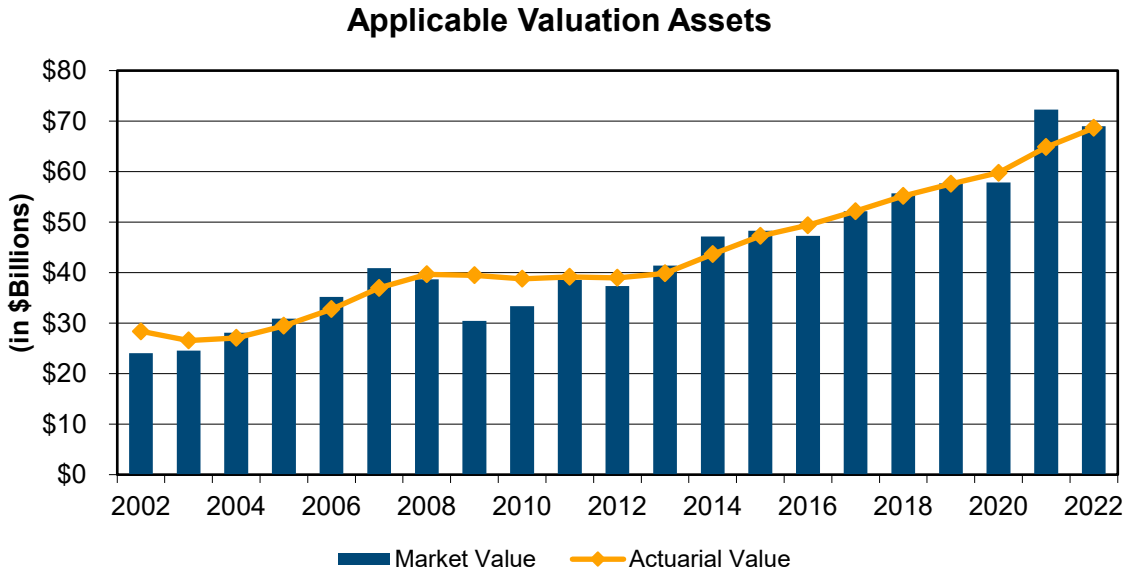
The actuarial asset method projects the expected market value of assets based on the prior year's market value of assets, the actual cash flow of contributions and benefit payments, and the assumed investment rate of return.

For the previous year, the assumed rate of return was 7.0%, net of all expenses. The difference between the actual market value and the expected market value is recognized evenly (also referred to as “smoothing”) over a five-year period.

Effective June 30, 2022 the actuarial asset method employs a method of offsetting investment gains and losses. In this valuation all deferred investment gains and losses are combined and offset into one single amount such that the actuarial asset value is unchanged from the prior method. In future years, to the extent there is an investment loss for the year and there are unrecognized investment gains from previous years, or to the extent that there is an investment gain for the year and there are unrecognized investment losses from previous years, the gain or loss for the year shall be used to offset unrecognized gains or losses from previous years in the order of oldest to most recent. Any remaining gain or loss for the year is recognized over a five-year period. With this modification to the actuarial asset method, in any given valuation only investment gains or losses will be present, which is expected to result in a less volatile actuarial value of assets.

Actuarial Value of Assets

The development of the June 30, 2022 actuarial value of assets is shown in Exhibit 5 and reflects the combination of all investment gains and losses as of that date into one single amount. Note the smoothing process is deferring past investment gains and losses, and is currently in a net actuarial gain position. The result is an actuarial value of assets that is less than the June 30, 2022 market value by $0.3 billion. The following graph shows a historical comparison of the actuarial and market assets used for valuation purposes.



Funding Policy

Under LACERA’s Retirement Benefit Funding Policy a Funded Ratio equal to 100% is the Funding Goal. Note that although the allocation of assets used in the actuarial valuation is similar to the process LACERA uses for accounting purposes, there are some differences, including the earnings considered for interest crediting purposes.

For funding purposes and for setting employer contributions rates, recognized earnings for a plan year is the recognized investment income as determined by the actuarial asset method and includes both unrealized income

and net realized income, together with the prior balance in the Contingency Reserve. The allocation of recognized earnings is performed once a year as of the valuation date in the following order of priority:

Priority 1: Allocate to the Member Reserve so the Actuarial Asset allocation to that Reserve equals the accounting value for that Reserve on the valuation date.

Priority 2: Allocate to the Advanced Employer Contributions Reserve so the Actuarial Asset allocation to that Reserve equals the accounting value for that Reserve on the valuation date.

Priority 3: Allocate to the Employer Reserve so the Actuarial Asset allocation to that reserve equals the accounting value for that Reserve on the valuation date.

Priority 4: Allocate to the County Contribution Credit Reserve so the Actuarial Asset allocation to that reserve equals the accounting value for that Reserve on the valuation date. Note: This Reserve is not a Valuation Reserve.

Priority 5: Allocate to the Employer Reserve so the total amounts allocated equal one-year's interest at the assumed interest rate used in the actuarial valuation as of the preceding valuation date to the extent there are positive recognized earnings to allocate.

Priority 6: Allocate to the Contingency Reserve an amount equal to 1% of the Market Value of Assets as of the valuation date to the extent there are positive recognized earnings to allocate.

Priority 7: Allocate to the Employer Reserve an amount, if necessary, when combined with other Valuation Reserves, to provide 100% funding of the AAL as of the valuation date to reach the Funding Goal. In the event there are negative recognized earnings, allocate the entire amount.

Priority 8: The Board may consider additional actions as permitted under the County Employee Retirement Law (CERL) using funds in excess of the amount needed to meet the Funding Goal for funding discretionary benefits. "Excess Earnings" as defined in the County Employees Retirement Law (CERL) may be appropriated upon reaching the Funding Goal; however, the Board may consider adjustment to the employer's contributions only upon satisfying California Government Code Section 7522.52(b).

Valuation Assets

Valuation Assets are the actuarial value of the fund, less the value of any Non-Valuation Reserves. Non-Valuation Reserves include Contingency Reserves and other reserves that have been set aside for current liabilities and special benefits to be funded outside of the actuarially determined contribution rates. The Contingency Reserve is set at a minimum of 1.0% of the market value of the total assets.

Effective June 30, 2022 the STAR Reserve is considered a Non-Valuation Reserve. Consistent with the exclusion of the STAR Reserve from Valuation Assets, the liability for any STAR benefits that may be granted in the future is not included in the liability portion of valuation. The June 30, 2022 STAR Reserve accounting value of $614 million was excluded from Valuation Assets and as such is not used to determine the employer contribution rates for the fiscal year beginning July 1, 2023.

The Non-Valuation Reserves shown in Exhibit 6 for funding purposes are not the same as those shown in the audited financial statements and in Exhibit 4.

Exhibit 2
Statement of Fiduciary Net Position
As of June 30, 2022 and June 30, 2021

	2022	2021
Assets		
Cash and Short-Term Investments	$ 3,058,494,546	$ 3,034,716,419
Cash Collateral on Loaned Securities	1,401,076,878	1,198,528,379
Receivables		
Contributions Receivable	119,635,183	114,101,681
Accounts Receivable - Sale of Investments	355,515,478	439,841,239
Accrued Interest and Dividends	226,860,897	169,925,118
Accounts Receivable - Other	10,226,949	109,138,958
Total Receivables	712,238,507	833,006,996
Investments at Fair Value		
Equity	24,464,719,621	29,705,842,700
Fixed Income	18,641,786,544	21,077,313,430
Private Equity	12,753,842,152	11,471,947,142
Real Estate	5,802,979,342	5,294,150,081
Hedge Funds	4,440,433,903	2,748,464,892
Real Assets	1,363,251,696	0
Total Investments	67,467,013,256	70,297,718,245
Total Assets	**72,638,823,188**	**75,363,970,038**
Liabilities		
Accounts Payable - Purchase of Investments	835,073,030	1,055,062,733
Retiree Payroll and Other Payables	1,779,455	1,550,257
Accrued Expenses	63,266,240	50,275,900
Tax Withholding Payable	42,715,354	40,144,308
Obligations under Securities Lending Program	1,401,076,878	1,198,528,379
Accounts Payable - Other	5,299,875	6,382,744
Total Liabilities	**2,349,210,833**	**2,351,944,321**
Fiduciary Net Position Restricted For Pension Benefits	**$ 70,289,612,355**	**$ 73,012,025,718**

Exhibit 3
Statement of Changes in Fiduciary Net Position
For the Fiscal Years Ended June 30, 2022 and 2021

	2022	2021
Additions		
Contributions		
Employer	$ 2,199,888,716	$ 2,012,877,282
Member[1]	758,632,238	760,993,626
Total Contributions	2,958,520,953	2,773,870,909
Investment Income		
From Investing Activities:		
Net Appreciation/(Depreciation) in Fair Value of Investments	(6,717,556,042)	9,981,327,917
Investment Income/(Loss)	5,476,668,193	5,915,583,546
Total Investing Activity Income	(1,240,887,848)	15,896,911,462
Less Expenses From Investing Activities	(310,360,199)	(271,751,482)
Net Investing Activity Income	(1,551,248,047)	15,625,159,981
From Securities Lending Activities:		
Securities Lending Income	12,294,541	5,071,951
Less Expenses From Securities Lending Activities:		
Borrower Rebates	125,823	869,192
Management Fees	(1,317,057)	(1,186,215)
Total Expenses from Securities Lending Activities	(1,191,234)	(317,023)
Net Securities Lending Income	11,103,307	4,754,928
Total Net Investment Income	(1,540,144,740)	15,629,914,908
Miscellaneous	4,117,638	2,927,574
Total Additions	1,422,493,851	18,406,713,391
Deductions		
Retiree Payroll	4,002,272,810	3,785,607,812
Administrative Expenses	86,110,835	76,369,711
Investment Expenses	14,010,176	14,216,047
Refunds	38,088,986	24,512,008
Lump Sum Death Benefits	4,205,274	4,142,050
Miscellaneous	219,132	247,956
Total Deductions	4,144,907,213	3,905,095,584
Net Increase/(Decrease)	(2,722,413,362)	14,501,617,807
Fiduciary Net Position Restricted For Pension Benefits		
Beginning of Year	73,012,025,718	58,510,407,911
End of Year	**$ 70,289,612,355**	**$ 73,012,025,718**

1. Member contributions include employer pick-up contributions.

Exhibit 4
Allocation of Assets by Accounting Reserve Amounts

(Dollars in Thousands)

	June 30, 2022	June 30, 2021
1. Member Reserves		
a. Active Members	$ 25,804,263	$ 24,646,373
b. Unclaimed Deposits	-	-
c. Total Member Reserves	25,804,263	24,646,373
2. Employer Reserves		
a. Actual Employer Contributions	32,011,255	29,026,898
b. Advanced Employer Contributions	-	-
c. Total Employer Contributions	32,011,255	29,026,898
3. County Contribution Credit Reserve	-	-
4. STAR Reserve	614,011	614,011
5. Contingency Reserve	-	147,104
6. Total Reserves at Book Value	58,429,529	54,434,386
7. Unrealized Investment Portfolio Appreciation	11,860,083	18,577,640
8. **Total Reserves at Fair Value**	**$ 70,289,612**	**$ 73,012,026**

Note: These amounts were determined by LACERA for accounting purposes and are reported in the ACFR for the fiscal year ended June 30, 2022.

Exhibit 5
Five-Year Smoothing of Gains and Losses on Market Value

(Dollars in Thousands)

June 30, 2022 Valuation														
Plan Year Ending	Contributions	Benefit Payments	Expected Market Value	Actual Market Value	Investment Gain / (Loss)		Percent Excluded		Preliminary Investment Gain / (Loss) Excluded		Adjusted Investment Gain / (Loss) Excluded	
6/30/2022	$ 2,958,521	$ 4,044,567	$ 76,999,453	$ 70,289,612	$ (6,709,841)	x	80%	=	$ (5,367,873)	→	$	0
6/30/2021	2,773,871	3,814,262	61,529,948	73,012,026	11,482,078	x	60%	=	6,889,247	→		261,095
6/30/2020	2,459,433	3,606,340	61,189,106	58,510,408	(2,678,698)	x	40%	=	(1,071,479)	→		0
6/30/2019	2,303,566	3,407,155	59,238,837	58,294,837	(944,000)	x	20%	=	(188,800)	→		0
6/30/2018	2,116,085	3,203,375	55,441,551	56,299,982	858,431	x	0%	=	0	→		0
								(a) Total Gain / (Loss) Excluded		=	$	261,095
								(b) Total Market Value of Assets		=	$	70,289,612
								(c) Total Actuarial Value of Assets [(b) - (a)]		=	**$**	**70,028,517**

Total Actuarial Value of Assets = Total Market Value of Assets less the Total Excluded amount
Excluded amounts will be recognized in future years.

Projected Recognition of Actuarial Asset Gains / (Losses) in Future Valuations

	2023 Val	2024 Val	2025 Val	2026 Val	Total
Amount to be Recognized	$ 87,032	$ 87,032	$ 87,032	$ -	$ 261,095

Note: After recognizing investment gains and losses under the old asset valuation method (shown in the Preliminary Investment Gain / (Loss) Excluded column), the remaining deferred gains and losses were combined and offset. Since the remaining deferred losses totaling $6,628,152 were less than the remaining deferred gains totaling, $6,889,247, the losses excluded were offset against the deferred gain excluded, resulting in an excluded gain of $261,095. As the deferred losses were fully offset against the deferred gain, the excluded losses equal $0.

Exhibit 6
Allocation of Valuation and Non-Valuation Assets

(Dollars in Thousands)

	June 30, 2022	June 30, 2021
1. Total Market Value of Assets	$ 72,638,823	$ 75,363,970
2. Current Liabilities	2,349,211	2,351,944
3. Net Assets Held in Trust for Pension Benefits	70,289,612	73,012,026
4. Market Stabilization Reserve[1]	261,095	7,372,529
5. Actuarial Value of Assets	70,028,517	65,639,497
6. Non-Valuation Reserves[2]		
a. Unclaimed Deposits	-	-
b. Contingency Reserve	702,896	730,120
c. Advanced Employer Contributions	-	-
d. County Contribution Credit Reserve	-	-
e. Reserve for STAR Program	614,011	-
f. Total Non-Valuation Reserves	1,316,907	730,120
7. Actuarial Value of Assets *minus* Non-Valuation Reserves	$ 68,711,610	$ 64,909,377
8. Valuation Assets[2]		
a. Member Reserves	25,804,263	24,646,373
b. Employer Reserves for Funding Purposes	42,907,347	40,263,004
c. Total Valuation Assets	$ 68,711,610	$ 64,909,377

1. The Market Stabilization Reserve represents the difference between the Market Value of the fund less Current Liabilities, and the Actuarial Value of the fund as determined in Exhibit 5.

2. The values used for funding purposes for all reserves are based on the Board's Funding Policy and reflect the change in the treatment of the STAR Reserve adopted by the Board of Investments at the December 2022 meeting. Amounts used for funding purposes may differ from those reported in the audited financial statements as shown in Exhibit 4.

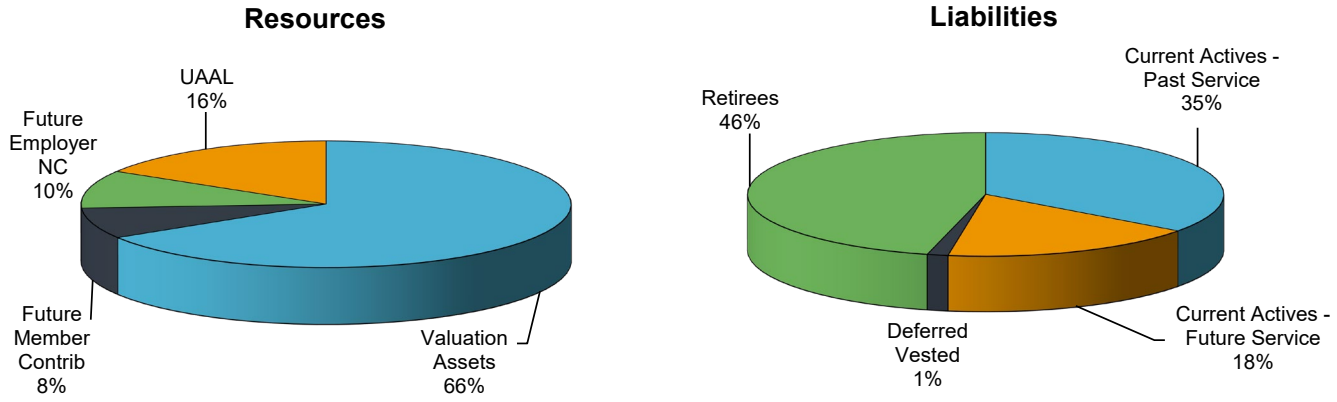
4. Actuarial Liabilities

In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of LACERA's assets as of the valuation date, June 30, 2022. In this section, the discussion will focus on the commitments of LACERA for retirement benefits, which are referred to as its actuarial liabilities.

Actuarial Balance Sheet – Liabilities

The first step in the valuation process is to compare the total resources of LACERA with the present value of all future benefits (liabilities) for all plans. Resources include Valuation Assets and expected future contributions by both the employers and members. Liabilities reflect benefits already earned in the past and those expected to be earned in the future by current members. This relationship is shown in the pie charts below.

The AAL is the total of these liabilities less expected future Normal Cost contributions. The 2022 actuarial valuation indicates that LACERA's Valuation Assets are less than its AAL.



The difference between the Valuation Assets and the liabilities is the amount that needs to be funded by future member and employer contributions. Both the current and future assets (contributions) are included on the actuarial balance sheet and compared to the liabilities. The difference between these two values is the UAAL.

Exhibit 7 contains an analysis of the present value of future benefits for inactive members (both retired and vested former members) and active members. The analysis is given by class of membership, by plan and by type of benefit. Note that for purposes of this exhibit the Valuation Assets are shown allocated by plan in proportion to each plan's reserves (employer and member).

Liabilities are the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits to be earned. For all members, active and inactive, the value extends over the rest of their lives and for the lives of any surviving beneficiaries.

The actuarial assumptions used to determine the liabilities as of June 30, 2022 are based on the results of the 2022 Investigation of Experience Report. See Appendix A of this report for details.

All liabilities reflect the benefits effective through June 30, 2022. This includes permanent STAR COLAs that have been adopted through the valuation date, but does not include the value of any STAR benefits that have been adopted but are not effective until after the valuation date and STAR benefits that may be granted in the future.

Exhibit 7
Actuarial Balance Sheet – June 30, 2022

(Dollars in Millions)

	General						Safety			
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Plan A	Plan B	Plan C	All Plans
LIABILITIES										
Present Value of Benefits - Inactives										
- Retirees and Beneficiaries	$ 10,327	$ 466	$ 291	$ 12,592	$ 5,314	$ 42	$ 6,722	$ 12,390	$ 17	$ 48,161
- Vested Former	4	1	0	737	462	109	0	152	11	1,476
- Inactive Total	10,331	467	291	13,329	5,776	151	6,722	12,542	28	49,637
Present Value of Benefits - Actives										
- Service Retirement	69	18	21	23,041	6,125	7,542	2	9,108	1,881	47,807
- Transfer Service (prior LACERA plan)	0	0	0	250	401	13	0	15	0	679
- Disability Retirement	0	0	0	797	N/A	500	0	2,902	970	5,169
- Death	0	0	0	285	N/A	138	0	63	29	515
- Termination	0	0	0	141	67	406	0	34	88	736
- Active Total	69	18	21	24,514	6,593	8,599	2	12,122	2,968	54,906
Total Actuarial Liabilities	**$ 10,400**	**$ 485**	**$ 312**	**$ 37,843**	**$ 12,369**	**$ 8,750**	**$ 6,724**	**$ 24,664**	**$ 2,996**	**$ 104,543**
ASSETS										
Valuation Assets	(5,432)	312	262	34,823	15,900	4,519	(3,147)	20,468	1,007	68,712
PV Future Member Contributions	1	0	0	2,637	N/A	3,286	0	1,033	1,224	8,181
PV Future Employer Normal Cost Contributions	1	1	0	3,069	994	3,037	0	1,783	1,157	10,042
UAAL or (Surplus Funding)	15,830	172	50	(2,686)	(4,525)	(2,092)	9,871	1,380	(392)	17,608
Total Current and Future Assets	**$ 10,400**	**$ 485**	**$ 312**	**$ 37,843**	**$ 12,369**	**$ 8,750**	**$ 6,724**	**$ 24,664**	**$ 2,996**	**$ 104,543**

Actuarial Balance Sheet – Assets

For the purpose of the Actuarial Balance Sheet, LACERA's assets are equal to the sum of:

(a) Assets currently available to pay benefits and considered for funding purposes (the Valuation Assets);

(b) The present value of future contributions expected to be made by current active members; and

(c) The present value of future contributions expected to be made by the employer.

Actuarial Cost Method

The Actuarial Balance sheet determines the amount of future contributions that are needed, but the method used to determine when those future contributions will be made in future years is called the "actuarial cost method." For this valuation, the entry age actuarial cost method has been used. Under this method, the contributions required to meet the difference between current assets and current actuarial liabilities are allocated each year between two elements:

- A normal cost amount; and
- An amount to amortize the UAAL (Unfunded Actuarial Accrued Liability). Note that the UAAL may be negative (representing current assets greater than current actuarial liabilities).

The two items described above – the Normal Cost and UAAL – are the keys to understanding the actuarial cost method.

Normal Cost

The Normal Cost is the theoretical contribution rate that will meet the ongoing costs of a group of average new employees. Suppose that a group of new employees was covered under a separate fund from which all benefits and to which all contributions and associated investment returns were paid. Under the entry age actuarial cost method, the Normal Cost contribution rate maintains the funding of benefits as a level percentage of pay. If experience follows the actuarial assumptions precisely, the fund would be completely liquidated when the last payment to the last survivor of the group is made.

By applying the Normal Cost contribution rate to the present value of salaries expected to be paid in the future, we determine the present value of future Normal Cost contributions. Future contributions are expected to be made by both the members and the employer. The member contribution rates are determined based upon requirements established in the CERL and the actuarial assumptions. Based on these member contribution rates, we determine the present value of future member contributions. We subtract that value from the total future Normal Cost contributions expected, based on the entry age cost method. The remaining difference is the employer portion of the future Normal Cost contributions.

Actuarial Accrued Liability

The difference between the present value of all future obligations and the present value of the future Normal Cost contributions is referred to as the Actuarial Accrued Liability (AAL). The AAL is calculated and then compared to the value of assets available to fund benefits. The difference is referred to as the UAAL. The results for all LACERA plans in aggregate are summarized below:

(Dollars in millions)	2022	2021	Percent Change
A. Actuarial present value of all future benefits for contributing members, former contributing members, and their survivors	$ 104,543	$ 100,064	4.5%
B. Actuarial present value of total future normal costs for current members	18,223	18,166	0.3%
C. Actuarial accrued liability [A-B]	86,320	81,898	5.4%
D. Valuation Assets	68,712	64,909	5.9%
E. UAAL or (Surplus Funding) [C-D]	17,608	16,989	3.6%
F. Funded Ratio [D/C]	79.6%	79.3%	0.4%

Unfunded Actuarial Accrued Liability

The portion allocated to service already rendered or accrued is called the AAL. The difference between the AAL and the Valuation Assets is called the Unfunded AAL (UAAL). If a UAAL amount exists, it usually results from prior years' benefit or assumption changes and the net effect of accumulated gains and losses. If the employer had always contributed the current Normal Cost, and if there were no prior benefit or assumption changes, and if actual experience exactly matched the actuarial assumptions, then the present value of all future Normal Cost contributions would be sufficient to fund all benefits and there would be no UAAL.

Exhibit 7 shows how the UAAL was derived for each level of plan benefits. In the Actuarial Balance sheet, the total actuarial liability for all future benefits must be equal to the current and future assets.

The Actuarial Balance Sheet for each plan, as well as its UAAL, is based on an estimated allocation of the total LACERA Valuation Assets, as previously shown in Exhibit 7. The allocation is based on the relative value of each plan's employer and member reserves as reported to us by LACERA. These allocations are shown for illustrative purposes only, as the UAAL contribution rates are paid by the employer based on the valuation results in aggregate.

Funding Adequacy

A key consideration in determining the adequacy of the funding of LACERA is how the UAAL is being funded. Under LACERA's Funding Policy, a new UAAL "layer" is established each year when the Funded Ratio is less than 100% or greater than or equal to 120%. Effective with the June 30, 2019 valuation, all new UAAL layers are amortized over 20-year periods.

If future experience is significantly more favorable than expected based on the actuarial assumptions, then LACERA's UAAL may be eliminated. Conversely, if experience is less favorable, a larger UAAL will develop.

Analysis of Change in Unfunded Actuarial Accrued Liability

The UAAL, at any date after establishment of a retirement plan, is affected by any actuarial gains (decreases in UAAL) or losses (increases in UAAL) arising when the actual experience of the retirement plan varies from the experience anticipated by the actuarial assumptions. To the extent actual experience, as it develops, differs from that expected according to the assumptions used, so will the emerging costs differ from the estimated costs.

The 2022 actuarial valuation reflects a decrease in the UAAL of approximately $1.5 billion since the prior year. The effect of the gains and losses on the UAAL is shown in Exhibit 8a. A summary of these factors is:

- Investment Returns: Returns on market assets were 0.1% (net of investment expenses) compared to the assumed return of 7.0%. This, combined with recognitions of gains and losses from prior periods, resulted in an actuarial asset gain of $1.0 billion.
- Active Member Experience (non salary): This includes gains and losses from termination, service retirement, disability retirement, and death different than assumed. This resulted in an actuarial loss of $31 million.
- Salary Increases: Individual salaries for continuing active members increased at a rate less than the valuation assumption. This resulted in an actuarial gain of $21 million.
- Actual CPI versus Assumption: The actual CPI increase was higher than assumed. This resulted in Plan A COLA increases higher than the assumption (note that other plans are assumed to receive the maximum COLA), which generated an actuarial loss of $40 million. In addition, the excess CPI resulted in an increase in the COLA accumulation banks, which generated an actuarial loss of $315 million.
- Mortality Experience: An actuarial loss due to mortality generally indicates that retired members are living longer than the current assumption predicts. Similarly, an actuarial gain on mortality indicates that retired members are not living as long as predicted. This year, there was an actuarial gain of $36 million due to mortality experience for retirees and beneficiaries.
- Other Experience: Examples of this are gains and losses from retirement and mortality experience of inactive members, reciprocity, and transfers between plans. These factors combined resulted in an actuarial gain of $2 million.

Change in Unfunded Actuarial Accrued Liability – History

Exhibit 8b shows the sources of change in the UAAL over the past five valuations. The single biggest source of annual change in most years, when there are no changes in the assumptions, is the return on investments being either greater than or less than the assumption.

Exhibit 8a
Analysis of Change in Unfunded Actuarial Accrued Liability

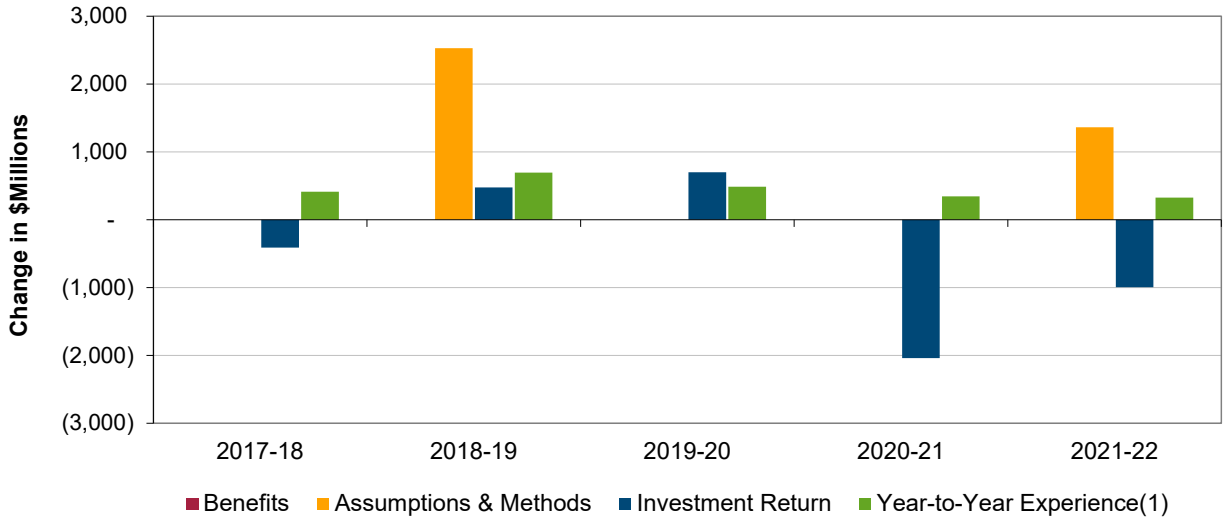
(Dollars in Millions)

			Amount	As a Percent of June 30, 2022 Actuarial Accrued Liability
Unfunded Actuarial Accrued Liability - June 30, 2021			**$ 16,989**	**19.68%**
Interest Accrued			1,202	1.39%
Benefits Accrued (Normal Cost)			1,681	1.95%
Contributions				
Employer - Cash	$	(2,200)		-2.55%
Employer - Contribution Credit		-		0.00%
Member		(759)		-0.88%
Total			(2,959)	-3.43%
Expected Unfunded Actuarial Accrued Liability - June 30, 2022			**$ 16,913**	**19.59%**
Sources of Change:				
Increase in UAAL due to New Assumptions			750	0.87%
Increase in UAAL due to New Methods			614	0.71%
Asset (Gains) and Losses				
(Gain) / Loss due to Investment Income			(996)	-1.15%
Liability (Gains) and Losses				
Active Member Experience (non salary)	$	31		0.04%
Salary Increases Greater than Expected		(21)		-0.02%
CPI Greater than Expected		355		0.41%
Mortality Experience		(36)		-0.04%
All Other Experience		(2)		0.00%
Total			327	0.38%
Total Changes			**$ 695**	0.80%
Unfunded Actuarial Accrued Liability - June 30, 2022			**$ 17,608**	**20.40%**

Exhibit 8b
History of Changes in Unfunded Actuarial Accrued Liability

(Dollars in Millions)

	2017-18	2018-19	2019-20	2020-21	2021-22	2017-22
Prior Valuation UAAL	**$ 13,145**	**$ 13,294**	**$ 17,018**	**$ 18,512**	**$ 16,989**	**$ 13,145**
Increase in UAAL due to:						
Expected Increase / (Decrease)	146	25	306	171	(76)	572
Asset (Gains) and Losses	(411)	477	701	(2,039)	(996)	(2,268)
Changes in Benefits	-	-	-	-	-	-
Changes in Assumptions	-	2,528	-	-	750	3,278
Changes in Methods	-	-	-	-	614	614
Salary Increases	223	486	388	484	(21)	1,560
CPI Increases	45	44	43	(73)	355	414
Mortality Experience	(20)	(6)	1	(96)	(36)	(157)
All Other Experience	166	170	55	30	29	450
Total Increase / (Decrease)	**149**	**3,724**	**1,494**	**(1,523)**	**619**	**4,463**
Valuation UAAL	**$ 13,294**	**$ 17,018**	**$ 18,512**	**$ 16,989**	**$ 17,608**	**$ 17,608**
Funded Ratio	**80.6%**	**77.2%**	**76.3%**	**79.3%**	**79.6%**	**79.6%**



1. Year-to-Year Experience includes changes due to Salary, CPI, Mortality and Other Experience.

5. Member Contributions

Normal Contributions for non-PEPRA Plans

Member contributions are of two types: Normal contributions and cost-of-living contributions.

Normal contributions for each of the legacy plans (all plans except General Plan G and Safety Plan C) are defined in the following sections of the CERL:

Plan	CERL Reference	Formula
General A	31621.3	1/240th of FAC at age 55
General B	31621.1	1/120th of FAC at age 55
General C	31621	1/120th of FAC at age 60
General D	31621	1/120th of FAC at age 60
General E	N/A	Plan E is non-contributory
Safety A	31639.5	1/200th of FAC at age 50
Safety B	31639.25	1/100th of FAC at age 50

Note: FAC = Final Average Compensation

Normal member contributions are determined using the Entry Age Normal Funding Method and the following actuarial assumptions:

1. Expected rate of return on assets.
2. Individual salary increase rate (wage growth + merit).
3. Mortality for members on service retirement.

Since new assumptions were adopted for the 2022 valuation, we are recommending changes to the member contribution rates for General Plans A to D and Safety Plans A and B. Member contributions are shown in Appendix D. A sample of these recommended member contribution rates is shown in Exhibit 9.

Member contribution rates for General Plan G and Safety Plan C are discussed below.

Cost-of-Living Contributions for Legacy Plans

The determination of the member cost-of-living (COLA) contributions is based on Section 31873 of the CERL. This section requires that the cost of the COLA benefit be shared equally between members and the employer. Unlike the member normal contributions, these rates are based on the actuarial cost of the benefits and reflect all assumptions used in the valuation of liabilities.

Since new assumptions were adopted for the 2022 valuation we are recommending changes in the member cost-of-living contribution rates. The recommended cost-of-living contribution rates, expressed as a percentage of the normal member contribution rates, are as follows:

Plan	Recommended COLA %	Current COLA %	Ratio (Recommended / Current)
General A	82.08%	84.46%	97.2%
General B	26.10%	25.90%	100.8%
General C	26.19%	26.81%	97.7%
General D	26.59%	25.94%	102.5%
General E	0.00%	0.00%	N/A
Safety A	87.15%	87.15%	100.0%
Safety B	33.43%	33.03%	101.2%

The relative magnitude of these amounts reflects the differences in the normal contribution rates for each plan and the different cost-of-living benefits offered by the different plans. The rate for Plan E is 0.00% since it is non-contributory.

A sample of the current member contribution rates (normal plus cost-of-living) can be found in Exhibit 9.

Full disclosure of the member rates showing both the normal and the total (normal plus cost-of-living) contribution rates can be found in Appendix D.

Member Contribution Rates for General Plan G and Safety Plan C (PEPRA Plans)

Members of the two plans developed in compliance with the California Public Employees' Pension Reform Act of 2013 (PEPRA) contribute a flat rate (i.e., does not vary by entry age) based on whether they are in the General or Safety plan. This rate is set equal to one-half of the total Normal Cost rate for the respective plan. We are recommending changes to the member contribution rates for these plans, as shown below, to reflect the Plan's Normal Cost rates for the 2022 valuation.

	General Plan G	Safety Plan C
All Ages: Recommended	**9.24%**	**14.76%**
All Ages: Current	9.08%	14.33%
Ratio (Recommended / Current)	101.8%	103.0%

Note that the member contribution rates for these plans are further split for purposes of this report into a "Normal" and "Cost of Living" component. The cost-of-living component for these members, as shown in Exhibit 9 on the following page, represents one-half of the cost of the COLA for these plans.

Average Member Rates

The average member contribution rate for only those active members in contributory plans at June 30, 2022 is 9.45% of covered payroll, compared to 8.21% of covered payroll for all active members including non-contributory members. The 8.21% offsets the gross normal cost to yield the employer normal cost rate. Note that covered payroll does not include pay for PEPRA plan members that is above the PEPRA compensation limit.

Exhibit 9
Sample Member Contribution Rates

	Entry Age	Recommended Rates (Based on 2022 Valuation) Normal	Cost of Living	Total as a % of Pay	Current Rate (Total)	Ratio (New / Current)
General Members						
Plan A	25	3.33%	2.73%	6.06%	5.98%	101.3%
	35	4.06%	3.33%	7.39%	7.36%	100.4%
	45	4.86%	3.99%	8.85%	8.91%	99.3%
	55	5.16%	4.24%	9.40%	9.46%	99.4%
Plan B	25	6.65%	1.74%	8.39%	8.15%	102.9%
	35	8.12%	2.12%	10.24%	10.05%	101.9%
	45	9.73%	2.54%	12.27%	12.16%	100.9%
	55	10.32%	2.69%	13.01%	12.90%	100.9%
Plan C	25	5.70%	1.49%	7.19%	7.00%	102.7%
	35	6.96%	1.82%	8.78%	8.62%	101.9%
	45	8.44%	2.21%	10.65%	10.56%	100.9%
	55	9.74%	2.55%	12.29%	12.28%	100.1%
Plan D	25	5.70%	1.52%	7.22%	6.95%	103.9%
	35	6.96%	1.85%	8.81%	8.56%	102.9%
	45	8.44%	2.24%	10.68%	10.49%	101.8%
	55	9.74%	2.59%	12.33%	12.19%	101.1%
Plan G	All Ages	7.48%	1.76%	9.24%	9.08%	101.8%
Safety Members						
Plan A	25	4.89%	4.26%	9.15%	8.87%	103.2%
	35	5.69%	4.96%	10.65%	10.54%	101.0%
	45	6.70%	5.84%	12.54%	12.54%	100.0%
	55	6.70%	5.84%	12.54%	12.54%	100.0%
Plan B	25	9.77%	3.27%	13.04%	12.61%	103.4%
	35	11.37%	3.80%	15.17%	14.99%	101.2%
	45	13.40%	4.48%	17.88%	17.83%	100.3%
	55	13.41%	4.48%	17.89%	17.83%	100.3%
Plan C	All Ages	11.49%	3.27%	14.76%	14.33%	103.0%

Note: A portion of some of the member contribution rates is paid for ("picked up") by the employer and is not considered part of the member's contribution account for refund purposes. Such contributions are referred to as the surcharge amount and are subject to change each year. The rates shown in the table above are prior to any surcharge payments.

6. Employer Contributions

Calculated Employer Contribution Rate

Contributions to LACERA are determined using the Entry Age Normal Cost Method. The portion of the actuarial present value of retirement benefits allocated to a valuation year by the actuarial cost method is called the Normal Cost. These amounts are usually expressed as a percentage of payroll and called the Normal Cost Contribution Rate. Exhibit 10 illustrates the Normal Cost Contribution Rates by type of benefit and for each plan based on this valuation. A comparison with last year is also shown.

Under the Funding Policy, the total contribution rate is set equal to the Normal Cost contribution rate plus a payment by the employer towards the UAAL. The calculation of the UAAL contribution rate is shown in Exhibit 12. A portion of the Normal Cost contribution is funded by member contributions. The remainder is paid for by the employer.

The total calculated employer contribution rates for each plan, along with a comparison to the prior year's calculated rates, can be found in Exhibit 11. These results are expressed as a percentage of payroll and annual contribution dollars. Note that LACERA's UAAL contribution rate is not determined separately for each plan but is funded evenly as a percentage of pay over salaries for all members.

For the fiscal year beginning in 2023, the total calculated employer contribution rate increases to 25.84% from the current fiscal year rate of 24.46%. This is equal to the aggregate employer Normal Cost contribution rate of 11.12% based on the 2022 valuation, plus the layered amortization payment of the UAAL, shown in Exhibit 12.

(All values as a % of Payroll)	
Employer Normal Cost Contribution Rate	11.12%
Layered Amortization of UAAL	14.72%
Calculated Employer Contribution Rate	25.84%

Exhibit 10
Calculated Normal Cost Contribution Rates – June 30, 2022

	General							Safety				Grand
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	Total
A. Normal Cost Contribution Rate												
Service Retirement	20.05%	19.22%	13.70%	15.14%	10.39%	15.83%	14.61%	25.31%	19.63%	17.88%	19.14%	15.46%
Disability Retirement	0.96%	1.10%	0.70%	1.08%	0.00%	1.25%	0.96%	11.93%	9.32%	10.36%	9.61%	2.60%
Death	0.28%	0.29%	0.22%	0.32%	0.00%	0.30%	0.26%	0.42%	0.34%	0.29%	0.33%	0.27%
Termination	0.46%	0.40%	0.40%	1.10%	0.63%	1.10%	1.02%	0.85%	0.85%	0.99%	0.89%	1.00%
Total	**21.75%**	**21.01%**	**15.02%**	**17.64%**	**11.02%**	**18.48%**	**16.85%**	**38.50%**	**30.14%**	**29.52%**	**29.97%**	**19.33%**
B. Member Contributions	(5.49)%	(9.94)%	(7.29)%	(8.20)%	0.00%	(9.24)%	(7.23)%	(11.04)%	(11.54)%	(14.76)%	(12.45)%	(8.21)%
C. Net Employer Normal Cost as of June 30, 2022 (A) - (B)	16.26%	11.07%	7.73%	9.44%	11.02%	9.24%	9.62%	27.46%	18.60%	14.76%	17.52%	11.12%
D. Net Employer Normal Cost as of June 30, 2021	17.01%	10.55%	7.65%	9.17%	10.72%	9.08%	9.41%	26.35%	18.22%	14.33%	17.21%	10.88%
E. Increase (Decrease) as a Percentage of Payroll (C) - (D)	(0.75)%	0.52%	0.08%	0.27%	0.30%	0.16%	0.21%	1.11%	0.38%	0.43%	0.31%	0.24%
F. Estimated Payroll for fiscal year beginning July 1, 2023[1]	$ 7	$ 2	$ 2	$ 3,808	$ 1,243	$ 2,505	$ 7,568	$ 0	$ 1,272	$ 502	$ 1,774	$ 9,342
G. Estimated Total Normal Cost Contribution in Dollars (A x F)[2]	$ 2	$ -	$ -	$ 672	$ 137	$ 463	$ 1,275	$ -	$ 383	$ 148	$ 532	$ 1,807

1. Estimated Payroll based upon annualized salary rate as of June 30, 2022 increased by 3.25% wage inflation. Dollar figures in millions.
2. The timing of the Normal Cost shown in this exhibit is spread over the entire year and corresponds to payroll timing.

Exhibit 11
Total Employer Contributions

	General							Safety				All Plans
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
A. Net Employer Normal Cost												
1. Basic Benefits	12.89%	8.99%	6.22%	7.77%	9.13%	7.48%	7.90%	21.48%	14.85%	11.49%	13.90%	9.02%
2. Cost-of-Living Benefits	3.37%	2.08%	1.51%	1.67%	1.89%	1.76%	1.72%	5.98%	3.75%	3.27%	3.62%	2.10%
3. Total June 30, 2022	16.26%	11.07%	7.73%	9.44%	11.02%	9.24%	9.62%	27.46%	18.60%	14.76%	17.52%	11.12%
B. UAAL Contribution Rate	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%	14.72%
C. Total June 30, 2022 Contribution Rate (A) + (B)	**30.98%**	**25.79%**	**22.45%**	**24.16%**	**25.74%**	**23.96%**	**24.34%**	**42.18%**	**33.32%**	**29.48%**	**32.24%**	**25.84%**
D. Total June 30, 2021 Contribution Rate	30.59%	24.13%	21.23%	22.75%	24.30%	22.66%	22.99%	39.93%	31.80%	27.91%	30.79%	24.46%
E. Estimated Payroll for fiscal year beginning July 1, 2023[1]	$ 7	$ 2	$ 2	$ 3,808	$ 1,243	$ 2,505	$ 7,568	$ 0	$ 1,272	$ 502	$ 1,774	$ 9,342
F. Estimated Annual Contribution (C x E)	**$ 2**	**$ 1**	**$ -**	**$ 920**	**$ 320**	**$ 600**	**$ 1,842**	**$ -**	**$ 424**	**$ 148**	**$ 572**	**$ 2,414**
G. Last Year's Estimated Annual Contribution	$ 3	$ 1	$ 1	$ 887	$ 326	$ 531	$ 1,746	$ -	$ 418	$ 129	$ 547	$ 2,293
H. Increase / (Decrease) in Annual Contribution	$ (1)	$ -	$ (1)	$ 33	$ (6)	$ 69	$ 96	$ -	$ 6	$ 19	$ 25	$ 121

1. Estimated Payroll based upon annualized salary rate as of June 30, 2022 increased by 3.25% wage inflation. Dollar figures in millions.

Exhibit 12
Unfunded Actuarial Accrued Liability Detail

(Dollars in Millions)

Unfunded Actuarial Accrued Liability - Amortization Detail

Date Established	Description	Balance as of June 30, 2022	Interest on Balance	Amort. Payment on June 30, 2023 [1]	Balance as of June 30, 2023 [2]	Remaining Period as of June 30, 2023 [5]	July 1, 2023 Amortization Payment
June 30, 2009	Initial UAAL	$ 5,516.1	$ 386.1	$ 454.9	$ 5,447.3	16 Years	$ 447.5
June 30, 2010	(Gain) / Loss[3]	3,029.0	212.0	239.7	3,001.3	17 Years	235.8
June 30, 2011	(Gain) / Loss[3]	1,509.4	105.7	115.0	1,500.1	18 Years	113.1
June 30, 2012	(Gain) / Loss[3]	2,479.7	173.6	182.3	2,471.0	19 Years	179.3
June 30, 2013	(Gain) / Loss[3]	1,402.0	98.1	103.1	1,397.0	19 Years	101.4
June 30, 2014	(Gain) / Loss	(2,596.1)	(181.7)	(190.9)	(2,586.9)	19 Years	(187.8)
June 30, 2015	(Gain) / Loss	(2,028.2)	(142.0)	(149.1)	(2,021.1)	19 Years	(146.7)
June 30, 2016	(Gain) / Loss[3]	3,897.0	272.8	286.5	3,883.3	19 Years	281.9
June 30, 2017	(Gain) / Loss	(21.1)	(1.5)	(1.6)	(21.1)	19 Years	(1.5)
June 30, 2018	(Gain) / Loss	61.0	4.3	4.5	60.8	19 Years	4.4
June 30, 2019	(Gain) / Loss[3]	3,911.5	273.8	309.6	3,875.7	17 Years	304.5
June 30, 2020	(Gain) / Loss	1,456.6	102.0	111.0	1,447.7	18 Years	109.2
June 30, 2021	(Gain) / Loss	(1,749.8)	(122.5)	(128.6)	(1,743.7)	19 Years	(126.6)
June 30, 2022	(Gain) / Loss[3]	741.0	51.9	(69.5) [4]	862.3	20 Years	60.4
						Total Amortization Payment July 1, 2023:	$ 1,375.0
						Projected Payroll July 1, 2023:	$ 9,342.3
UAAL as of June 30, 2022:		**$ 17,608.0**		**UAAL Contribution Rate (as a % of Payroll) FYB July 1, 2023:**			**14.72%**

Explanatory Notes:

1. Amortization Payments are based on a fixed schedule that increases by the payroll assumption each year.
2. The assets and liabilities used in the calculation of the UAAL are as of June 30, 2022, whereas, the contribution rates are not effective until July 1, 2023. Therefore, the UAAL is projected to June 30, 2023 based on the actual contribution rate for the period, with the projected UAAL as of June 30, 2023 equaling $17,574 million.
3. (Gain) / Loss layers include the impact of assumption and method changes in these years.
4. The amortization of UAAL does not begin until July 1, 2023; therefore, the UAAL amount is adjusted by one year to reflect the actual July 1, 2022 contribution rate.
5. Effective with the June 30, 2019 valuation, all new UAAL layers are amortized over a 20-year period, beginning with the date the contribution is first expected to be made.

7. Supplemental Information

Governmental Accounting Standards Board (GASB) Statement 67 sets out requirements for defined benefit pension plan reporting and disclosures. GASB Statement 68 sets out requirements for accounting by state and local government employers.

Milliman provides LACERA with results relevant to Statements 67 and 68 in separate stand-alone financial reporting valuation reports.

For informational purposes, we have provided the following exhibits in this report that LACERA may use in the audited financial statements:

Exhibit 13: Schedule of Funding Progress
Exhibit 14: Schedule of Employer Contributions
Exhibit 15: Solvency Test
Exhibit 16: Actuarial Analysis of Financial Experience
Exhibit 17: Retirants and Beneficiaries added to / removed from Retiree Payroll

Exhibit 13, Schedule of Funding Progress, compares actuarial assets and liabilities of the Plan, based on the actuarial funding method used.

Exhibit 14, Schedule of Employer Contributions, compares the employer contributions required based on the actuarial valuation with the employer contributions actually made. Information shown in this exhibit comes from LACERA's audited financial statements.

Exhibit 15 compares the Actuarial Value of Valuation Assets to the types of Actuarial Accrued Liabilities, applying them first to Active Member contributions, then to retirees and beneficiaries, and then the remaining amount to the Active Members benefits. This is referred to as the Solvency Test.

Exhibit 16 shows the changes in actual versus expected UAAL from year to year.

Exhibit 17 reconciles the retired members and beneficiaries who have been added to and removed from the retiree payroll.

Exhibit 13
Schedule of Funding Progress

(Dollars in Thousands)

Actuarial Valuation Date	(a) Actuarial Value of Valuation Assets	(b) Actuarial Accrued Liabilities	(b-a) Unfunded Actuarial Accrued Liabilities (UAAL)	(a/b) Funded Ratio	(c) Covered Payroll[1]	[(b-a)/c] UAAL as a Percentage of Covered Payroll
June 30, 2013[2]	$ 39,932,416	$ 53,247,776	$ 13,315,360	75.0%	$ 6,595,902	201.9%
June 30, 2014	43,654,462	54,942,453	11,287,991	79.5%	6,672,228	169.2%
June 30, 2015	47,328,270	56,819,215	9,490,945	83.3%	6,948,738	136.6%
June 30, 2016[2]	49,357,847	62,199,214	12,841,367	79.4%	7,279,777	176.4%
June 30, 2017	52,166,307	65,310,803	13,144,496	79.9%	7,637,032	172.1%
June 30, 2018	55,233,108	68,527,354	13,294,246	80.6%	7,957,981	167.1%
June 30, 2019[2]	57,617,288	74,635,840	17,018,552	77.2%	8,370,050	203.3%
June 30, 2020	59,762,991	78,275,175	18,512,184	76.3%	8,724,151	212.2%
June 30, 2021	64,909,377	81,898,044	16,988,667	79.3%	9,062,051	187.5%
June 30, 2022[2]	68,711,610	86,320,151	17,608,541	79.6%	9,100,791	193.5%

1. Covered Payroll includes compensation paid to all active employees on which contributions are calculated, as reported by LACERA. Covered Payroll differs from the Active Member Valuation Payroll shown in Table C-1, which is an annualized compensation of only those members who were active on the actuarial valuation date.

2. Assumption and method changes.

Exhibit 14
Schedule of Contributions from the Employer

(Dollars in Thousands)

Fiscal Year Ending	Actuarially Determined Employer Contribution	Actual Employer Contributions			Percentage of Actuarially Determined Contribution Contributed
		Cash Payment	Transfer from Reserve Accounts	Total	
June 30, 2013	$ 1,172,014	$ 723,195	$ 448,819	$ 1,172,014	100%
June 30, 2014	1,320,442	1,320,442	-	1,320,442	100%
June 30, 2015	1,494,975	1,494,975	-	1,494,975	100%
June 30, 2016	1,443,130	1,443,130	-	1,443,130	100%
June 30, 2017[(1)]	1,392,813	1,370,922	21,891	1,392,813	100%
June 30, 2018	1,564,284	1,564,284	-	1,564,284	100%
June 30, 2019	1,708,122	1,708,122	-	1,708,122	100%
June 30, 2020	1,800,137	1,800,137	-	1,800,137	100%
June 30, 2021	2,012,877	2,012,877	-	2,012,877	100%
June 30, 2022	2,199,889	2,199,889	-	2,199,889	100%

1. The County Contribution Reserve was used to offset the contribution required from the Courts in the fiscal year ended June 30, 2017.

Exhibit 15
Solvency Test

(Dollars in Millions)

Actuarial Valuation Date	Actuarial Value of Valuation Assets	Actuarial Accrued Liabilities for: Active Member Contributions (A)	Retirees and Beneficiaries[1] (B)	Active Members (Employer Financed Portion) (C)	Portion of Actuarial Accrued Liabilities Covered by Assets (A)	(B)	(C)
June 30, 2013	$ 39,932	$ 7,837	$ 30,980	$ 14,430	100%	100%	8%
June 30, 2014	43,654	8,354	31,882	14,706	100%	100%	23%
June 30, 2015	47,328	8,805	32,734	15,280	100%	100%	38%
June 30, 2016	49,358	8,767	35,316	18,116	100%	100%	29%
June 30, 2017	52,166	9,482	37,077	18,752	100%	100%	30%
June 30, 2018	55,233	9,882	39,192	19,453	100%	100%	32%
June 30, 2019	57,617	10,210	42,235	22,190	100%	100%	23%
June 30, 2020	59,763	10,650	44,500	23,125	100%	100%	20%
June 30, 2021	64,909	11,115	46,774	24,009	100%	100%	29%
June 30, 2022	68,712	11,029	49,637	25,654	100%	100%	31%

1. Includes vested and non-vested former members.

Notes:

For the purpose of this exhibit, Valuation Assets are allocated, in order, to active member contribution accounts (A), the Actuarial Accrued Liability for retirees and beneficiaries (B) and the employer financed portion of active member liabilities (C). Active member contributions are always assumed to be 100% funded. Assets are then allocated to the Actuarial Accrued Liability for retirees and beneficiaries until that category is 100% funded, and then any remaining Valuation Assets are allocated to the employer financed portion of active member liabilities. The employer's UAAL contributions are based on a percentage of active member salaries and those contributions are projected to eliminate any unfunded liability in that category over the scheduled amortization period.

Exhibit 16
Actuarial Analysis of Financial Experience

(Dollars in Millions)

	Valuation as of June 30						
	2016	2017	2018	2019	2020	2021	2022
Unfunded Actuarial Accrued Liability	$9,491	$12,841	$13,145	$13,294	$17,018	$18,512	$16,989
Expected Increase/(Decrease) from Prior Valuation	(102)	320	146	25	306	171	(76)
Salary Increases Greater/(Less) than Expected	162	277	223	486	388	484	(21)
CPI Greater/(Less) than Expected	(191)	(139)	45	44	43	(73)	355
Change in Assumptions / Methods	2,922	-	-	2,528	-	-	1,364
Asset Return Less/(Greater) than Expected	496	(421)	(411)	477	701	(2,039)	(996)
All Other Experience	63	267	146	164	56	(66)	(7)
Ending Unfunded Actuarial Accrued Liability	**$12,841**	**$13,145**	**$13,294**	**$17,018**	**$18,512**	**$16,989**	**$17,608**

Exhibit 17
Retirants and Beneficiaries added to and removed from Retiree Payroll

(Dollars in Thousands)

Valuation Date	Added to Rolls		Removed from Rolls		Rolls at End of Year		% Increase in Retiree Allowance	Average Annual Allowance
	Member Count	Annual Allowance[1]	Member Count	Annual Allowance[1]	Member Count	Annual Allowance[1]		
June 30, 2013	3,373	$ 205,659 [2]	(2,057)	$ (69,494)	58,086 [3]	$ 2,611,067	5.50%	$ 45.0
June 30, 2014	3,128	172,743 [2]	(1,985)	(71,730)	59,229 [3]	2,712,080	3.87%	45.8
June 30, 2015	3,501	180,549 [2]	(2,124)	(80,028)	60,606 [3]	2,812,601	3.71%	46.4
June 30, 2016	3,479	220,632 [2]	(2,171)	(80,881)	61,914 [3]	2,952,352	4.97%	47.7
June 30, 2017	3,721	245,915 [2]	(2,311)	(89,624)	63,324 [3]	3,108,643	5.29%	49.1
June 30, 2018	3,826	276,118 [2]	(2,270)	(89,033)	64,880 [3]	3,295,728	6.02%	50.8
June 30, 2019	3,978	302,022 [2]	(2,351)	(97,840)	66,507 [3]	3,499,910	6.20%	52.6
June 30, 2020	3,930	311,206 [2]	(2,425)	(104,914)	68,012 [3]	3,706,202	5.89%	54.5
June 30, 2021	4,350	327,745 [2]	(2,865)	(132,185)	69,497 [3]	3,901,762	5.28%	56.1
June 30, 2022	4,796	378,343 [2]	(2,722)	(130,089)	71,571 [3]	4,150,016	6.36%	58.0

1. Annual allowance is the monthly benefit allowance annualized for those members counted as of June 30.

2. Includes COLAs that occurred during the fiscal year and therefore were not included in the previous years' Annual Allowance totals.

3. For the actuarial valuation year, Member Count includes retirees who due to timing at year end, are not yet included in the total Retired Members count disclosed in Note A - Plan Description of LACERA's ACFR for the fiscal year ended June 30, 2022.

8. Cash Flow History and Projections

Exhibits 18a and 18b contain tables and graphs that illustrate both the cash flow history for the past 10 years and a projection on the valuation basis for the next 10 years.

Contributions include both employer and member contributions. Exhibit 18a shows that net cash outflow has gradually increased over the last five years. In future years, the cash flow is expected to become increasingly negative. This is a typical pattern for a mature retirement plan where it is expected that contributions will be less than benefits and that the plan will begin drawing on the fund that has been built up over prior years.

Note that the actual cash contributions do not reflect the transfers made between reserve funds, but only cash coming into the Plan. We are assuming no further transfers, only full cash contributions. In addition, LACERA will receive dividends and interest payments from its investments. These types of payments are not considered for this analysis, which focuses solely on comparing contributions with benefit payments and administrative expenses.

The projected cash flows include contributions, statutory benefits, and administrative expenses only. They are based on the actuarial assumptions as stated in Appendix A of this valuation report. The total employer contribution rate is assumed to be 24.46% for the first year and 25.84% for the second year; total employer contributions for the remainder of the period reflect the expected recognition of asset gains and losses currently being deferred. The aggregate member rate is assumed to stay at the calculated rate for June 30, 2022 of 8.21% of payroll. Expenses are based on the expenses for the year ended June 30, 2022, increased annually with the actuarial inflation assumption of 2.75%.

Any increases or reductions in future contribution rates will increase or decrease the net cash flow. The projected cash flows do not include:

- Projected STAR benefits that have not yet been granted and STAR benefits that have been adopted but are not effective until after the valuation date.
- Projected benefits payable under certain insurance contracts for a group of retired members. These payments are netted against the total expected retiree benefits.

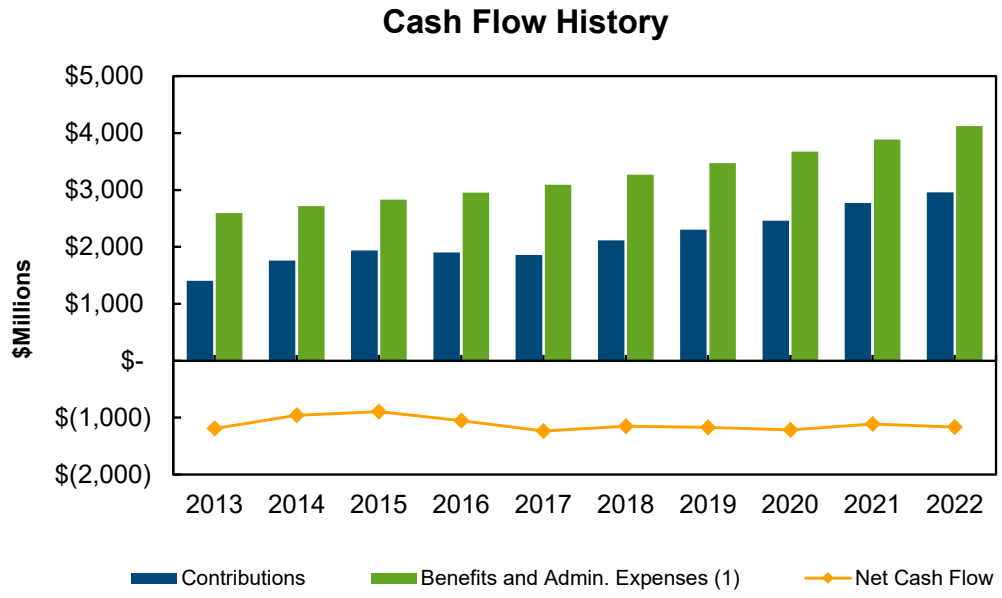
Exhibit 18a
Cash Flow History and Projections – Dollars

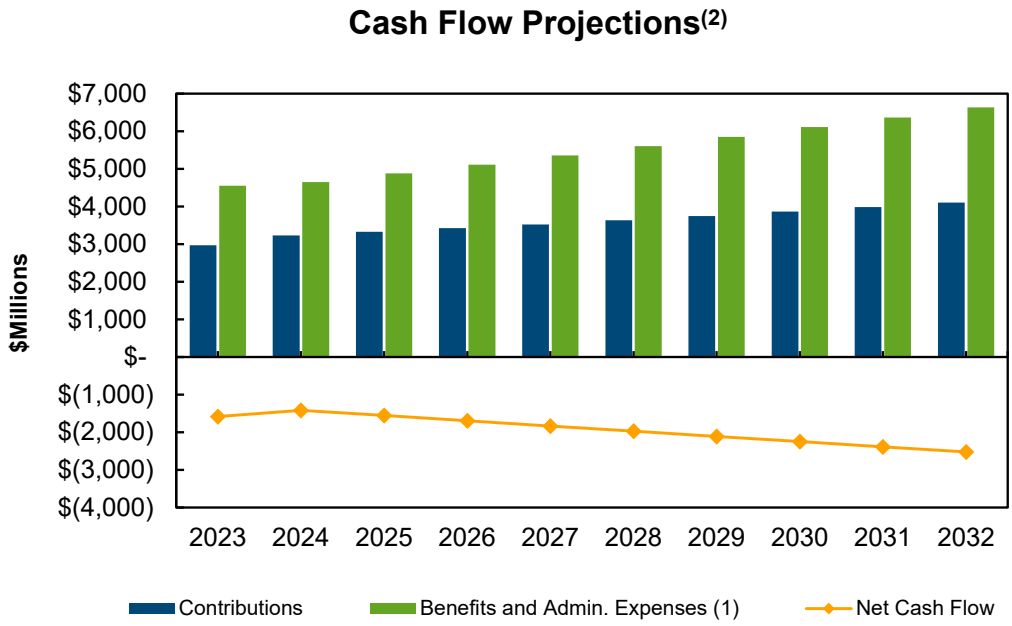
Plan Year Ending	Cash Flow History			
	Total Contributions	Benefits & Administrative Expenses[1]	Net Cash Flow	Net Cash Flow as a Percent of Market Assets
2013	$ 1,403	$ 2,593	$ (1,190)	-3.1%
2014	1,759	2,719	(960)	-2.3%
2015	1,936	2,829	(893)	-1.9%
2016	1,902	2,954	(1,052)	-2.2%
2017	1,858	3,094	(1,236)	-2.6%
2018	2,116	3,268	(1,152)	-2.2%
2019	2,304	3,475	(1,171)	-2.1%
2020	2,459	3,676	(1,217)	-2.1%
2021	2,774	3,886	(1,112)	-1.9%
2022	2,959	4,126	(1,167)	-1.6%

Plan Year Ending	Cash Flow Projections[2]			
	Total Contributions	Benefits & Administrative Expenses[1]	Net Cash Flow	Net Cash Flow as a Percent of Market Assets
2023	$ 2,972	$ 4,555	$ (1,583)	-2.3%
2024	3,232	4,652	(1,419)	-1.9%
2025	3,328	4,880	(1,553)	-2.0%
2026	3,424	5,114	(1,690)	-2.1%
2027	3,523	5,356	(1,832)	-2.1%
2028	3,634	5,602	(1,968)	-2.2%
2029	3,746	5,854	(2,108)	-2.2%
2030	3,863	6,110	(2,246)	-2.3%
2031	3,984	6,370	(2,386)	-2.3%
2032	4,109	6,633	(2,525)	-2.3%

1. Investment expenses are assumed to be covered by investment return.
2. Future contributions reflect the expected impact of asset gains and losses currently being deferred.

Exhibit 18b
Cash Flow History and Projections – Graphs





1. Investment expenses are assumed to be covered by investment return.
2. Future contributions reflect the expected impact of asset gains and losses currently being deferred.

9. Risk Discussion

Please refer to the Risk Assessment report dated May 23, 2022 for a detailed analysis of the main risks applicable to LACERA. That report includes detailed identification and assessment of risks.

Overview

The results of any actuarial valuation are based on one set of reasonable assumptions. Although we believe the current assumptions provide a reasonable estimate of future expectations, it is almost certain that future experience will differ from the assumptions to some extent. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the Plan, or of the Plan's members.

Actuarial Standard of Practice 51 (ASOP 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the Plan.
- Assess the risks identified as significant to the Plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the Plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the Plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed.

In addition, the California Actuarial Advisory Panel (CAAP) has adopted a set of model disclosure elements for actuarial valuation reports of public retirement systems in California. Most of these elements are included in other areas of this report. The remaining CAAP-recommended disclosures are as follows:

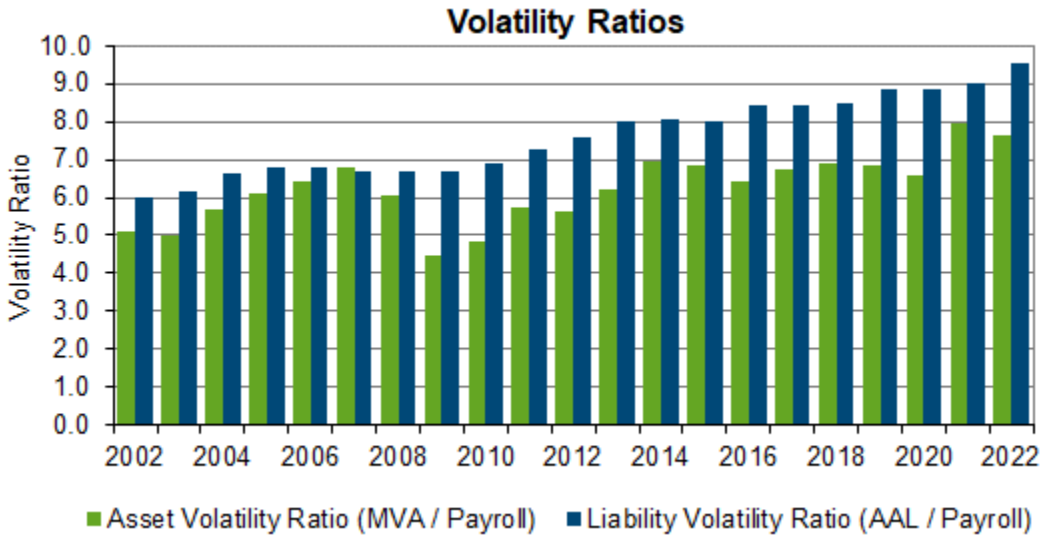
Disclosure Element	Description	Value
Gross Normal Cost $ [1]	Normal Cost allocated to valuation year, paid at mid-year.	$ 1,777.2
Statutory Contribution $ [1]	Expected Employer Contribution paid at mid-year.	$ 2,248.9
Asset Smoothing Ratio	Actuarial Value of Assets divided by Market Value of Assets	99.6%
Asset Volatility Ratio	Market Value of Assets divided by Payroll	7.6
Liability Volatility Ratio	Actuarial Accrued Liability divided by Payroll	9.5

1. Amounts shown in millions of dollars

This Section 9 uses the framework of ASOP 51 and the Asset and Liability Volatility Ratios shown above to communicate important information about: significant risks to the Plan, the Plan's maturity, and relevant historical plan data.

Asset and Liability Volatility Ratios

Asset and Liability Volatility Ratios are a measure of the level of assets (or liabilities) to payroll. In general, a higher ratio means that the employer contribution rates (ECR) are more sensitive to changes in levels of assets or liabilities. Asset and Liability Volatility Ratios are shown below, and in Exhibit E-4.



As shown above, in the current valuation LACERA has an Asset Volatility Ratio of 7.6 and a Liability Volatility Ratio of 9.5. These ratios have increased over time as LACERA has matured. Specifically, due to the liabilities growing significantly faster than payroll in the fiscal year ended June 30, 2022, the Liability Volatility Ratio has increased from 9.0 to 9.5. This means that the ECR is more sensitive to changes in the level of liabilities and payroll now than it was just one year ago.

LACERA has accumulated a significant amount of assets relative to its payroll and by several measures is considered a mature plan. Accumulating assets to pay for future benefit obligations is responsible funding, but it does mean changes in the investment markets can have a significant impact on the ECR.

For LACERA, 7.6 Asset Volatility Ratio means that a 10% investment gain or loss relative to the assumed 7.0% investment return assumption (that is, an investment return of -3.0% or of 17.0%) translates to a 5.4% of pay increase (or decrease) in the ECR, all other things being equal. Since LACERA uses actuarial smoothing, the increase would not be immediate, but would occur gradually over five years and could potentially be offset, or further increased, by future investment gains or losses or other factors.

The Liability Volatility Ratio measures the sensitivity of the ECR to changes in the level of liabilities, all else being equal. With a liability volatility ratio of 9.5 an increase (or decrease) in the investment return assumption of 0.5% translates to a decrease (or increase) in the ECR of approximately 5.1% of pay for LACERA.

Factors Affecting Future Results

There are a number of factors that affect future valuation results. To the extent actual experience for these factors varies from the assumptions, this will likely cause either increases or decreases in the plan's future funding level and ECR. The factors that can have the most significant impact on LACERA's valuation results are:

- Investment returns

  To the extent that actual investment returns differ from the assumed investment return, the Plan's future assets, ECR, and funded status may differ significantly from those presented in this valuation. Additional discussion of the impact of variance of investment returns is included below.

- Compensation increases

  Individual member retirement benefits are linked to that member's compensation. As such, assumptions need to be made as to a member's future compensation increases. Higher future compensation increases will generally result in larger retirement benefits, liabilities, ECRs, and a lower funded status. Conversely, lower compensation increases than assumed will generally result in smaller retirement benefits, liabilities, ECRs, and a higher funded status.

- Payroll variation

  In the valuation, an assumption is made for the overall rate of payroll growth of LACERA from year-to-year. To the extent that the overall rate of payroll growth is greater than assumed, the ECR may decrease since the UAAL will be amortized over a larger payroll base. The opposite will occur if the overall rate of payroll growth is lower than assumed.

  This effect often will offset somewhat with individual compensation increases, discussed above.

- Longevity and other demographic risks

  The liabilities reported in this valuation have been calculated by assuming that members will follow specific patterns of demographic experience (e.g., mortality, retirement, termination, disability) as described in Appendix A. To the extent that actual demographic experience is different than is assumed to occur, future liabilities, ECRs, and funded status may differ from that presented in this valuation.

All of these assumptions are reviewed in detail during the triennial Investigation of Experience study, and are also reviewed annually during the valuation process. Changes in assumptions are generally recommended as part of the triennial Investigation of Experience if actual experience has been materially different than assumed or forecasts have changed significantly. Additionally, changes may be recommended and discussed at each valuation if they are deemed to be appropriate at that time.

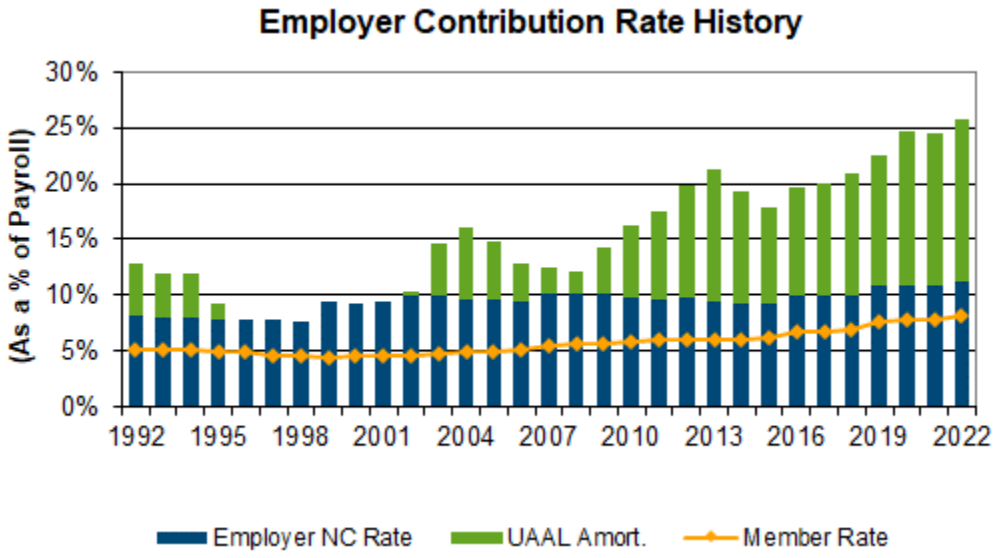
Discussion of Investment Return Risk

Of these factors, we believe the factor with the greatest potential risk to impact future valuation results for LACERA is future investment returns. For example, if actual returns fall short of the current assumption of 7.0% per year, this will cause an increase in the ECR and a decrease in the Funded Ratio, all other things being equal. Conversely, if actual returns exceed the current assumption of 7.0% per year, this will cause a decrease in the ECR and an increase in the Funded Ratio.

The magnitude of the increase or decrease in the ECR is affected by the maturity level, and specifically, the asset volatility ratio. LACERA has accumulated a significant amount of assets relative to its payroll and by several measures is considered a mature plan. Accumulating assets to pay for future benefit obligations is responsible funding, but it does mean that changes in the investment markets can have a significant impact on the ECR.

Historical Variation in Employer Contribution Rate

One way to assess future risks is to look at historical measurements. The following graph shows how the ECR has varied over the last 30 years under various investment return and assumption environments.



Appendix A Actuarial Procedures and Assumptions

The actuarial procedures and assumptions used in this valuation are described in this section. The assumptions were reviewed and changed for the June 30, 2022 actuarial valuation as a result of the 2022 triennial Investigation of Experience Study.

The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of LACERA and of LACERA itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of LACERA's benefits.

Table A-1 summarizes the assumptions.

Tables A-2 and A-3 show how members are expected to leave retired status due to death.

Table A-4 presents the probability of refund of contributions upon termination of employment while vested.

Table A-5 presents the expected annual percentage increase in salaries.

Tables A-6 to A-13 presents the probabilities that a member will leave the System for various reasons.

Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age).

The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the Unfunded Actuarial Accrued Liability (UAAL).

For members who transferred between plans, entry age is based on original entry into the System.

For General Plan G and Safety Plan C, the normal cost rate is rounded up to the nearest 0.02%.

Amortization Method

The original UAAL as of June 30, 2009 is amortized as a level percentage of the projected salaries of present and future members of LACERA over a closed 30-year period. As of the June 30, 2019 valuation, all amortization layers with periods greater than 22 years as of July 1, 2020 were amortized over a 22-year period. Future changes in the UAAL due to actuarial gains and losses and assumption changes are amortized over new closed 20-year periods, beginning with the date the contribution is first expected to be made. This is referred to as “layered” amortization. For increases in the UAAL due to changes in benefit provisions, the increase is amortized over a 10-year period.

Records and Data

The data used in this valuation consists of financial information and the age, service, and income records for active and inactive members and their survivors. All of the data were supplied by LACERA and are accepted for valuation purposes without audit.

Replacement of Former Members

The ages and relative salaries at entry of future members are assumed to follow a new entrant distribution based on the pattern of current members. The normal cost rates for active members within an individual plan will remain fairly stable in future years unless there are changes in the governing law, the actuarial assumptions, or the pattern of the new entrants.

Growth in Membership

For benefit determination purposes, no growth in the membership of LACERA is assumed. For funding purposes, if amortization is required, the total payroll of covered members is assumed to grow due to the combined effects of future wage increases of current active members and the replacement of the current active members by new employees. No growth or decline in the total number of active members is assumed.

Payroll Growth

Total payroll is expected to grow at 3.25% per year.

Internal Revenue Code Section 415 Limit

The Internal Revenue Code (IRC) Section 415 maximum benefit limitation is not explicitly reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit calculation at retirement.

Internal Revenue Code Section 401(a)(17)

The Internal Revenue Code Section 401(a)(17) maximum compensation limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

Government Code Section 7522.10

The maximum compensation limit under Government Code Section 7522.10 is reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

Employer Contributions

The employer contribution rate is set by the Board of Investments based on actuarial valuations.

Member Contributions

The member contribution rates of contributory legacy plans (all plans except General Plans E and G and Safety Plan C) vary by entry age and are described in the law. Code references are shown in Appendix B of the valuation report. The methods and assumptions used are detailed later in this section.

The individual member rates by entry age, plan, and class are illustrated in Appendix D of the valuation report.

Valuation of Assets

The assets are valued using a five-year smoothed method based on the difference between the expected market value and the actual market value of the assets as of the valuation date. The expected market value is the prior year's market value increased with the net increase in the cash flow of funds, all increased with interest during the past fiscal year at the expected investment return rate assumption. To the extent that there is a loss for the year and there are unrecognized gains from previous years, or to the extent that there is a gain for the year and there are unrecognized losses from previous years, the gain or loss for the year shall be used to offset unrecognized gains or losses from previous years in the order of oldest to most recent. Any remaining gain or loss for the year

is recognized over a five-year period. Valuation Assets exclude the statutory Contingency Reserve and the STAR Reserve. The five-year smoothing valuation basis for all assets was adopted effective June 30, 2009, and the offsetting methodology and STAR Reserve treatment were adopted effective June 30, 2022.

Price Inflation (Local and National)

The price inflation assumption is used in the determination of assumptions for individual salary increases, overall wage growth, postretirement benefit increases, and PEPRA compensation limit increases. Both the local and national price inflation assumptions are 2.75% per year.

Investment Earnings and Expenses

The future investment earnings of the assets of LACERA are assumed to accrue at an annual rate of 7.00% compounded annually, net of both investment and administrative expenses. This rate was adopted June 30, 2019.

Postretirement Benefit Increases

Postretirement increases are assumed for the valuation in accordance with the benefits provided as described in Appendix B. These adjustments vary by plan and are assumed payable each year in the future but are limited to not exceed the expected local inflation of 2.75% per year, with the exception that any COLA accumulation banks for Plan A members are reflected in the valuation. The local inflation rate used for the postretirement benefit assumptions was adopted June 30, 2016.

Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 7.00% compounded semi-annually for an annualized rate of 7.12%. This rate was adopted effective June 30, 2019.

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table A-5. In addition to increases in salary due to promotions and longevity, this scale includes an assumed 3.25% per annum rate of increase in the general wage level of the membership. These rates were adopted June 30, 2022.

Increases are assumed to occur mid-year (i.e., January 1st) and only apply to base salary, excluding megaflex compensation. The mid-year timing reflects that salary increases occur throughout the year, or on average mid-year.

For plans with a one-year final average compensation period, actual average annual compensation is used. For Plan E, Plan G and Safety Plan C, the monthly rate as of June of the valuation year was annualized. Due to irregular compensation payments included as pensionable earnings, actual annual pay is preferred over annualizing a single monthly payment amount.

Social Security Wage Base

Plan E members have their benefits offset by an assumed Social Security Benefit. For valuation funding purposes, we need to project the Social Security Benefit. We assume the current Social Security provisions will continue and the annual Wage Base will increase at the rate of 3.25% per year. Note that statutory provisions describe exactly how to compute the offset for purposes of determining a member's offset amount at time of termination or retirement. This rate was adopted June 30, 2016.

Note also, that it is assumed all Plan E members born after 1950 have less than 10 years of Social Security-covered service and, therefore, do not have their benefit offset.

General Plan G and Safety Plan C members have their compensation limited to approximately 120% of the Social Security Wage Base. The limit for 2022 is $161,969 (after applying the 120% factor) and is projected to increase at the assumed national CPI rate of 2.75%. This rate of future increase was adopted effective June 30, 2016.

Retirement

Members in General Plans A-D may retire at age 50 with 10 years of service, or any age with 30 years of service, or age 70 regardless of the number of years of service. General Plan G members are eligible to retire at age 52 with 5 years of service, or age 70 regardless of the number of years of service. Non-contributory Plan E members may retire at age 55 with 10 years of service. Members of Safety Plans A and B may retire at age 50 with 10 years of service, or any age with 20 years of service. Safety Plan C members are eligible to retire at age 50 with 5 years of County service. Retirement probabilities vary by age and are shown by plan in Tables A-6 through A-13.

All General members who attain or have attained age 75 in active service and all Safety members who attain or have attained age 65 in active service are assumed to retire immediately (except for Safety Plan C members who have not yet attained 5 years of service).

Vested former members are assumed to retire at the later of their current age and the assumed retirement age specified as follows:

Assumption for Deferred Commencement

Plan	Age at Commencement
GA	62
GB	62
GC	62
GD	59
GE	62
GG	57
SA	55
SB	50
SC	50

The assumptions regarding termination of employment, early retirement, and unreduced service retirement are treated as a single set of decrements in regard to a particular member. For example, a General Plan D member hired at age 30 has a probability of withdrawing from LACERA due to death, disability or other termination of employment until age 50. After age 50, the member can withdraw due to death, disability, or retirement. Thus, in no year during the member's projected employment would the member be eligible for both a probability of other termination of employment and a probability of retirement.

The retirement probabilities were adopted June 30, 2022.

Disability

The probabilities of disability used in the valuation are also illustrated in Tables A-6 through A-13. These probabilities were adopted June 30, 2019.

Postretirement Mortality – Other Than Disabled Members

The same postretirement mortality probabilities are used in the valuation for members retired for service and beneficiaries. These probabilities are illustrated in Table A-2. Current beneficiary mortality is assumed to be the same as for healthy members of the same sex. Future beneficiaries are assumed to be of the opposite sex and have the same mortality as General members. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Note that these assumptions include a projection for expected future mortality improvement. The new projection scale was adopted June 30, 2022.

Males: General members: PubG-2010 Healthy Retiree Mortality Table for Males, with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males multiplied by 85%, with MP-2021 Ultimate Projection Scale.

Females: General members: PubG-2010 Healthy Retiree Mortality Table for Females multiplied by 110%, with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2021 Ultimate Projection Scale.

Postretirement Mortality – Disabled Members

For members retired for disability, the mortality probabilities used in the valuation are illustrated in Table A-3. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Note that these assumptions include a projection for expected future mortality improvement. The new projection scale was adopted June 30, 2022.

Males: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Males and PubG-2010 Disabled Retiree Mortality Table for Males, both projected with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males, with MP-2021 Ultimate Projection Scale.

Females: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Females and PubG-2010 Disabled Retiree Mortality Table for Females, both projected with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2021 Ultimate Projection Scale.

Mortality while in Active Status

For active members, the mortality probabilities used in the valuation are illustrated in Tables A-6 through A-13. The amount-weighted Pub-2010 mortality tables are used. These mortality tables were adopted June 30, 2019.

Class	Gender	Proposed Table
General	Male	PubG-2010 (120%) Employee Male[1]
General	Female	PubG-2010 (130%) Employee Female[1]
Safety	Male	PubS-2010 (100%) Employee Male[1]
Safety	Female	PubS-2010 (100%) Employee Female[1]

1. *Projected using the MP-2021 Ultimate projection scale.*

These assumptions include a projection for expected future mortality improvement, which was adopted June 30, 2022.

Note that Safety members have an additional service-connected mortality probability of 0.01% per year.

Other Employment Terminations

Tables A-6 to A-13 show, for all ages, the probabilities assumed in this valuation for future termination from active service other than for death, disability, or retirement. These probabilities do not apply to members eligible for service retirement. These probabilities were adopted June 30, 2022.

Terminating employees may withdraw their contributions immediately upon termination of employment and forfeit the right to further benefits, or they may leave their contributions with LACERA. Former contributing members whose contributions are on deposit may later elect to receive a refund, may return to work, or may remain inactive until becoming eligible to receive a retirement benefit under either LACERA or a reciprocal retirement system. All terminating members who are not eligible for vested benefits are assumed to withdraw their contributions immediately. It is assumed that all terminating members will not be rehired in the future.

Table A-4 gives the assumed probabilities that vested members will withdraw their contributions and elect a refund immediately upon termination and the probability that remaining members will elect a deferred vested benefit. All non-vested members are assumed to elect a refund and withdraw their contributions. These probabilities were adopted June 30, 2022.

Probability of Eligible Survivors

For members not currently in pay status, 77% of all males and 48% of all females are assumed to have eligible survivors (spouses or qualified domestic partners). Survivors are assumed to be three years younger than male members and two years older than female members. Survivors are assumed to be of the opposite gender as the member. There is no explicit assumption for children's benefits. We believe the survivor benefits based on this assumption are sufficient to cover children's benefits as they occur. These probabilities were adopted June 30, 2022.

Valuation of Vested Former Members

The deferred retirement benefit is calculated based on the member's final compensation and service at termination. The compensation amount is projected until the assumed retirement age for members who are assumed to be employed by a reciprocal agency. For members who are missing compensation data, Final Compensation is estimated as the average amount for all members who terminated during the same year and had a valid compensation amount. The greater of the present value of the calculated benefit and the employee's current contribution balance is valued for future deferred vested members.

Reciprocal Employment

17% of General and 36% of Safety current and future vested former members are assumed to work for a reciprocal employer. These probabilities were adopted June 30, 2022.

Current vested reciprocal members are assumed to receive annual salary increases of 4.25%. Future reciprocal vested members are assumed to receive the same salary increases they would have received if they had stayed in active employment with LACERA and retired at the assumed retirement age.

Other Technical Assumptions

Decrements are assumed to occur mid-year, except that if the retirement rate is 100% at a given age then the member is assumed to retire at the beginning of the year at that age.

Decrement rates shown are probabilities and are non-competing.

Termination rates are asummed to be 0% if the member is eligible for service retirement.

Valuation of Annuity Purchases

Over 30 years ago, LACERA purchased single life annuities from two insurance companies for some retired members (currently less than 1% of the retired population). The total liability for these members is calculated and then offset by the expected value of the benefit to be paid by the insurance companies.

For affected members, the insurance companies are responsible for:

1. Straight life annuity payments
2. Statutory COLAs

LACERA is responsible for:

1. Benefit payments payable to any beneficiary
2. STAR COLAs

Member Contribution Rate Assumptions

The following assumptions summarize the procedures used to compute member contribution rates based on entry age:

In general, the member rate is determined by the Present Value of the Future Benefit (PVFB) payable at retirement age, divided by the present value of all future salaries payable between age at entry and retirement age. For these purposes, per the CERL:

A. The Annuity factor used for General members is based on a 35% / 65% blend of the male and female valuation mortality tables and projection scale, with a static projection to 2044. For Safety members, it is based on an 85% / 15% blend of the male and female annuity factors determined using the same mortality tables as used for service-retired members.
B. The annuity factor used in determining the present value of future benefits (PVFB) at entry age is equal to the life only annuity factor at 7.00%.
C. The Final Compensation is based on the salary paid in the year prior to attaining the retirement age.
D. Example: For a General Plan C Member who enters at age 59 or earlier, the Final Compensation at retirement (age 60) will be the monthly average of the annual salaries during age 59.
E. Member Rates are assumed to increase with entry age. There are a few exceptions at the higher entry ages where the calculated rate is less than the previous entry age. In these cases the member contribution rate is adjusted so that it is no less than the value for the previous entry age.

Table A-1
Summary of Valuation Assumptions as of June 30, 2022

I. Economic assumptions

A.	Payroll / General wage increases	3.25%
B.	Investment earnings	7.00%
C.	Growth in membership	0.00%
D.	Postretirement benefit increases (varies by plan)	Plan COLA not greater than local price inflation assumption[1]
E.	National price inflation assumption	2.75%
F.	Local price inflation assumption	2.75%

II. Demographic assumptions

A.	Salary increases due to service	Table A-5
B.	Retirement	Tables A-6 to A-13
C.	Disability	Tables A-6 to A-13
D.	Mortality during active employment	Tables A-6 to A-13
E.	Mortality for active members after termination and service retired members[2]	Table A-2

Class	Gender	
General	Male	PubG-2010 (100%) Healthy Retiree Male
General	Female	PubG-2010 (110%) Healthy Retiree Female
Safety	Male	PubS-2010 (85%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

F. Mortality among disabled members[2] — Table A-3

Class	Gender	
General	Male	Avg of: PubG-2010 (100%) Healthy Retiree Male PubG-2010 (100%) Disabled Retiree Male
General	Female	Avg of: PubG-2010 (100%) Healthy Retiree Female PubG-2010 (100%) Disabled Retiree Female
Safety	Male	PubS-2010 (100%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

G. Mortality for beneficiaries[1] — Table A-2
Basis – Beneficiaries are assumed to have the same mortality as a General member of the opposite gender who has taken a service retirement.

H.	Other terminations of employment	Tables A-6 to A-13
I.	Refund of contributions on vested termination	Table A-4

1. To account for existing Plan A COLA accumulation balances, retirees and beneficiaries with a retirement date prior to April 1, 2022 are assumed to receive 3.00% annual COLAs.

2. All mortality probabilities are projected using the MP-2021 Ultimate projection scale.

Table A-2
Mortality for Members Retired for Service[1]

Age	Safety Male	Safety Female	General Male	General Female
20	0.0520%	0.0210%	0.0740%	0.0380%
25	0.0470%	0.0260%	0.0560%	0.0260%
30	0.0520%	0.0350%	0.0720%	0.0440%
35	0.0590%	0.0470%	0.0940%	0.0680%
40	0.0750%	0.0640%	0.1320%	0.1060%
45	0.1037%	0.0870%	0.1960%	0.1650%
50	0.1632%	0.1490%	0.2980%	0.2442%
55	0.2601%	0.2580%	0.4310%	0.3146%
60	0.4318%	0.4460%	0.6150%	0.4224%
65	0.7489%	0.7700%	0.9130%	0.6743%
70	1.3328%	1.3290%	1.5260%	1.1693%
75	2.4021%	2.2950%	2.6710%	2.0713%
80	4.3376%	3.9620%	4.7740%	3.6960%
85	7.7648%	6.8420%	8.5910%	6.8255%
90	13.4810%	11.8150%	14.6720%	12.6357%

Mortality Improvement Scale

Age	All Groups
60 & Less	1.350%
61	1.350%
62	1.350%
63	1.340%
64	1.320%
65	1.310%
70	1.240%
75	1.170%
80	1.100%
85	0.870%
90	0.630%
95	0.400%
100	0.300%
105	0.200%
110	0.100%
115	0.000%

1. Mortality probabilities are those applicable for the fiscal year beginning in 2010. Annual projected improvements are assumed in the following years under the schedule shown. For example, the annual mortality probability for an 85-year old Safety male in fiscal year beginning in 2022 is 6.9918% calculated as follows:

Age 85 probability in 2022 = Age 85 probability in 2010 with 12 years improvement

= 7.7648% x (100.0% - 0.87%) ^ 12 = 6.9918%

Table A-3
Mortality for Members Retired for Disability[1]

Age	Safety Male	Safety Female	General Male	General Female
20	0.0610%	0.0210%	0.2430%	0.1340%
25	0.0550%	0.0260%	0.1670%	0.0940%
30	0.0610%	0.0350%	0.2130%	0.1485%
35	0.0700%	0.0470%	0.2760%	0.2315%
40	0.0880%	0.0640%	0.3885%	0.3625%
45	0.1220%	0.0870%	0.6015%	0.5675%
50	0.1920%	0.1490%	0.9515%	0.8525%
55	0.3060%	0.2580%	1.2725%	1.0140%
60	0.5080%	0.4460%	1.5590%	1.1700%
65	0.8810%	0.7700%	1.9785%	1.4345%
70	1.5680%	1.3290%	2.7135%	1.9625%
75	2.8260%	2.2950%	3.9315%	2.9430%
80	5.1030%	3.9620%	6.0610%	4.6835%
85	9.1350%	6.8420%	9.7030%	7.7680%
90	15.8600%	11.8150%	15.4625%	12.5760%

1. Mortality probabilities are those applicable for the fiscal year beginning in 2010. Annual projected improvements are assumed in the following years under the schedule shown on the preceding page.

Table A-4
Immediate Refund of Contributions upon Termination of Employment
(Excludes Plan E)

Years of Service	General	Safety
0	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	30%	30%
6	30%	30%
7	30%	30%
8	29%	28%
9	28%	26%
10	28%	24%
11	28%	22%
12	28%	20%
13	27%	18%
14	26%	16%
15	26%	14%
16	25%	12%
17	24%	10%
18	22%	9%
19	21%	8%
20	19%	7%
21	18%	6%
22	16%	5%
23	14%	4%
24	12%	3%
25	10%	2%
26	8%	2%
27	6%	2%
28	4%	2%
29	2%	2%
30 & Up	0%	0%

Table A-5
Annual Increase in Salary[1]

Years of Service	General	Safety
<1	6.00%	9.00%
1	5.25%	8.50%
2	4.75%	7.50%
3	4.10%	5.75%
4	3.50%	4.25%
5	3.00%	3.00%
6	2.50%	2.50%
7	2.00%	2.10%
8	1.60%	1.70%
9	1.45%	1.45%
10	1.30%	1.30%
11	1.15%	1.20%
12	1.00%	1.10%
13	0.90%	1.00%
14	0.85%	0.90%
15	0.80%	0.90%
16	0.75%	0.90%
17	0.70%	0.90%
18	0.65%	0.90%
19	0.60%	2.25%
20	0.55%	0.90%
21	0.50%	0.90%
22	0.45%	0.90%
23	0.40%	0.90%
24	0.40%	3.00%
25	0.40%	0.90%
26	0.40%	0.90%
27	0.40%	0.90%
28	0.40%	0.90%
29	0.40%	3.00%
30 or More	0.40%	0.90%

1. The total expected increase in salary includes both merit (shown above) and the general wage increase assumption of 3.25% per annum increase. The total result is compounded rather than additive. For example, the total assumed increase for General members for service less than one year is 9.45%.

Appendix A Probabilities of Separation from Active Service Tables A-6 to A-13

A schedule of the probabilities of termination of employment due to the following causes can be found on the following pages:

Service Retirement:	Member retires after meeting age and service requirements for reasons other than disability.
Withdrawal:	Member terminates and elects a refund of member contributions, or a deferred vested retirement benefit.
Service Disability:	Member receives disability retirement; disability is service related.
Ordinary Disability:	Member receives disability retirement; disability is not service related.
Service Death:	Member dies before retirement; death is service related.
Ordinary Death:	Member dies before retirement; death is not service related.

Each of these represents the probability that a member will separate from service at each age due to the particular cause. For example, a probability of 0.0300 for a member's service retirement at age 50 means we assume that 30 out of 1,000 members who are age 50 will retire at that age.

Each table represents the detailed probabilities needed for each LACERA plan by gender:

Table	A-6: General Plan A, B & C – Males	A-10: General Plan E – Males
	A-7: General Plan A, B & C – Females	A-11: General Plan E – Females
	A-8: General Plan D & G – Males	A-12: Safety Plan A, B & C – Males
	A-9: General Plan D & G – Females	A-13: Safety Plan A, B & C – Females

Table A-6
Probability of Separation from Active Service for General Members
Plans A, B & C – Male

Age	Service Retirement	Other Terminations	Service Disability	Ordinary Disability	Service Death	Ordinary Death
18	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
19	0.00000	0.00500	0.00010	0.00010	N/A	0.00046
20	0.00000	0.00500	0.00010	0.00010	N/A	0.00044
21	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
22	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
23	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
24	0.00000	0.00500	0.00010	0.00010	N/A	0.00035
25	0.00000	0.00500	0.00010	0.00010	N/A	0.00034
26	0.00000	0.00500	0.00010	0.00010	N/A	0.00036
27	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
28	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
29	0.00000	0.00500	0.00010	0.00010	N/A	0.00041
30	0.00000	0.00500	0.00010	0.00020	N/A	0.00043
31	0.00000	0.00500	0.00010	0.00020	N/A	0.00046
32	0.00000	0.00500	0.00010	0.00020	N/A	0.00048
33	0.00000	0.00500	0.00016	0.00020	N/A	0.00050
34	0.00000	0.00500	0.00022	0.00020	N/A	0.00053
35	0.00000	0.00500	0.00028	0.00020	N/A	0.00056
36	0.00000	0.00500	0.00034	0.00020	N/A	0.00060
37	0.00000	0.00500	0.00040	0.00020	N/A	0.00064
38	0.00000	0.00500	0.00048	0.00020	N/A	0.00068
39	0.00000	0.00500	0.00056	0.00020	N/A	0.00073
40	0.03000	0.00500	0.00064	0.00020	N/A	0.00079
41	0.03000	0.00500	0.00072	0.00020	N/A	0.00085
42	0.03000	0.00500	0.00080	0.00020	N/A	0.00092
43	0.03000	0.00500	0.00084	0.00024	N/A	0.00100
44	0.03000	0.00500	0.00088	0.00028	N/A	0.00108
45	0.03000	0.00500	0.00092	0.00032	N/A	0.00118
46	0.03000	0.00500	0.00096	0.00036	N/A	0.00128
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00139
48	0.03000	0.00500	0.00104	0.00044	N/A	0.00152
49	0.03000	0.00500	0.00108	0.00048	N/A	0.00166
50	0.03000	0.00500	0.00112	0.00052	N/A	0.00179
51	0.03000	0.00500	0.00116	0.00056	N/A	0.00194
52	0.03000	0.00500	0.00120	0.00060	N/A	0.00210
53	0.03000	0.00500	0.00156	0.00064	N/A	0.00227
54	0.06000	0.00500	0.00192	0.00068	N/A	0.00244
55	0.10000	0.00500	0.00228	0.00072	N/A	0.00263
56	0.12000	0.00500	0.00264	0.00076	N/A	0.00283
57	0.17000	0.00500	0.00300	0.00080	N/A	0.00306
58	0.26000	0.00500	0.00330	0.00084	N/A	0.00330
59	0.26000	0.00500	0.00360	0.00088	N/A	0.00355
60	0.30000	0.00500	0.00390	0.00092	N/A	0.00383
61	0.30000	0.00500	0.00420	0.00096	N/A	0.00413
62	0.30000	0.00500	0.00450	0.00100	N/A	0.00445
63	0.30000	0.00500	0.00450	0.00104	N/A	0.00481
64	0.30000	0.00500	0.00450	0.00108	N/A	0.00520
65	0.30000	0.00500	0.00450	0.00112	N/A	0.00562
66	0.22000	0.00500	0.00450	0.00116	N/A	0.00607
67	0.22000	0.00500	0.00450	0.00120	N/A	0.00658
68	0.22000	0.00500	0.00450	0.00124	N/A	0.00713
69	0.22000	0.00500	0.00450	0.00128	N/A	0.00775
70	0.22000	0.00500	0.00450	0.00132	N/A	0.00844
71	0.22000	0.00500	0.00450	0.00136	N/A	0.00920
72	0.22000	0.00500	0.00450	0.00140	N/A	0.01004
73	0.22000	0.00500	0.00450	0.00144	N/A	0.01098
74	0.22000	0.00500	0.00450	0.00148	N/A	0.01201
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01315

Table A-7
Probability of Separation from Active Service for General Members
Plans A, B & C – Female

Age	Service Retirement	Other Terminations	Service Disability	Ordinary Disability	Service Death	Ordinary Death
18	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
19	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
20	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
21	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
22	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
23	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
24	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
25	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
26	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
27	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
28	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
29	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
30	0.00000	0.00500	0.00015	0.00010	N/A	0.00020
31	0.00000	0.00500	0.00015	0.00010	N/A	0.00021
32	0.00000	0.00500	0.00015	0.00010	N/A	0.00023
33	0.00000	0.00500	0.00020	0.00010	N/A	0.00025
34	0.00000	0.00500	0.00025	0.00010	N/A	0.00027
35	0.00000	0.00500	0.00030	0.00010	N/A	0.00030
36	0.00000	0.00500	0.00035	0.00010	N/A	0.00033
37	0.00000	0.00500	0.00040	0.00010	N/A	0.00036
38	0.00000	0.00500	0.00042	0.00014	N/A	0.00039
39	0.00000	0.00500	0.00044	0.00018	N/A	0.00043
40	0.03000	0.00500	0.00046	0.00022	N/A	0.00047
41	0.03000	0.00500	0.00048	0.00026	N/A	0.00052
42	0.03000	0.00500	0.00050	0.00030	N/A	0.00056
43	0.03000	0.00500	0.00060	0.00032	N/A	0.00061
44	0.03000	0.00500	0.00070	0.00034	N/A	0.00066
45	0.03000	0.00500	0.00080	0.00036	N/A	0.00073
46	0.03000	0.00500	0.00090	0.00038	N/A	0.00079
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00086
48	0.03000	0.00500	0.00110	0.00042	N/A	0.00092
49	0.03000	0.00500	0.00120	0.00044	N/A	0.00100
50	0.03000	0.00500	0.00130	0.00046	N/A	0.00108
51	0.03000	0.00500	0.00140	0.00048	N/A	0.00117
52	0.03000	0.00500	0.00150	0.00050	N/A	0.00126
53	0.03000	0.00500	0.00156	0.00052	N/A	0.00137
54	0.06000	0.00500	0.00162	0.00054	N/A	0.00147
55	0.10000	0.00500	0.00168	0.00056	N/A	0.00160
56	0.12000	0.00500	0.00174	0.00058	N/A	0.00173
57	0.17000	0.00500	0.00180	0.00060	N/A	0.00187
58	0.26000	0.00500	0.00194	0.00064	N/A	0.00203
59	0.26000	0.00500	0.00208	0.00068	N/A	0.00221
60	0.30000	0.00500	0.00222	0.00072	N/A	0.00242
61	0.30000	0.00500	0.00236	0.00076	N/A	0.00264
62	0.30000	0.00500	0.00250	0.00080	N/A	0.00289
63	0.30000	0.00500	0.00250	0.00084	N/A	0.00317
64	0.30000	0.00500	0.00250	0.00088	N/A	0.00350
65	0.30000	0.00500	0.00250	0.00092	N/A	0.00385
66	0.22000	0.00500	0.00250	0.00096	N/A	0.00425
67	0.22000	0.00500	0.00250	0.00100	N/A	0.00471
68	0.22000	0.00500	0.00250	0.00104	N/A	0.00520
69	0.22000	0.00500	0.00250	0.00108	N/A	0.00575
70	0.22000	0.00500	0.00250	0.00112	N/A	0.00636
71	0.22000	0.00500	0.00250	0.00116	N/A	0.00703
72	0.22000	0.00500	0.00250	0.00120	N/A	0.00777
73	0.22000	0.00500	0.00250	0.00124	N/A	0.00859
74	0.22000	0.00500	0.00250	0.00128	N/A	0.00950
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01050

Table A-8
Probability of Separation from Active Service for General Members
Plans D & G – Male

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plan D	Plan G							
18	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	0	0.08000	80%
19	0.00000	0.00000	0.00010	0.00010	N/A	0.00046	1	0.06500	80%
20	0.00000	0.00000	0.00010	0.00010	N/A	0.00044	2	0.05000	80%
21	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	3	0.04250	80%
22	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	4	0.03500	80%
23	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	5	0.03100	80%
24	0.00000	0.00000	0.00010	0.00010	N/A	0.00035	6	0.02900	80%
25	0.00000	0.00000	0.00010	0.00010	N/A	0.00034	7	0.02700	80%
26	0.00000	0.00000	0.00010	0.00010	N/A	0.00036	8	0.02500	80%
27	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	9	0.02000	80%
28	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	10	0.01700	80%
29	0.00000	0.00000	0.00010	0.00010	N/A	0.00041	11	0.01500	80%
30	0.00000	0.00000	0.00010	0.00020	N/A	0.00043	12	0.01350	80%
31	0.00000	0.00000	0.00010	0.00020	N/A	0.00046	13	0.01200	80%
32	0.00000	0.00000	0.00010	0.00020	N/A	0.00048	14	0.01100	80%
33	0.00000	0.00000	0.00016	0.00020	N/A	0.00050	15	0.01000	80%
34	0.00000	0.00000	0.00022	0.00020	N/A	0.00053	16	0.00950	80%
35	0.00000	0.00000	0.00028	0.00020	N/A	0.00056	17	0.00900	80%
36	0.00000	0.00000	0.00034	0.00020	N/A	0.00060	18	0.00850	80%
37	0.00000	0.00000	0.00040	0.00020	N/A	0.00064	19	0.00800	80%
38	0.00000	0.00000	0.00048	0.00020	N/A	0.00068	20	0.00750	90%
39	0.00000	0.00000	0.00056	0.00020	N/A	0.00073	21	0.00700	90%
40	0.01500	0.00000	0.00064	0.00020	N/A	0.00079	22	0.00650	90%
41	0.01500	0.00000	0.00072	0.00020	N/A	0.00085	23	0.00600	90%
42	0.01500	0.00000	0.00080	0.00020	N/A	0.00092	24	0.00550	90%
43	0.01500	0.00000	0.00084	0.00024	N/A	0.00100	25	0.00500	110%
44	0.01500	0.00000	0.00088	0.00028	N/A	0.00108	26	0.00450	110%
45	0.01500	0.00000	0.00092	0.00032	N/A	0.00118	27	0.00400	110%
46	0.01500	0.00000	0.00096	0.00036	N/A	0.00128	28	0.00400	110%
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00139	29	0.00400	110%
48	0.01500	0.00000	0.00104	0.00044	N/A	0.00152	30 & Above	0.00000	160%
49	0.01500	0.00000	0.00108	0.00048	N/A	0.00166			
50	0.01500	0.01200	0.00112	0.00052	N/A	0.00179			
51	0.01200	0.00960	0.00116	0.00056	N/A	0.00194			
52	0.01200	0.00960	0.00120	0.00060	N/A	0.00210			
53	0.01500	0.01200	0.00156	0.00064	N/A	0.00227			
54	0.02000	0.01600	0.00192	0.00068	N/A	0.00244			
55	0.03000	0.02400	0.00228	0.00072	N/A	0.00263			
56	0.03000	0.02400	0.00264	0.00076	N/A	0.00283			
57	0.03000	0.02400	0.00300	0.00080	N/A	0.00306			
58	0.04000	0.03200	0.00330	0.00084	N/A	0.00330			
59	0.05000	0.04000	0.00360	0.00088	N/A	0.00355			
60	0.07000	0.05600	0.00390	0.00092	N/A	0.00383			
61	0.07000	0.05600	0.00420	0.00096	N/A	0.00413			
62	0.10000	0.10000	0.00450	0.00100	N/A	0.00445			
63	0.12000	0.12000	0.00450	0.00104	N/A	0.00481			
64	0.17000	0.17000	0.00450	0.00108	N/A	0.00520			
65	0.23000	0.18400	0.00450	0.00112	N/A	0.00562			
66	0.19000	0.15200	0.00450	0.00116	N/A	0.00607			
67	0.19000	0.30000	0.00450	0.00120	N/A	0.00658			
68	0.19000	0.19000	0.00450	0.00124	N/A	0.00713			
69	0.19000	0.19000	0.00450	0.00128	N/A	0.00775			
70	0.24000	0.24000	0.00450	0.00132	N/A	0.00844			
71	0.19000	0.19000	0.00450	0.00136	N/A	0.00920			
72	0.19000	0.19000	0.00450	0.00140	N/A	0.01004			
73	0.19000	0.19000	0.00450	0.00144	N/A	0.01098			
74	0.19000	0.19000	0.00450	0.00148	N/A	0.01201			
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01315			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-9
Probability of Separation from Active Service for General Members
Plans D & G – Female

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plan D	Plan G							
18	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	0	0.08000	80%
19	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	1	0.06500	80%
20	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	2	0.05000	80%
21	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	3	0.04250	80%
22	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	4	0.03500	80%
23	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	5	0.03100	80%
24	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	6	0.02900	80%
25	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	7	0.02700	80%
26	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	8	0.02500	80%
27	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	9	0.02000	80%
28	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	10	0.01700	80%
29	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	11	0.01500	80%
30	0.00000	0.00000	0.00015	0.00010	N/A	0.00020	12	0.01350	80%
31	0.00000	0.00000	0.00015	0.00010	N/A	0.00021	13	0.01200	80%
32	0.00000	0.00000	0.00015	0.00010	N/A	0.00023	14	0.01100	80%
33	0.00000	0.00000	0.00020	0.00010	N/A	0.00025	15	0.01000	80%
34	0.00000	0.00000	0.00025	0.00010	N/A	0.00027	16	0.00950	80%
35	0.00000	0.00000	0.00030	0.00010	N/A	0.00030	17	0.00900	80%
36	0.00000	0.00000	0.00035	0.00010	N/A	0.00033	18	0.00850	80%
37	0.00000	0.00000	0.00040	0.00010	N/A	0.00036	19	0.00800	80%
38	0.00000	0.00000	0.00042	0.00014	N/A	0.00039	20	0.00750	90%
39	0.00000	0.00000	0.00044	0.00018	N/A	0.00043	21	0.00700	90%
40	0.01500	0.00000	0.00046	0.00022	N/A	0.00047	22	0.00650	90%
41	0.01500	0.00000	0.00048	0.00026	N/A	0.00052	23	0.00600	90%
42	0.01500	0.00000	0.00050	0.00030	N/A	0.00056	24	0.00550	90%
43	0.01500	0.00000	0.00060	0.00032	N/A	0.00061	25	0.00500	110%
44	0.01500	0.00000	0.00070	0.00034	N/A	0.00066	26	0.00450	110%
45	0.01500	0.00000	0.00080	0.00036	N/A	0.00073	27	0.00400	110%
46	0.01500	0.00000	0.00090	0.00038	N/A	0.00079	28	0.00400	110%
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00086	29	0.00400	110%
48	0.01500	0.00000	0.00110	0.00042	N/A	0.00092	30 & Above	0.00000	160%
49	0.01500	0.00000	0.00120	0.00044	N/A	0.00100			
50	0.01500	0.01200	0.00130	0.00046	N/A	0.00108			
51	0.01200	0.00960	0.00140	0.00048	N/A	0.00117			
52	0.01200	0.00960	0.00150	0.00050	N/A	0.00126			
53	0.01500	0.01200	0.00156	0.00052	N/A	0.00137			
54	0.02000	0.01600	0.00162	0.00054	N/A	0.00147			
55	0.03000	0.02400	0.00168	0.00056	N/A	0.00160			
56	0.03000	0.02400	0.00174	0.00058	N/A	0.00173			
57	0.03000	0.02400	0.00180	0.00060	N/A	0.00187			
58	0.04000	0.03200	0.00194	0.00064	N/A	0.00203			
59	0.05000	0.04000	0.00208	0.00068	N/A	0.00221			
60	0.07000	0.05600	0.00222	0.00072	N/A	0.00242			
61	0.07000	0.05600	0.00236	0.00076	N/A	0.00264			
62	0.10000	0.10000	0.00250	0.00080	N/A	0.00289			
63	0.12000	0.12000	0.00250	0.00084	N/A	0.00317			
64	0.17000	0.17000	0.00250	0.00088	N/A	0.00350			
65	0.23000	0.18400	0.00250	0.00092	N/A	0.00385			
66	0.19000	0.15200	0.00250	0.00096	N/A	0.00425			
67	0.19000	0.30000	0.00250	0.00100	N/A	0.00471			
68	0.19000	0.19000	0.00250	0.00104	N/A	0.00520			
69	0.19000	0.19000	0.00250	0.00108	N/A	0.00575			
70	0.24000	0.24000	0.00250	0.00112	N/A	0.00636			
71	0.19000	0.19000	0.00250	0.00116	N/A	0.00703			
72	0.19000	0.19000	0.00250	0.00120	N/A	0.00777			
73	0.19000	0.19000	0.00250	0.00124	N/A	0.00859			
74	0.19000	0.19000	0.00250	0.00128	N/A	0.00950			
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01050			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-10
Probability of Separation from Active Service for General Members
Plan E – Male

Age	Service Retirement[1]	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
18	0.00000	N/A	N/A	N/A	0.00043	0	0.08000	70%
19	0.00000	N/A	N/A	N/A	0.00046	1	0.06500	70%
20	0.00000	N/A	N/A	N/A	0.00044	2	0.05000	70%
21	0.00000	N/A	N/A	N/A	0.00043	3	0.04250	70%
22	0.00000	N/A	N/A	N/A	0.00040	4	0.03500	70%
23	0.00000	N/A	N/A	N/A	0.00037	5	0.03100	70%
24	0.00000	N/A	N/A	N/A	0.00035	6	0.02700	70%
25	0.00000	N/A	N/A	N/A	0.00034	7	0.02300	70%
26	0.00000	N/A	N/A	N/A	0.00036	8	0.02300	70%
27	0.00000	N/A	N/A	N/A	0.00037	9	0.02300	70%
28	0.00000	N/A	N/A	N/A	0.00040	10	0.02300	70%
29	0.00000	N/A	N/A	N/A	0.00041	11	0.01900	70%
30	0.00000	N/A	N/A	N/A	0.00043	12	0.01800	70%
31	0.00000	N/A	N/A	N/A	0.00046	13	0.01680	70%
32	0.00000	N/A	N/A	N/A	0.00048	14	0.01560	70%
33	0.00000	N/A	N/A	N/A	0.00050	15	0.01440	70%
34	0.00000	N/A	N/A	N/A	0.00053	16	0.01320	70%
35	0.00000	N/A	N/A	N/A	0.00056	17	0.01200	70%
36	0.00000	N/A	N/A	N/A	0.00060	18	0.01160	70%
37	0.00000	N/A	N/A	N/A	0.00064	19	0.01120	70%
38	0.00000	N/A	N/A	N/A	0.00068	20	0.01080	70%
39	0.00000	N/A	N/A	N/A	0.00073	21	0.01040	70%
40	0.00000	N/A	N/A	N/A	0.00079	22	0.01000	70%
41	0.00000	N/A	N/A	N/A	0.00085	23	0.01000	70%
42	0.00000	N/A	N/A	N/A	0.00092	24	0.01000	70%
43	0.00000	N/A	N/A	N/A	0.00100	25	0.01000	100%
44	0.00000	N/A	N/A	N/A	0.00108	26	0.01000	100%
45	0.00000	N/A	N/A	N/A	0.00118	27	0.01000	100%
46	0.00000	N/A	N/A	N/A	0.00128	28	0.01000	100%
47	0.00000	N/A	N/A	N/A	0.00139	29	0.01000	100%
48	0.00000	N/A	N/A	N/A	0.00152	30 & Above	0.01000	130%
49	0.00000	N/A	N/A	N/A	0.00166			
50	0.00000	N/A	N/A	N/A	0.00179			
51	0.00000	N/A	N/A	N/A	0.00194			
52	0.00000	N/A	N/A	N/A	0.00210			
53	0.00000	N/A	N/A	N/A	0.00227			
54	0.00000	N/A	N/A	N/A	0.00244			
55	0.02000	N/A	N/A	N/A	0.00263			
56	0.02000	N/A	N/A	N/A	0.00283			
57	0.02500	N/A	N/A	N/A	0.00306			
58	0.02500	N/A	N/A	N/A	0.00330			
59	0.03000	N/A	N/A	N/A	0.00355			
60	0.04000	N/A	N/A	N/A	0.00383			
61	0.06000	N/A	N/A	N/A	0.00413			
62	0.09000	N/A	N/A	N/A	0.00445			
63	0.09000	N/A	N/A	N/A	0.00481			
64	0.19000	N/A	N/A	N/A	0.00520			
65	0.27000	N/A	N/A	N/A	0.00562			
66	0.20000	N/A	N/A	N/A	0.00607			
67	0.20000	N/A	N/A	N/A	0.00658			
68	0.20000	N/A	N/A	N/A	0.00713			
69	0.20000	N/A	N/A	N/A	0.00775			
70	0.20000	N/A	N/A	N/A	0.00844			
71	0.20000	N/A	N/A	N/A	0.00920			
72	0.20000	N/A	N/A	N/A	0.01004			
73	0.20000	N/A	N/A	N/A	0.01098			
74	0.20000	N/A	N/A	N/A	0.01201			
75	1.00000	N/A	N/A	N/A	0.01315			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-11
Probability of Separation from Active Service for General Members
Plan E – Female

Age	Service Retirement[1]	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
18	0.00000	N/A	N/A	N/A	0.00017	0	0.08000	70%
19	0.00000	N/A	N/A	N/A	0.00017	1	0.06500	70%
20	0.00000	N/A	N/A	N/A	0.00017	2	0.05000	70%
21	0.00000	N/A	N/A	N/A	0.00016	3	0.04250	70%
22	0.00000	N/A	N/A	N/A	0.00014	4	0.03500	70%
23	0.00000	N/A	N/A	N/A	0.00013	5	0.03100	70%
24	0.00000	N/A	N/A	N/A	0.00012	6	0.02700	70%
25	0.00000	N/A	N/A	N/A	0.00012	7	0.02300	70%
26	0.00000	N/A	N/A	N/A	0.00013	8	0.02300	70%
27	0.00000	N/A	N/A	N/A	0.00014	9	0.02300	70%
28	0.00000	N/A	N/A	N/A	0.00016	10	0.02300	70%
29	0.00000	N/A	N/A	N/A	0.00017	11	0.01900	70%
30	0.00000	N/A	N/A	N/A	0.00020	12	0.01800	70%
31	0.00000	N/A	N/A	N/A	0.00021	13	0.01680	70%
32	0.00000	N/A	N/A	N/A	0.00023	14	0.01560	70%
33	0.00000	N/A	N/A	N/A	0.00025	15	0.01440	70%
34	0.00000	N/A	N/A	N/A	0.00027	16	0.01320	70%
35	0.00000	N/A	N/A	N/A	0.00030	17	0.01200	70%
36	0.00000	N/A	N/A	N/A	0.00033	18	0.01160	70%
37	0.00000	N/A	N/A	N/A	0.00036	19	0.01120	70%
38	0.00000	N/A	N/A	N/A	0.00039	20	0.01080	70%
39	0.00000	N/A	N/A	N/A	0.00043	21	0.01040	70%
40	0.00000	N/A	N/A	N/A	0.00047	22	0.01000	70%
41	0.00000	N/A	N/A	N/A	0.00052	23	0.01000	70%
42	0.00000	N/A	N/A	N/A	0.00056	24	0.01000	70%
43	0.00000	N/A	N/A	N/A	0.00061	25	0.01000	100%
44	0.00000	N/A	N/A	N/A	0.00066	26	0.01000	100%
45	0.00000	N/A	N/A	N/A	0.00073	27	0.01000	100%
46	0.00000	N/A	N/A	N/A	0.00079	28	0.01000	100%
47	0.00000	N/A	N/A	N/A	0.00086	29	0.01000	100%
48	0.00000	N/A	N/A	N/A	0.00092	30 & Above	0.01000	130%
49	0.00000	N/A	N/A	N/A	0.00100			
50	0.00000	N/A	N/A	N/A	0.00108			
51	0.00000	N/A	N/A	N/A	0.00117			
52	0.00000	N/A	N/A	N/A	0.00126			
53	0.00000	N/A	N/A	N/A	0.00137			
54	0.00000	N/A	N/A	N/A	0.00147			
55	0.02000	N/A	N/A	N/A	0.00160			
56	0.02000	N/A	N/A	N/A	0.00173			
57	0.02500	N/A	N/A	N/A	0.00187			
58	0.02500	N/A	N/A	N/A	0.00203			
59	0.03000	N/A	N/A	N/A	0.00221			
60	0.04000	N/A	N/A	N/A	0.00242			
61	0.06000	N/A	N/A	N/A	0.00264			
62	0.09000	N/A	N/A	N/A	0.00289			
63	0.09000	N/A	N/A	N/A	0.00317			
64	0.19000	N/A	N/A	N/A	0.00350			
65	0.27000	N/A	N/A	N/A	0.00385			
66	0.20000	N/A	N/A	N/A	0.00425			
67	0.20000	N/A	N/A	N/A	0.00471			
68	0.20000	N/A	N/A	N/A	0.00520			
69	0.20000	N/A	N/A	N/A	0.00575			
70	0.20000	N/A	N/A	N/A	0.00636			
71	0.20000	N/A	N/A	N/A	0.00703			
72	0.20000	N/A	N/A	N/A	0.00777			
73	0.20000	N/A	N/A	N/A	0.00859			
74	0.20000	N/A	N/A	N/A	0.00950			
75	1.00000	N/A	N/A	N/A	0.01050			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.

2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-12
Probability of Separation from Active Service for Safety Members
Plans A, B & C – Male

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plans A & B	Plan C							
18	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	0	0.05000	30%
19	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	1	0.03750	30%
20	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	2	0.02000	30%
21	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	3	0.01500	30%
22	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	4	0.01200	30%
23	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	5	0.01130	30%
24	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	6	0.01070	30%
25	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	7	0.01000	30%
26	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	8	0.00920	30%
27	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	9	0.00840	30%
28	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	10	0.00760	30%
29	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	11	0.00680	30%
30	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	12	0.00600	30%
31	0.00000	0.00000	0.00200	0.00000	0.00010	0.00042	13	0.00560	30%
32	0.00000	0.00000	0.00200	0.00000	0.00010	0.00043	14	0.00520	30%
33	0.00000	0.00000	0.00210	0.00000	0.00010	0.00044	15	0.00480	40%
34	0.00000	0.00000	0.00220	0.00000	0.00010	0.00045	16	0.00440	40%
35	0.00000	0.00000	0.00230	0.00000	0.00010	0.00047	17	0.00400	40%
36	0.00000	0.00000	0.00240	0.00000	0.00010	0.00049	18	0.00360	40%
37	0.00000	0.00000	0.00250	0.00000	0.00010	0.00050	19	0.00320	40%
38	0.00000	0.00000	0.00260	0.00000	0.00010	0.00053	20	0.00280	70%
39	0.00000	0.00000	0.00270	0.00000	0.00010	0.00056	21	0.00240	70%
40	0.00750	0.00000	0.00280	0.00000	0.00010	0.00059	22	0.00200	70%
41	0.00750	0.00000	0.00290	0.00000	0.00010	0.00062	23	0.00200	70%
42	0.00750	0.00000	0.00300	0.00000	0.00010	0.00067	24	0.00200	70%
43	0.00750	0.00000	0.00310	0.00000	0.00010	0.00071	25	0.00200	110%
44	0.00750	0.00000	0.00320	0.00000	0.00010	0.00076	26	0.00200	110%
45	0.00750	0.00000	0.00330	0.00000	0.00010	0.00082	27	0.00200	110%
46	0.00750	0.00000	0.00340	0.00000	0.00010	0.00088	28	0.00200	110%
47	0.00750	0.00000	0.00350	0.00000	0.00010	0.00095	29	0.00200	110%
48	0.00750	0.00000	0.00400	0.00000	0.00010	0.00102	30 & Above	0.00000	170%
49	0.00750	0.00000	0.00500	0.00000	0.00010	0.00111			
50	0.02000	0.02000	0.00750	0.00000	0.00010	0.00120			
51	0.02000	0.02000	0.00750	0.00000	0.00010	0.00129			
52	0.02000	0.02000	0.00750	0.00000	0.00010	0.00140			
53	0.03000	0.03000	0.02000	0.00000	0.00010	0.00151			
54	0.12000	0.08000	0.02000	0.00000	0.00010	0.00162			
55	0.22000	0.15000	0.07500	0.00000	0.00010	0.00175			
56	0.18000	0.15000	0.07500	0.00000	0.00010	0.00190			
57	0.14000	0.23000	0.10000	0.00000	0.00010	0.00205			
58	0.15000	0.15000	0.10000	0.00000	0.00010	0.00223			
59	0.22000	0.22000	0.10000	0.00000	0.00010	0.00243			
60	0.21000	0.21000	0.10000	0.00000	0.00010	0.00264			
61	0.20000	0.20000	0.05000	0.00000	0.00010	0.00288			
62	0.20000	0.20000	0.05000	0.00000	0.00010	0.00315			
63	0.20000	0.20000	0.05000	0.00000	0.00010	0.00344			
64	0.23000	0.23000	0.05000	0.00000	0.00010	0.00375			
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00410			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-13
Probability of Separation from Active Service for Safety Members
Plans A, B & C – Female

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plans A & B	Plan C							
18	0.00000	0.00000	0.00300	0.00000	0.00010	0.00014	0	0.05000	30%
19	0.00000	0.00000	0.00300	0.00000	0.00010	0.00015	1	0.03750	30%
20	0.00000	0.00000	0.00300	0.00000	0.00010	0.00016	2	0.02000	30%
21	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	3	0.01500	30%
22	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	4	0.01200	30%
23	0.00000	0.00000	0.00300	0.00000	0.00010	0.00018	5	0.01130	30%
24	0.00000	0.00000	0.00300	0.00000	0.00010	0.00019	6	0.01070	30%
25	0.00000	0.00000	0.00300	0.00000	0.00010	0.00020	7	0.01000	30%
26	0.00000	0.00000	0.00300	0.00000	0.00010	0.00021	8	0.00920	30%
27	0.00000	0.00000	0.00300	0.00000	0.00010	0.00022	9	0.00840	30%
28	0.00000	0.00000	0.00340	0.00000	0.00010	0.00024	10	0.00760	30%
29	0.00000	0.00000	0.00380	0.00000	0.00010	0.00025	11	0.00680	30%
30	0.00000	0.00000	0.00420	0.00000	0.00010	0.00027	12	0.00600	30%
31	0.00000	0.00000	0.00460	0.00000	0.00010	0.00028	13	0.00560	30%
32	0.00000	0.00000	0.00500	0.00000	0.00010	0.00030	14	0.00520	30%
33	0.00000	0.00000	0.00560	0.00000	0.00010	0.00032	15	0.00480	40%
34	0.00000	0.00000	0.00620	0.00000	0.00010	0.00034	16	0.00440	40%
35	0.00000	0.00000	0.00680	0.00000	0.00010	0.00036	17	0.00400	40%
36	0.00000	0.00000	0.00740	0.00000	0.00010	0.00038	18	0.00360	40%
37	0.00000	0.00000	0.00800	0.00000	0.00010	0.00041	19	0.00320	40%
38	0.00000	0.00000	0.00840	0.00000	0.00010	0.00043	20	0.00280	70%
39	0.00000	0.00000	0.00880	0.00000	0.00010	0.00046	21	0.00240	70%
40	0.00750	0.00000	0.00920	0.00000	0.00010	0.00049	22	0.00200	70%
41	0.00750	0.00000	0.00960	0.00000	0.00010	0.00052	23	0.00200	70%
42	0.00750	0.00000	0.01000	0.00000	0.00010	0.00056	24	0.00200	70%
43	0.00750	0.00000	0.01040	0.00000	0.00010	0.00059	25	0.00200	110%
44	0.00750	0.00000	0.01080	0.00000	0.00010	0.00063	26	0.00200	110%
45	0.00750	0.00000	0.01120	0.00000	0.00010	0.00067	27	0.00200	110%
46	0.00750	0.00000	0.01160	0.00000	0.00010	0.00071	28	0.00200	110%
47	0.00750	0.00000	0.01200	0.00000	0.00010	0.00076	29	0.00200	110%
48	0.00750	0.00000	0.01300	0.00000	0.00010	0.00080	30 & Above	0.00000	170%
49	0.00750	0.00000	0.01500	0.00000	0.00010	0.00085			
50	0.02000	0.02000	0.01800	0.00000	0.00010	0.00091			
51	0.02000	0.02000	0.02000	0.00000	0.00010	0.00097			
52	0.02000	0.02000	0.02400	0.00000	0.00010	0.00103			
53	0.03000	0.03000	0.02800	0.00000	0.00010	0.00109			
54	0.12000	0.08000	0.03200	0.00000	0.00010	0.00116			
55	0.22000	0.15000	0.11000	0.00000	0.00010	0.00123			
56	0.18000	0.15000	0.06000	0.00000	0.00010	0.00131			
57	0.14000	0.23000	0.06000	0.00000	0.00010	0.00140			
58	0.15000	0.15000	0.06000	0.00000	0.00010	0.00148			
59	0.22000	0.22000	0.06000	0.00000	0.00010	0.00158			
60	0.21000	0.21000	0.06000	0.00000	0.00010	0.00168			
61	0.20000	0.20000	0.06000	0.00000	0.00010	0.00178			
62	0.20000	0.20000	0.06000	0.00000	0.00010	0.00190			
63	0.20000	0.20000	0.06000	0.00000	0.00010	0.00202			
64	0.23000	0.23000	0.06000	0.00000	0.00010	0.00215			
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00228			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Appendix B Summary of Plan Provisions

All actuarial calculations are based on our understanding of the statutes governing LACERA as contained in the County Employees Retirement Law (CERL) of 1937 and the California Public Employees' Pension Reform Act of 2013 (PEPRA). The benefit and contribution provisions of this law are summarized briefly below, along with corresponding references to the Government Code Section. This summary does not attempt to cover all the detailed provisions of the law.

MEMBERSHIP	Government Code Section
Permanent employees of Los Angeles County (County) and participating districts who work ¾ time or more are eligible for membership in LACERA.	(31551, 31552, Bylaws)
Employees eligible for safety membership (law enforcement, firefighting and specific lifeguards) become safety members on the first day of the month after date of hire. Employees who become members on or after January 1, 2013, will enter into Safety Plan C.	(31558)
All other employees become general members on the first day of the month after date of hire or the first day of the month after they make an election of either Plan D or Plan E, depending on the law in effect at that time. Employees who become members on or after January 1, 2013 will enter into General Plan G.	(31493, 31493.5, 31493.6, Bylaws)
Elective officers become members on the first day of the month after filing a declaration with the Board of Retirement (Board).	(31553, 31562)
General members in Plan E may transfer all their Plan E service credit to Plan D during an approved transfer period by making the required contributions. Transferred members relinquish, waive, and forfeit any and all vested or accrued benefits available under any other retirement plan and are entitled only to the benefits of Plan D.	(31494.1, 31494.3)

RETIREMENT PLANS

The County has established nine defined benefit plans. The following outlines the dates these plans were available, based on a member's date of entry into LACERA:

Safety Member Plans:

Plan A: Inception to August 1977
Plan B: September 1977 through December 2012
Plan C: January 2013 to present (7522.02)

General Member Plans:

Plan A: Inception through August 1977
Plan B: September 1977 through September 1978
Plan C: October 1978 through May 1979
Plan D: June 1979 through December 2012
Plan E: February 1982 through December 2012
Plan G: January 2013 to present (31487, 31496) (7522.02)

NOTE: After review of a new member's account, a member with prior membership may be enrolled into one of the pre-PEPRA plans.

MEMBER CONTRIBUTIONS

Plans A, B, D and General Plan C members

Contributions are based on the entry age and class of each member and are required of all members in Plans A, B, C, and D. Current member rates are shown in Appendix D. Section 5 provides additional detail on how these rates are calculated. (31620)

Contributions cease when general members are credited with 30 years of service in a contributory plan, provided they were members of LACERA or a reciprocal plan on March 7, 1973, and continuously thereafter. All safety members are eligible for the 30-year cessation of contributions. (31625.2, 31836.1)

Interest is credited to contributions semiannually on June 30 and December 31 at an interest rate set by the Board of Investments on amounts that have been on deposit for at least six months. (31591, 31700)

In addition to the normal contributions, members pay one-half of the cost of their plan's COLA. This is discussed further in Section 5 of this report. (31873)

General Plan G and Safety Plan C members

Members contribute 50% of the aggregate Normal Cost rate for their Plan. (7522.30)

EMPLOYER CONTRIBUTIONS

The employer (County or District) contributes to the retirement fund a percent of the total compensation provided for all members based on an actuarial valuation and recommendation of the actuary and the Board of Investments. (31453, 31454 31581)

SERVICE RETIREMENT ALLOWANCE

Eligibility

Plans A-B: **Safety members** (31662.4, 31662.6, 31663.25)

Age 50 with 10 years of County service;
Any age with 20 years of service; or

Plans A-D: **General members** (31672)

Age 50 with 10 years of County service;
Any age with 30 years of service; or
Age 70 and actively employed, regardless of service.

Plan C: **Safety members** (7522.25(d))

Age 50 with 5 years of service.

Plan E: **General members** (31491, 31491.3)

Age 65 with 10 years of service.
A reduced benefit is also payable at age 55 with 10 years of service.

Plan G: **General members** (7522.20(a))

Age 52 with 5 years of service.

Final Compensation

General Plans A-D and Safety Plans A-B (31462.3)

Average of the member's highest monthly pensionable earnings during any 12-consecutive-month period.

Plan E: Average of the member's highest monthly pensionable earnings during any three 12-consecutive month periods. (31488)

General Plan G and Safety Plan C

Average of the member's highest monthly pensionable earnings during any 36-consecutive month period. (7522.32)

The amount of compensation that is taken into account in computing benefits payable to any person who first becomes a member on or after July 1, 1996, shall not exceed the dollar limitations in Section 401(a)(17) of Title 26 of the US Code. (31671)

The amount of compensation taken into account for General Plan G and Safety Plan C members is limited to $161,969 for 2022. The amount of compensation taken into account shall be adjusted based on changes in the Consumer Price Index for All Urban Consumers: U.S. City Average. Adjustments shall be effective annually on January 1. (7522.10)

SERVICE RETIREMENT ALLOWANCE (continued**)**

Monthly Allowance

Plans A-B: **Safety members** (31664)

1/50 x Final Compensation x Safety age factor x Years of service. (The Safety Plan A and Safety Plan B age factors are the same.)

Plans A-D: **General members** (31676.1) (31676.11) (31676.14) (7522.25(d))

1/60 x Final Compensation x a Plan specific age factor x years of service. (The General Plan C and General D age factors are the same.)

Plan C: **Safety members**

Final Compensation x Safety Plan percentage x Years of service.

Plan E: **General members [(a)+(b)-(c)] x d where:** (31491, 31491.3 (b)&(c))

(a) 2% x Final Compensation x (Years of Service (up to 35 years), plus
(b) 1 % x Final Compensation x Years of Service in excess of 35 (up to 10)
(c) Estimated Primary Insurance Amount (PIA) x Years of Covered Service (up to 35) divided by 35.
(d) Early Retirement Adjustment Factor

The PIA is calculated based on certain assumptions specified by statute, and an assumed Social Security retirement age of 62.

If retirement occurs prior to age 65, benefit amount is adjusted by an Early Retirement Adjustment Factor.

Plan G: **General members** (7522.20(a))

Final Compensation x General Plan percentage x Years of Service.

Social Security Integration

Plans A-C: **General Members** (31808)

For County service covered by Social Security prior to January 1, 1983, the 1/60 factor is replaced by 1/90 for the first $350 of compensation.

Plan D: The 1/90 factor is applied to the first $1,050 of compensation.

SERVICE RETIREMENT ALLOWANCE (continued)

Sample Plan Age Factors

Plan	Age 50	Age 55	Age 60	Age 65 & Up	
General A	0.8850	1.1686	1.4638	1.5668	(31676.14)
General B	0.7454	1.0000	1.3093	1.5668	(31676.11)
General C&D	0.7091	0.8954	1.1500	1.4593	(31676.1)
General E	N/A	0.3748	0.6009	1.0000	(31491.3(a))
Safety A&B	1.0000	1.3099	1.3099	1.3099	(31664)

Sample Plan Age Percentages

Plan	Age 50	Age 55	Age 60	Age 65 & Up	
General G	N/A	1.30%	1.80%	2.30%*	(7522.20(a))
Safety C	2.00%	2.50%	2.70%	2.70%	(7522.25(d))

**Maximum percentage for General Plan G is 2.50% at age 67.*

Maximum Allowance

Plans A-D, G: Allowance may not exceed 100% of final compensation. (31676.1, 31676.11, 31676.14)

Plan E: The sum of the normal retirement allowance and the estimated PIA cannot exceed 70% of Final Compensation for a member with 35 or less years of service, and cannot exceed 80% of Final Compensation if service exceeds 35 years. (31491)

Unmodified Retirement Allowance (Normal Form)

Plans A-D, G: Life Annuity payable to retired member with 65% continuance to an eligible survivor (or eligible children). (31760.12, 31785.4)

Plan E: Life Annuity payable to retired member with 55% continuance to an eligible survivor (or eligible children). (31492.1)

Eligible survivor includes certain domestic partners. (31780.2)

Optional Retirement Allowance

A member may elect to have the actuarial equivalent of the service or disability retirement allowance applied to a lesser retirement allowance during the retired member's life in order to provide an optional survivor allowance. (31760)

Unmodified Plus:	Members with eligible survivors may elect a higher percent than the standard unmodified continuance, up to 100%. The benefit is actuarially reduced from the unmodified amount. The elected percent of the member's reduced allowance is payable to the eligible survivor.	(31760.5)
Option 1:	Member's allowance is reduced to pay a cash refund of any unpaid annuity payments (up to the amount of the member's contributions at retirement) to the member's estate or to a beneficiary having an insurable interest in the life of the member.	(31761)
Option 2:	100% of member's reduced allowance is payable to a beneficiary having an insurable interest in the life of the member.	(31762)
Option 3:	50% of member's reduced allowance is payable to a beneficiary having an insurable interest in the life of the member.	(31763)
Option 4:	Other % of member's reduced allowance is payable to a beneficiary(ies) having an insurable interest in the life of the member.	(31764)

A member may not revoke and name another beneficiary if the member elects Option 2, 3, or 4. (31782)

Pension Advance Option:	The Pension Advance Option is available to members who are fully insured under Social Security for the purpose of coordinating a member's retirement allowance with benefits receivable from Social Security. It is not available to disability retirees or members who elect Option 2, 3, or 4. The allowance is increased prior to age 62 and then reduced after 62 by amounts which have equivalent actuarial values. The automatic 65% continuance for eligible spouses of members who elect the Pension Advance Option is based on the unmodified allowance the member would have received if the member had not elected the option.	(31810, 31811)

All Allowances (31452.7, 31600)

All allowances are made on a pro-rata basis (based on the number of days in that month) if not in effect for the entire month of retirement. For deaths that occur mid-month, the full month's payment is made.

SERVICE-CONNECTED DISABILITY RETIREMENT ALLOWANCE

Eligibility

Plans A-D, G:	Any age or years of service; disability must result from occupational injury or disease, and member must be permanently incapacitated for the performance of duty.	(31720)
Plan E:	Not available under Plan E.	(31487)

Monthly Allowance

Greater of (1) 50% of final compensation, and (2) the service retirement allowance, if eligible to retire. (31727.4)

Normal Form Of Payment

Life Annuity with 100% continuance to a surviving spouse (or eligible children). (31786)

NONSERVICE-CONNECTED DISABILITY RETIREMENT ALLOWANCE

Eligibility

Plans A-D, G:	Any age with five years of service, and permanently incapacitated for the performance of duty.	(31720)
Plan E:	Not available under Plan E.	(31487)

Monthly Allowance

The monthly allowance is equal to a service retirement allowance if a General member is age 65 or a Safety member is age 55; otherwise the monthly allowance is the greater of that to which the member would be entitled as service retirement or the sum of (a) or (b) where: (31726, 31726.5)

General Members:	(a) 90% of 1/60 of Final Compensation x years of service, if member must rely on service in another retirement plan in order to be eligible to retire, or allowance exceeds 1/3 of final compensation.	(31727(a))
	(b) 90% of 1/60 of Final Compensation x years of service projected to age 65, not to exceed 1/3 of Final Compensation.	(31727(b))
Safety Members:	1/60 is replaced by 1/50 and age 65 is replaced by age 55 in (a) and (b) above.	(31727.2)

Normal Form of Payment

Life Annuity with 65% continuance to a surviving spouse (or eligible children). (31760.1, 31760.12, 31785, 31785.4)

SERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS

Eligibility

Plans A-D, G:	Active members who die in service as a result of injury or disease arising out of and in the course of employment.	(31787)
Plan E:	Not available under Plan E.	(31487)

Monthly Allowance (31787)

A monthly allowance payable to an eligible survivor (or eligible children) equal to the retirement allowance the deceased member would have received under a service-connected disability retirement.

Optional Combined Benefit (31781.3)

In lieu of the monthly allowance above, a surviving spouse may elect:

(a) A lump sum equal to 1/12 of the compensation earned in the preceding 12 months x years of service (benefit not to exceed 50% of the 12 months' compensation), plus

(b) A monthly payment equal to 50% of the member's Final Compensation, reduced by a monthly amount, which is the actuarial equivalent of (a) above based on the age of surviving spouse.

Death Benefit (Lump Sum) (31781)

The member's accumulated contributions with interest, plus 1/12 of the compensation earned in the preceding 12 months x years of service (benefit not to exceed 50% of the 12 months' compensation).

Additional Allowance for Children (31787.5)

In the case of a surviving spouse of a member who is killed in the performance of duty or who dies as the result of an accident or an injury caused by external violence or physical force, incurred in the performance of the member's duty: 25% of death allowance (whether or not the monthly allowance or combined benefit is chosen) for one child, 40% for two children, and 50% for three or more children.

Additional Amount for Spouse of Safety Member (31787.6)

A surviving spouse of a safety member, who is killed in the performance of duty or who dies as the result of an accident or injury caused by external violence or physical force, incurred in the performance of his or her duty, is also entitled to receive a lump-sum death benefit equal to 12 x monthly rate of compensation at the time of member's death in addition to all other benefits.

Note: For valuation purposes, an unmarried member is assumed to take the lump sum benefit. A married member is assumed to take the monthly allowance or the lump sum, whichever is more valuable.

NONSERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS

Eligibility

Plans A-D, G:	Active members who die while in service or while physically or mentally incapacitated for the performance of duty.	(31780)
Plan E:	Not available under Plan E.	(31487)

Death Benefit (Lump Sum) (31781)

The member's accumulated contributions with interest, plus 1/12 of the compensation earned in preceding 12 months x the number of completed years of service (benefit not to exceed 50% of the 12 months' compensation).

Optional Death Benefit

In lieu of the lump-sum death benefit, the following several optional death benefits are available to provide flexibility to survivors.

First Optional Death Benefit (31781.1, 31781.12)

If a member who would have been entitled to a non-service-connected disability retirement allowance dies prior to retirement as a result of such disability, the surviving spouse (or eligible children) may elect to receive an optional death allowance equal to 65% of the monthly retirement allowance to which the member would have been entitled as of the date of death.

Second Optional Death Benefit (31781.2, 31765.2)

If a member dies prior to reaching the minimum retirement age but has 10 or more years of County service, a surviving spouse (or eligible children) may elect to leave the amount of the death benefit on deposit until the earliest date the member could have retired and at that time receive the allowance provided for in Section 31765 (an Option 3 benefit) or 31765.2 (a 65% continuance).

Third Optional Death Benefit

A surviving spouse of a member who dies after five years of County service may elect a combined benefit equal to:

(a) A lump sum equal to 1/12 of the compensation earnable in the preceding 12 months x the number of completed years of service (benefit not to exceed 50% of the 12 months' compensation), plus (31781.3)

(b) A monthly payment equal to 65% of the monthly retirement allowance to which the member would have been entitled if the member retired or could have retired for a non-service-connected disability as of the date of death, reduced by a monthly amount which is the actuarial equivalent of (a) above based on the age of surviving spouse. (31781.1, 31781.12)

NONSERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS (continued**)**

Fourth Optional Death Benefit

If a member dies while eligible for a service retirement and the surviving spouse is designated as beneficiary, the spouse (or eligible children) may elect to receive 65% of the monthly retirement allowance to which the member would have been entitled as of the date of death. (31765.1, 31765.2)

Fifth Optional Death Benefit

If a member dies while eligible for a service retirement and the surviving spouse is designated as beneficiary and survives the member by not less than 30 days, the spouse (or eligible children) may elect to receive the same retirement allowance as the spouse would have received had the member retired on the date of death and selected Option 3. (31765)

Note: For valuation purposes, an unmarried member is assumed to take the lump sum benefit. A married member is assumed to take the first optional death benefit or the lump sum, whichever is more valuable.

POSTRETIREMENT DEATH/BURIAL BENEFIT

Plans A-E:	A one-time lump-sum benefit of $5,000 is payable to the estate or to the beneficiary designated by the member upon the death of any member while receiving a retirement allowance. This is in addition to any other death or survivor benefits. The amount is currently paid by the County based on agreement with LACERA. It is not included for valuation purposes.	(31789.3)

DEFERRED RETIREMENT ALLOWANCE

Eligibility

Plans A, B, D and General Plan C:		
	Five years of county or reciprocal service. Member contributions must be left on deposit.	(31700)
Safety Plan C:	Age 50 with 5 years of service.	(7522.25(d))
Plan E:	Age 55 with 10 years of service.	(31491)
Plan G:	Age 52 with 5 years of service.	(7522.20(a))

DEFERRED RETIREMENT ALLOWANCE (continued)

Monthly Allowance

Plans A-D, G:	Same as service retirement allowance; payable any time after the member would have been eligible for service retirement.	(31703, 31704, 31705)
	If a former member dies before the effective date of the deferred retirement allowance, the member's accumulated contributions are paid to the estate or to the named beneficiary.	(31702)
Plan E:	Same as service retirement allowance at normal retirement age 65 or in an actuarially equivalent reduced amount at early retirement, after age 55.	(31491)

TRANSFERS BETWEEN PLAN D AND PLAN E

Members in Plan D may transfer to Plan E on a prospective basis. Members in Plan E may transfer to Plan D on a prospective basis.	(31494.2, 31494.5)

RECIPROCITY

All Plans:	Reciprocal benefits are may be granted to members who are entitled to retirement benefits from two or more retirement plans established under the CERL or from a County retirement plan and the California Public Employees' Retirement System (CalPERS). Reciprocity also applies to the members of the State Teachers' Retirement System Defined Benefit Plan.	(31830, 31840.4, 31840.8)
	Final Compensation may be based on service with CalPERS or another County retirement plan, if greater.	(31835)
	Vested former members are eligible for disability and death benefits from LACERA, if disabled while a member of CalPERS or another County retirement plan, but combined benefits are limited.	(31837, 31838, 31838.5, 31839)

TRANSFER FROM CALPERS

Whenever firefighting or law enforcement functions performed by a public agency or the state subject to the California Public Employees Retirement Law are transferred to the County, fire authority, or district, employees performing those functions become members of LACERA. LACERA and CalPERS may enter into an agreement whereby the members' service credit plus the members' and the cities' or states' retirement contributions are transferred from CalPERS to LACERA. (31657)

COST-OF-LIVING INCREASES

Cost-of-living increases (or decreases) are applied to all retirement allowances (service and disability), optional death allowances, and annual death allowances effective April 1, based on changes in the Consumer Price Index (CPI) from the previous January 1 to the current January 1, to the nearest ½ of 1%. (31870, 31870.1)

Plan A:	Members (and their beneficiaries) are limited to a maximum 3% cost-of-living increase.	(31870.1)
Plans B-D, G:	Members (and their beneficiaries) are limited to a maximum 2% cost-of-living increase. When the CPI exceeds 2% or 3%, the difference between the actual CPI and the maximum cost-of-living increase given in any year is credited to the COLA Accumulation. It may be used in future years to provide cost-of-living increases when the CPI falls below 2% or 3%, depending on the retirement plan.	(31870)
Plan E:	Members (and their beneficiaries) are limited to a maximum 2% cost-of-living increase. The 2% is pro-rated based on service earned after June 4, 2002. "Elective COLA" increases for service earned prior to June 4, 2002 may be purchased by the member.	(31495.5)

STAR PROGRAM

Contributory plan members who have a COLA Accumulation of more than 20% resulting from CPI increases that exceeded the maximum cost-of-living increases that could be granted are eligible for a supplemental cost-of-living increase effective January 1 known as the Supplemental Targeted Adjustment for Retirees Cost-of-Living Adjustment (STAR COLA). These benefits are not evaluated in this report, or as part of the actuarially required funding amount, unless they have been vested by the Board of Retirement. (31874.3(b))

Appendix C Valuation Data and Schedules

On the following table, Exhibit C-1, we present a summary of LACERA membership at June 30, 2022 for active members. Similar information is shown in Exhibit C-2 Retired for retired members and C-2 Former for vested former members.

Note that salary amounts shown are the prior year annual pensionable earnings for those members of plans with a one-year final compensation period. For plans with a three-year final compensation period, the monthly rate of pay at June 2022 is shown.

Additional statistical data on both active and retired members is shown in the following tables. Additional detailed summaries are supplied to LACERA staff in a supplementary report.

Exhibit C-3: Age Distribution of Active Members

Exhibit C-4: Age, Service, Compensation Distribution of Active Members

Exhibit C-5: Age, Retirement Year, Benefit Amount and Plan Distribution of Retired Members

Exhibits C-4 and C-5 are shown for all plans combined as well as for each plan separately.

Data on LACERA membership as of June 30, 2022 was supplied to us by LACERA staff. Based on our review of this data and discussions with LACERA staff, all retiree and beneficiary records were included in our valuation.

All records for active and former members supplied by LACERA were included in the valuation.

Exhibit C-1
LACERA Membership – Active Members as of June 30, 2022

	Sex	Vested	NonVested	Total Number	Annual Salary	Average Age	Average Monthly Salary	Average Service
General Members								
Plan A	M	22	-	22	$ 3,272,148	76.1	$ 12,395	44.0
	F	34	-	34	3,348,252	71.5	8,207	42.3
Plan B	M	4	-	4	397,872	70.8	8,289	32.7
	F	11	-	11	1,437,096	68.6	10,887	39.3
Plan C	M	3	-	3	219,984	70.0	6,111	43.5
	F	14	-	14	1,704,060	70.1	10,143	42.2
Plan D	M	11,527	52	11,579	1,231,354,560	52.2	8,862	20.4
	F	24,077	104	24,181	2,338,914,516	51.7	8,060	20.5
Plan E	M	4,310	60	4,370	425,544,924	55.9	8,115	23.7
	F	9,521	93	9,614	778,115,652	56.1	6,745	24.6
Plan G	M	5,177	6,127	11,304	911,853,228	40.2	6,722	4.7
	F	10,170	12,383	22,553	1,638,677,292	39.3	6,055	4.6
Total		64,870	18,819	83,689	$ 7,334,839,584	47.6	$ 7,304	14.7
Safety Members								
Plan A	M	1	-	1	$ 178,488	65.0	$ 14,874	27.3
	F	-	-	-	-	N/A	N/A	N/A
Plan B	M	6,785	92	6,877	975,441,792	47.2	11,820	20.3
	F	1,209	6	1,215	163,570,788	45.2	11,219	18.7
Plan C	M	1,636	2,412	4,048	415,169,508	32.8	8,547	4.4
	F	289	420	709	72,548,580	31.8	8,527	4.4
Total		9,920	2,930	12,850	$ 1,626,909,156	41.6	$ 10,551	14.3
Grand Total		74,790	21,749	96,539	$ 8,961,748,740	46.8	$ 7,736	14.7

Exhibit C-2
Retired LACERA Membership – Retired Members and Beneficiaries as of June 30, 2022

	Sex	Number	Annual Allowance	Average Age	Average Monthly Benefit
General Members					
Plan A	M	6,341	$ 479,856,346	81.3	$ 6,306
	F	11,716	646,267,502	80.9	4,597
Plan B	M	206	15,117,046	76.1	6,115
	F	505	28,440,714	75.9	4,693
Plan C	M	143	8,669,030	75.1	5,052
	F	342	17,015,911	75.5	4,146
Plan D	M	7,499	373,149,368	69.2	4,147
	F	14,276	634,236,318	69.1	3,702
Plan E	M	5,252	185,413,445	72.9	2,942
	F	11,125	324,202,688	72.7	2,428
Plan G	M	87	1,638,707	65.2	1,570
	F	114	1,527,062	64.3	1,116
Total		57,606	$ 2,715,534,137	74.0	$ 3,928
Safety Members					
Plan A	M	4,135	$ 467,104,513	78.2	$ 9,414
	F	2,017	160,797,548	79.4	6,643
Plan B	M	6,380	692,813,087	61.7	9,049
	F	1,412	112,664,601	59.2	6,649
Plan C	M	14	844,892	55.7	5,029
	F	7	256,841	42.4	3,058
Total		13,965	$ 1,434,481,482	68.9	$ 8,560
Grand Total		71,571	$ 4,150,015,619	73.0	$ 4,832

Exhibit C-2
Former LACERA Membership – Vested Former Members as of June 30, 2022[1]
Subtotaled by Plan and Retirement Type

	Sex	Number	Average Age
General Members			
Plan A	M	14	75.7
	F	33	74.5
Plan B	M	2	74.5
	F	6	72.3
Plan C	M	5	69.0
	F	8	67.9
Plan D	M	2,565	50.4
	F	5,379	49.9
Plan E	M	933	57.3
	F	2,068	57.6
Plan G	M	2,014	38.6
	F	4,731	38.0
Total		17,758	46.9
Safety Members			
Plan A	M	4	70.0
	F	-	-
Plan B	M	675	45.5
	F	123	46.0
Plan C	M	424	32.2
	F	63	32.5
Total		1,289	40.6
Grand Total		19,047	46.5

1. Includes non-vested former members who still have member contributions with LACERA

Exhibit C-2a
LACERA Membership – Retired Members and Beneficiaries as of June 30, 2022
Subtotaled by Plan and Retirement Type

Plan	Retirement Type	Number	Annual Benefits in Thousands	Average Monthly Benefit
General Plans:				
Plan A				
	Healthy	12,712	$ 903,205	$ 5,921
	Disabled	1,213	54,671	3,756
	Beneficiaries	4,132	168,248	3,393
	Total	18,057	$ 1,126,124	$ 5,197
Plan B				
	Healthy	590	$ 38,747	$ 5,473
	Disabled	52	2,026	3,247
	Beneficiaries	69	2,785	3,363
	Total	711	$ 43,558	$ 5,105
Plan C				
	Healthy	371	$ 22,016	$ 4,945
	Disabled	49	1,765	3,002
	Beneficiaries	65	1,903	2,440
	Total	485	$ 25,684	$ 4,413
Plan D				
	Healthy	17,606	$ 872,120	$ 4,128
	Disabled	2,339	88,479	3,152
	Beneficiaries	1,830	46,787	2,131
	Total	21,775	$ 1,007,386	$ 3,855
Plan E				
	Healthy	14,860	$ 485,306	$ 2,722
	Disabled	N/A	N/A	N/A
	Beneficiaries	1,517	24,310	1,335
	Total	16,377	$ 509,616	$ 2,593
Plan G				
	Healthy	167	$ 2,372	$ 1,183
	Disabled	20	590	2,458
	Beneficiaries	14	204	1,214
	Total	201	$ 3,166	$ 1,313
Safety Plans:				
Plan A				
	Healthy	1,931	$ 228,295	$ 9,852
	Disabled	2,583	273,304	8,817
	Beneficiaries	1,638	126,303	6,426
	Total	6,152	$ 627,902	$ 8,505
Plan B				
	Healthy	3,223	$ 354,562	$ 9,167
	Disabled	4,185	424,411	8,451
	Beneficiaries	384	26,505	5,752
	Total	7,792	$ 805,478	$ 8,614
Plan C				
	Healthy	11	$ 697	$ 5,277
	Disabled	8	333	3,473
	Beneficiaries	2	72	2,990
	Total	21	$ 1,102	$ 4,372
Grand Totals		71,571	4,150,016	4,832

Exhibit C-2b
LACERA Membership – Retired Members and Beneficiaries as of June 30, 2022
Subtotaled by Retirement Type and Plan

Type	Plan	Number	Annual Benefits in Thousands	Average Monthly Benefit
Healthy Retirees				
	General A	12,712	$ 903,205	$ 5,921
	General B	590	38,747	5,473
	General C	371	22,016	4,945
	General D	17,606	872,120	4,128
	General E	14,860	485,306	2,722
	General G	167	2,372	1,183
	Safety A	1,931	228,295	9,852
	Safety B	3,223	354,562	9,167
	Safety C	11	697	5,277
	Total	51,471	$ 2,907,320	$ 4,707
Disabled Retirees				
	General A	1,213	$ 54,671	$ 3,756
	General B	52	2,026	3,247
	General C	49	1,765	3,002
	General D	2,339	88,479	3,152
	General E	N/A	N/A	N/A
	General G	20	590	2,458
	Safety A	2,583	273,304	8,817
	Safety B	4,185	424,411	8,451
	Safety C	8	333	3,473
	Total	10,449	$ 845,579	$ 6,744
Beneficiaries				
	General A	4,132	$ 168,248	$ 3,393
	General B	69	2,785	3,363
	General C	65	1,903	2,440
	General D	1,830	46,787	2,131
	General E	1,517	24,310	1,335
	General G	14	204	1,214
	Safety A	1,638	126,303	6,426
	Safety B	384	26,505	5,752
	Safety C	2	72	2,990
	Total	9,651	$ 397,117	$ 3,429
Grand Totals		71,571	$ 4,150,016	$ 4,832

Exhibit C-3
Age Distribution of Active Members as of June 30, 2022

	Age Groups						
	0-29	30-39	40-49	50-59	60-69	70+	Total
General Plans:							
Plan A							
Male	-	-	-	-	4	18	22
Female	-	-	-	-	12	22	34
Plan B							
Male	-	-	-	-	1	3	4
Female	-	-	-	-	9	2	11
Plan C							
Male	-	-	-	-	1	2	3
Female	-	-	-	-	6	8	14
Plan D							
Male	1	907	3,658	4,517	2,228	268	11,579
Female	1	1,872	8,201	9,369	4,245	493	24,181
Plan E							
Male	-	201	902	1,626	1,372	269	4,370
Female	-	343	1,835	3,766	3,197	473	9,614
Plan G							
Male	1,218	5,068	2,932	1,446	593	47	11,304
Female	2,713	10,847	5,315	2,705	892	81	22,553
Safety Plans:							
Plan A							
Male	-	-	-	-	1	-	1
Female	-	-	-	-	-	-	-
Plan B							
Male	5	1,177	2,821	2,671	201	2	6,877
Female	1	284	577	338	15	-	1,215
Plan C							
Male	1,340	2,211	403	73	21	-	4,048
Female	273	375	55	5	1	-	709
Grand Totals:	5,552	23,285	26,699	26,516	12,799	1,688	96,539

Exhibit C-4
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
All Plans

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	288	86	114	48	18	2	-	-	-	-	-	-	556
25-29	1,153	905	1,051	731	541	613	2	-	-	-	-	-	4,996
30-34	1,091	949	1,288	1,250	1,344	4,321	415	8	1	-	-	-	10,667
35-39	732	614	830	899	977	4,834	2,599	1,084	49	-	-	-	12,618
40-44	430	380	537	543	685	3,094	2,890	3,418	1,202	67	1	-	13,247
45-49	290	260	358	404	436	1,958	2,050	3,045	3,781	808	61	1	13,452
50-54	209	179	256	269	301	1,449	1,461	2,269	3,785	2,247	1,652	114	14,191
55-59	150	129	159	177	227	1,048	999	1,634	2,544	1,718	2,523	1,017	12,325
60-64	62	41	105	110	120	722	805	1,240	1,840	908	1,513	1,497	8,963
65 & Over	22	14	32	52	58	399	565	881	1,393	593	629	886	5,524
Total Count	4,427	3,557	4,730	4,483	4,707	18,440	11,786	13,579	14,595	6,341	6,379	3,515	96,539

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	49,995	68,539	74,453	63,715	73,909	88,734	-	-	-	-	-	-	59,976
25-29	56,752	63,666	72,677	74,439	79,695	81,392	72,762	-	-	-	-	-	69,456
30-34	65,914	68,656	73,068	75,118	76,285	82,631	90,217	60,257	72,564	-	-	-	77,121
35-39	74,754	80,210	78,249	82,635	81,662	86,889	98,989	97,232	111,783	-	-	-	88,061
40-44	75,522	75,649	73,933	84,545	83,438	92,548	102,093	99,021	103,371	112,500	206,556	-	94,801
45-49	64,631	69,519	72,434	81,569	80,828	88,877	102,300	100,560	106,672	121,932	127,373	146,232	98,918
50-54	65,606	73,502	72,349	77,118	83,046	87,856	97,475	99,378	106,260	120,857	121,804	123,290	103,965
55-59	67,156	77,884	68,802	73,736	79,203	84,934	92,683	90,485	96,990	112,634	112,461	108,970	99,501
60-64	72,638	76,024	64,639	85,429	73,330	83,915	89,322	85,050	90,091	108,509	107,599	108,672	95,987
65 & Over	98,668	104,778	77,253	83,143	83,155	91,471	88,427	84,386	82,621	95,108	99,298	100,518	90,345
Avg. Annual Compensation	$ 65,087	$ 70,994	$ 73,633	$ 78,527	$ 79,828	$ 86,817	$ 98,124	$ 96,008	$ 100,235	$ 114,502	$ 112,587	$ 107,187	$ 92,830

Exhibit C-4a
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan A

Count

Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	3	3	4	5	41	56
Total Count	-	-	-	-	-	-	-	3	3	4	5	41	56

Compensation

Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	59,816	86,936	123,294	96,053	126,993	118,221
Avg. Annual Compensation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 59,816	$ 86,936	$ 123,294	$ 96,053	$ 126,993	$ 118,221

Exhibit C-4b
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan B

Count

Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	-	2	2	1	10	15
Total Count	-	-	-	-	-	-	-	-	2	2	1	10	15

Compensation

Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	-	143,592	134,040	141,264	113,844	122,331
Avg. Annual Compensation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 143,592	$ 134,040	$ 141,264	$ 113,844	$ 122,331

Exhibit C-4c
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan C

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	6	6
65 & Over	-	-	-	-	-	-	-	-	-	-	-	11	11
Total Count	-	-	-	-	-	-	-	-	-	-	-	17	17

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	95,858	95,858
65 & Over	-	-	-	-	-	-	-	-	-	-	-	122,627	122,627
Avg. Annual Compensation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 113,179	$ 113,179

Exhibit C-4d
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan D

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	1	1	-	-	-	-	-	2
30-34	1	-	-	7	3	87	180	6	1	-	-	-	285
35-39	1	5	5	13	12	306	1,560	553	39	-	-	-	2,494
40-44	1	3	4	13	15	286	1,980	2,243	684	51	-	-	5,280
45-49	-	1	9	10	9	200	1,435	2,057	2,325	490	42	1	6,579
50-54	1	1	4	10	10	159	1,038	1,568	2,357	1,214	759	86	7,207
55-59	1	3	4	1	4	102	737	1,148	1,663	1,085	1,343	588	6,679
60-64	-	-	2	3	2	58	565	842	1,188	586	773	622	4,641
65 & Over	-	-	2	2	1	36	372	575	775	345	273	212	2,593
Total Count	5	13	30	59	56	1,235	7,868	8,992	9,032	3,771	3,190	1,509	35,760

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	79,092	40,644	-	-	-	-	-	59,868
30-34	93,096	-	-	94,380	89,896	86,858	73,717	58,924	72,564	-	-	-	78,159
35-39	133,272	95,657	114,564	99,500	86,017	93,768	91,942	82,874	106,752	-	-	-	90,467
40-44	190,188	112,692	90,489	108,397	74,625	110,021	98,185	93,922	95,543	104,592	-	-	96,713
45-49	-	48,792	82,037	132,355	102,041	105,090	100,737	98,958	100,731	109,205	117,111	146,232	101,069
50-54	102,804	90,588	189,531	153,966	140,148	103,904	95,787	99,091	104,600	112,789	104,470	120,625	103,837
55-59	336,840	192,096	78,138	67,908	195,147	99,262	92,732	92,019	97,909	111,796	108,412	117,784	102,584
60-64	-	-	162,750	162,016	110,412	101,851	90,091	88,426	94,559	114,071	111,199	116,729	101,280
65 & Over	-	-	124,374	46,356	91,032	109,665	86,826	87,766	86,404	98,366	108,631	119,917	93,761
Avg. Annual Compensation	$ 171,240	$ 117,848	$ 110,601	$ 116,495	$ 104,171	$ 101,468	$ 94,900	$ 94,121	$ 98,810	$ 110,807	$ 108,283	$ 117,829	$ 99,840

Exhibit C-4e
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan E

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	1	6	48	2	-	-	-	-	57
35-39	-	-	-	-	-	35	305	146	1	-	-	-	487
40-44	-	-	-	-	-	26	374	484	201	5	-	-	1,090
45-49	-	-	-	-	-	30	325	554	669	64	5	-	1,647
50-54	-	-	-	-	-	14	268	465	821	431	373	13	2,385
55-59	-	-	-	-	-	22	222	387	670	445	877	384	3,007
60-64	-	-	-	-	-	22	209	375	604	293	700	833	3,036
65 & Over	-	-	-	-	-	9	178	297	606	237	343	605	2,275
Total Count	-	-	-	-	1	164	1,929	2,710	3,572	1,475	2,298	1,835	13,984

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	64,944	77,638	67,538	64,254	-	-	-	-	68,440
35-39	-	-	-	-	-	82,287	78,519	70,043	89,748	-	-	-	76,272
40-44	-	-	-	-	-	84,426	85,489	78,256	75,699	127,459	-	-	80,639
45-49	-	-	-	-	-	83,940	86,752	82,886	83,395	84,523	75,857	-	83,917
50-54	-	-	-	-	-	109,017	91,254	82,043	82,627	92,831	86,240	88,965	86,081
55-59	-	-	-	-	-	85,633	84,926	74,608	80,496	97,325	97,233	86,283	88,214
60-64	-	-	-	-	-	92,091	81,214	74,567	77,507	93,070	100,179	98,881	90,099
65 & Over	-	-	-	-	-	67,119	87,311	77,600	76,799	88,275	90,757	90,286	84,574
Avg. Annual Compensation	$ -	$ -	$ -	$ -	$ 64,944	$ 85,972	$ 84,594	$ 78,296	$ 80,129	$ 93,259	$ 95,333	$ 93,341	$ 86,074

Exhibit C-4f
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
General Plan G

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	222	44	51	32	10	-	-	-	-	-	-	-	359
25-29	996	692	705	484	333	362	-	-	-	-	-	-	3,572
30-34	983	795	1,071	1,066	1,107	3,344	31	-	-	-	-	-	8,397
35-39	689	536	736	811	864	3,822	60	-	-	-	-	-	7,518
40-44	406	351	495	499	623	2,504	30	2	-	-	-	-	4,910
45-49	284	249	326	385	412	1,646	30	4	1	-	-	-	3,337
50-54	202	168	245	255	281	1,240	29	2	1	1	-	-	2,424
55-59	146	110	149	176	219	907	16	4	-	-	-	-	1,727
60-64	60	37	101	106	118	628	18	4	2	-	-	-	1,074
65 & Over	21	14	30	50	57	352	12	3	-	-	-	-	539
Total Count	4,009	2,996	3,909	3,864	4,024	14,805	226	19	4	1	-	-	33,857

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	46,401	49,774	48,300	49,151	58,634	-	-	-	-	-	-	-	47,670
25-29	54,971	55,675	59,818	60,236	64,898	63,038	-	-	-	-	-	-	58,521
30-34	64,756	64,741	67,671	70,622	70,018	74,505	73,015	-	-	-	-	-	70,478
35-39	74,316	78,780	75,350	80,529	78,641	81,279	92,662	-	-	-	-	-	79,589
40-44	74,987	73,585	71,895	82,653	81,863	88,117	156,346	102,546	-	-	-	-	83,431
45-49	64,303	68,141	70,244	79,694	79,280	85,589	137,668	74,775	44,352	-	-	-	79,960
50-54	64,199	69,147	69,521	73,477	79,370	84,708	111,242	368,850	191,304	44,136	-	-	79,164
55-59	64,435	63,620	66,573	73,769	75,943	82,435	133,834	176,127	-	-	-	-	77,333
60-64	71,795	62,559	63,019	83,048	72,702	80,642	126,612	103,107	121,776	-	-	-	78,163
65 & Over	99,292	104,778	74,112	84,614	83,017	89,916	139,372	100,240	-	-	-	-	89,725
Avg. Annual Compensation	$ 64,202	$ 66,624	$ 68,200	$ 74,534	$ 75,438	$ 81,475	$ 114,878	$ 139,976	$ 119,802	$ 44,136	$ -	$ -	$ 75,332

Exhibit C-4g
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
Safety Plan A

Count

Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	-	-	1	-	-	1
Total Count	-	-	-	-	-	-	-	-	-	1	-	-	1

Compensation

Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65 & Over	-	-	-	-	-	-	-	-	-	178,488	-	-	178,488
Avg. Annual Compensation	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 178,488	$ -	$ -	$ 178,488

Exhibit C-4h
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
Safety Plan B

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	5	1	-	-	-	-	-	6
30-34	-	1	3	-	2	93	149	-	-	-	-	-	248
35-39	-	3	8	5	5	147	651	385	9	-	-	-	1,213
40-44	-	12	7	3	5	86	494	687	316	11	1	-	1,622
45-49	-	3	4	3	2	27	257	427	785	254	14	-	1,776
50-54	-	9	1	-	4	12	125	232	605	601	520	15	2,124
55-59	-	13	1	-	1	5	24	94	211	188	303	45	885
60-64	-	3	-	-	-	1	13	19	46	29	40	36	187
65 & Over	-	-	-	-	-	1	3	2	7	4	7	7	31
Total Count	-	44	24	11	19	377	1,717	1,846	1,979	1,087	885	103	8,092

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	114,996	104,880	-	-	-	-	-	113,310
30-34	-	84,528	111,884	-	123,924	118,299	119,436	-	-	-	-	-	118,814
35-39	-	94,144	104,820	122,390	113,227	121,811	125,160	128,167	136,032	-	-	-	125,517
40-44	-	109,748	108,031	132,276	102,634	118,654	126,659	130,175	137,912	142,365	206,556	-	129,803
45-49	-	141,228	108,648	123,712	110,520	121,591	126,510	131,449	144,186	155,911	176,560	-	139,997
50-54	-	143,616	104,784	-	166,251	113,426	121,538	133,767	144,633	157,380	172,615	168,316	152,553
55-59	-	160,014	149,736	-	141,228	121,536	135,485	132,837	142,124	153,707	174,480	187,392	156,951
60-64	-	168,004	-	-	-	121,704	134,618	138,529	138,581	152,110	167,870	198,138	158,511
65 & Over	-	-	-	-	-	147,156	149,484	133,044	148,584	150,423	150,201	188,453	157,227
Avg. Annual Compensation	$ -	$ 136,008	$ 109,148	$ 125,447	$ 123,917	$ 119,915	$ 125,280	$ 130,727	$ 142,949	$ 156,083	$ 172,962	$ 188,442	$ 140,758

Exhibit C-4i
Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2022
Safety Plan C

Count

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Total Count
Under 25	66	42	63	16	8	2	-	-	-	-	-	-	197
25-29	157	213	346	247	208	245	-	-	-	-	-	-	1,416
30-34	107	153	214	177	231	791	7	-	-	-	-	-	1,680
35-39	42	70	81	70	96	524	23	-	-	-	-	-	906
40-44	23	14	31	28	42	192	12	2	1	-	-	-	345
45-49	6	7	19	6	13	55	3	3	1	-	-	-	113
50-54	6	1	6	4	6	24	1	2	1	-	-	-	51
55-59	3	3	5	-	3	12	-	1	-	-	-	-	27
60-64	2	1	2	1	-	13	-	-	-	-	-	-	19
65 & Over	1	-	-	-	-	1	-	1	-	-	-	-	3
Total Count	413	504	767	549	607	1,859	46	9	3	-	-	-	4,757

Compensation

Age	Years of Service 0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	Average Comp.
Under 25	62,084	88,198	95,625	92,843	93,002	88,734	-	-	-	-	-	-	82,402
25-29	68,045	89,626	98,878	102,269	103,385	107,834	-	-	-	-	-	-	96,871
30-34	76,296	88,892	99,536	101,436	105,778	112,362	124,243	-	-	-	-	-	104,287
35-39	80,555	89,461	99,725	101,058	106,659	114,305	124,095	-	-	-	-	-	107,933
40-44	79,986	90,230	96,651	102,069	107,657	113,706	117,516	138,432	104,388	-	-	-	107,541
45-49	80,158	90,735	97,840	96,158	110,646	114,926	106,548	100,832	106,548	-	-	-	106,549
50-54	106,794	157,104	104,298	117,072	104,604	119,087	109,236	96,054	120,024	-	-	-	113,706
55-59	109,668	130,788	111,554	-	141,948	135,488	-	149,604	-	-	-	-	128,905
60-64	97,908	298,260	48,342	108,072	-	145,301	-	-	-	-	-	-	136,197
65 & Over	85,560	-	-	-	-	147,156	-	85,560	-	-	-	-	106,092
Avg. Annual Compensation	$ 72,396	$ 90,086	$ 98,761	$ 101,613	$ 105,330	$ 112,987	$ 120,934	$ 111,848	$ 110,320	$ -	$ -	$ -	$ 102,526

Exhibit C-5
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
All Plans

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	1	7	5	13	69	44	139	$ 1,084
35-39	-	-	-	-	-	-	2	4	7	66	42	121	2,481
40-44	-	-	-	-	-	1	1	13	38	100	74	227	2,935
45-49	-	-	-	-	-	2	14	39	76	147	115	393	3,471
50-54	-	-	-	1	5	31	91	91	152	363	544	1,278	3,742
55-59	-	-	-	1	50	112	154	149	323	1,467	1,922	4,178	6,010
60-64	-	-	4	30	99	152	169	245	1,133	3,100	2,282	7,214	5,648
65-69	-	6	36	65	105	152	287	1,050	2,765	4,437	3,266	12,169	4,949
70-74	4	49	100	118	157	321	1,136	2,900	4,038	4,243	1,386	14,452	4,719
75-79	10	118	199	179	369	1,215	2,850	2,961	2,895	1,600	638	13,034	4,931
80-84	39	114	139	260	918	1,701	2,074	1,520	1,005	704	397	8,871	4,698
85-89	60	93	174	522	1,132	1,052	866	530	420	414	253	5,516	4,219
90-94	52	90	301	439	630	375	225	209	215	216	113	2,865	3,907
95-99	23	89	159	168	145	70	53	71	68	65	27	938	3,580
100 & Over	15	24	34	20	21	16	12	7	16	9	2	176	3,009
Total Count	203	583	1,146	1,803	3,631	5,201	7,941	9,794	13,164	17,000	11,105	**71,571**	
Avg Monthly Benefit	$ 2,487	$ 3,107	$ 3,147	$ 3,668	$ 4,631	$ 4,697	$ 5,429	$ 4,727	$ 4,744	$ 4,867	$ 5,174		**$ 4,832**

Exhibit C-5a
Distribution of Retired Members and Beneficiaries by Age and Retirement Year
as of June 30, 2022
General Plan A

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	1	-	2	3	1	7	$ 791
35-39	-	-	-	-	-	-	-	2	1	3	2	8	1,240
40-44	-	-	-	-	-	-	1	4	2	1	3	11	1,952
45-49	-	-	-	-	-	-	2	4	4	-	-	10	2,636
50-54	-	-	-	1	-	3	2	3	4	3	6	22	2,526
55-59	-	-	-	-	1	1	2	5	3	7	7	26	3,644
60-64	-	-	1	1	2	4	7	14	9	16	6	60	3,167
65-69	-	3	8	10	8	17	54	125	342	187	42	796	5,478
70-74	2	23	32	31	36	140	412	996	897	206	109	2,884	5,928
75-79	5	59	71	59	200	607	1,292	1,174	422	238	151	4,278	5,892
80-84	22	62	66	157	621	899	1,200	393	225	223	156	4,024	5,409
85-89	35	57	112	406	793	703	355	169	173	188	136	3,127	4,586
90-94	29	68	245	328	509	207	96	109	127	131	66	1,915	3,981
95-99	22	71	138	151	113	47	31	50	46	44	23	736	3,511
100 & Over	13	23	33	19	13	14	11	6	12	7	2	153	3,031
Total Count	128	366	706	1,163	2,296	2,642	3,466	3,054	2,269	1,257	710	**18,057**	
Avg Monthly Benefit	$ 1,908	$ 2,490	$ 2,531	$ 3,157	$ 4,438	$ 4,684	$ 6,340	$ 6,436	$ 6,245	$ 4,778	$ 4,029		**$ 5,197**

Exhibit C-5b
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
General Plan B

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	-	-	-	$ -
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	1	-	1	2,848
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	1	1	3,253
60-64	-	-	-	-	-	-	-	3	1	6	8	18	5,387
65-69	-	-	-	-	1	1	4	17	47	67	5	142	5,732
70-74	-	-	1	4	4	4	13	48	92	31	7	204	6,252
75-79	-	-	1	3	4	15	37	42	30	9	4	145	4,755
80-84	-	-	1	2	4	9	31	17	12	5	2	83	4,386
85-89	-	-	1	2	6	19	14	13	6	2	1	64	3,901
90-94	-	-	2	4	13	15	2	4	-	3	-	43	2,412
95-99	-	-	-	2	2	1	3	1	-	-	-	9	2,635
100 & Over	-	-	-	-	1	-	-	-	-	-	-	1	6,945
Total Count	-	-	6	17	35	64	104	145	188	124	28	**711**	
Avg Monthly Benefit	$ -	$ -	$ 1,495	$ 1,524	$ 2,109	$ 2,556	$ 3,797	$ 4,909	$ 6,596	$ 6,962	$ 5,265		**$ 5,105**

Exhibit C-5c
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
General Plan C

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	1	-	1	$ 5,205
35-39	-	-	-	-	-	-	-	-	-	1	-	1	5,205
40-44	-	-	-	-	-	-	-	-	1	-	-	1	1,689
45-49	-	-	-	-	-	-	-	-	1	-	-	1	1,380
50-54	-	-	-	-	-	-	-	-	1	-	-	1	1,689
55-59	-	-	-	-	-	-	-	-	-	1	1	2	1,248
60-64	-	-	-	-	-	-	1	1	3	13	5	23	4,487
65-69	-	1	1	4	-	3	3	5	22	38	16	93	5,882
70-74	-	-	2	2	2	2	17	20	51	32	5	133	5,669
75-79	-	-	2	2	6	9	9	29	23	8	1	89	4,112
80-84	-	-	-	6	8	8	17	12	7	3	1	62	2,681
85-89	-	-	-	3	5	7	14	5	3	1	1	39	2,894
90-94	-	-	-	2	8	9	2	3	1	3	-	28	1,868
95-99	-	-	-	1	4	1	1	1	1	1	-	10	2,042
100 & Over	-	-	-	-	1	-	-	-	-	-	-	1	716
Total Count	-	1	5	20	34	39	64	76	114	102	30	**485**	
Avg Monthly Benefit	$ -	$ 1,918	$ 1,575	$ 1,139	$ 1,454	$ 2,190	$ 3,010	$ 3,443	$ 6,051	$ 6,260	$ 6,341		**$ 4,413**

Exhibit C-5d
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
General Plan D

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	3	2	9	35	17	66	$ 774
35-39	-	-	-	-	-	-	1	-	1	24	18	44	1,685
40-44	-	-	-	-	-	-	-	5	14	38	33	90	2,121
45-49	-	-	-	-	-	2	3	7	33	53	35	133	2,427
50-54	-	-	-	-	1	4	20	23	58	199	320	625	2,356
55-59	-	-	-	-	8	13	39	52	182	660	694	1,648	3,081
60-64	-	-	-	4	15	37	49	125	487	1,250	1,457	3,424	4,207
65-69	-	-	3	5	22	48	119	411	870	2,243	1,643	5,364	4,558
70-74	-	1	2	15	27	66	231	517	1,375	1,938	638	4,810	4,040
75-79	-	-	2	10	32	137	278	666	1,051	628	183	2,987	3,687
80-84	-	-	3	13	42	127	306	469	358	201	77	1,596	3,100
85-89	-	-	2	11	30	108	212	152	88	63	33	699	2,604
90-94	-	-	2	4	22	60	60	44	23	20	9	244	2,518
95-99	-	-	-	3	10	11	2	6	4	4	1	41	1,876
100 & Over	-	-	-	1	2	-	-	-	-	1	-	4	880
Total Count	-	1	14	66	211	613	1,323	2,479	4,553	7,357	5,158	**21,775**	
Avg Monthly Benefit	$ -	$ 2,987	$ 1,864	$ 1,599	$ 1,865	$ 2,106	$ 2,448	$ 2,893	$ 3,695	$ 4,165	$ 4,703		**$ 3,855**

Exhibit C-5e
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
General Plan E

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	1	-	2	-	16	11	30	$ 729
35-39	-	-	-	-	-	-	1	2	3	10	6	22	923
40-44	-	-	-	-	-	1	-	2	6	11	6	26	1,084
45-49	-	-	-	-	-	-	-	-	8	21	13	42	1,552
50-54	-	-	-	-	-	-	2	4	11	25	24	66	961
55-59	-	-	-	-	-	-	1	7	19	141	241	409	1,114
60-64	-	-	-	-	-	-	2	2	152	497	509	1,162	1,947
65-69	-	-	-	-	-	-	4	161	573	1,519	1,417	3,674	3,177
70-74	-	-	-	-	-	6	136	631	1,377	1,898	538	4,586	2,946
75-79	-	-	-	-	-	83	378	826	1,287	618	222	3,414	2,567
80-84	-	-	-	-	25	188	363	595	339	178	102	1,790	2,124
85-89	-	-	-	8	64	143	244	144	100	96	40	839	1,663
90-94	-	-	-	13	45	79	45	24	23	24	10	263	1,389
95-99	-	-	1	4	15	6	4	4	8	2	1	45	846
100 & Over	-	-	-	-	2	2	1	1	2	1	-	9	456
Total Count	-	-	1	25	151	509	1,181	2,405	3,908	5,057	3,140	**16,377**	
Avg Monthly Benefit	$ -	$ -	$ 81	$ 266	$ 547	$ 808	$ 1,261	$ 1,704	$ 2,633	$ 3,058	$ 3,383		**$ 2,593**

Exhibit C-5f
Distribution of Retired Members and Beneficiaries by Age and Retirement Year
as of June 30, 2022
General Plan G

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	2	1	3	$ 2,331
35-39	-	-	-	-	-	-	-	-	-	-	1	1	1,180
40-44	-	-	-	-	-	-	-	-	-	2	-	2	1,899
45-49	-	-	-	-	-	-	-	-	-	2	3	5	1,691
50-54	-	-	-	-	-	-	-	-	-	2	6	8	1,515
55-59	-	-	-	-	-	-	-	-	-	3	21	24	688
60-64	-	-	-	-	-	-	-	-	1	6	31	38	897
65-69	-	-	-	-	-	-	-	-	-	15	55	70	1,117
70-74	-	-	-	-	-	-	-	-	-	13	22	35	1,483
75-79	-	-	-	-	-	-	-	1	-	4	4	9	4,053
80-84	-	-	-	-	-	-	-	-	-	4	2	6	2,355
85-89	-	-	-	-	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	-	-	-	-	-	1	1	53	146	**201**	
Avg Monthly Benefit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,047	$ 987	$ 1,680	$ 1,176		**$ 1,313**

Exhibit C-5g
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
Safety Plan A

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	2	3	1	6	$ -
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	1	2	-	3	6,486
50-54	-	-	-	-	1	-	2	-	1	-	-	4	6,412
55-59	-	-	-	-	-	1	1	-	2	3	2	9	5,401
60-64	-	-	-	-	3	1	4	-	18	10	4	40	8,071
65-69	-	2	11	16	9	17	19	97	150	34	36	391	10,098
70-74	2	25	58	46	60	80	273	476	94	81	56	1,251	9,391
75-79	5	59	119	101	117	343	811	175	60	81	72	1,943	8,875
80-84	17	52	69	82	217	469	151	31	61	88	55	1,292	8,156
85-89	25	36	59	92	232	70	27	47	49	64	42	743	7,188
90-94	23	22	51	87	32	5	19	24	40	34	28	365	6,636
95-99	1	18	20	7	1	4	12	9	9	14	2	97	6,342
100 & Over	2	1	1	-	2	-	-	-	2	-	-	8	6,304
Total Count	75	215	388	431	674	990	1,319	859	489	414	298	**6,152**	
Avg Monthly Benefit	$ 3,475	$ 4,164	$ 4,411	$ 5,944	$ 7,699	$ 8,822	$ 10,382	$ 10,792	$ 9,560	$ 7,535	$ 7,432		**$ 8,505**

Exhibit C-5h
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
Safety Plan B

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	3	1	-	8	11	23	$ 2,218
35-39	-	-	-	-	-	-	-	-	2	27	12	41	4,299
40-44	-	-	-	-	-	-	-	2	15	48	32	97	4,333
45-49	-	-	-	-	-	-	9	28	29	67	63	196	4,647
50-54	-	-	-	-	3	24	65	61	77	134	188	552	5,708
55-59	-	-	-	1	41	97	111	85	117	652	953	2,057	9,434
60-64	-	-	3	25	79	110	106	100	462	1,299	258	2,442	9,549
65-69	-	-	13	30	65	66	84	234	761	334	51	1,638	8,762
70-74	-	-	5	20	28	23	54	212	152	43	11	548	7,845
75-79	-	-	4	4	10	21	45	48	21	14	1	168	5,548
80-84	-	-	-	-	1	1	6	3	3	2	2	18	4,670
85-89	-	-	-	-	2	2	-	-	1	-	-	5	2,793
90-94	-	-	1	1	1	-	1	1	1	1	-	7	1,516
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	26	81	230	344	484	775	1,641	2,629	1,582	**7,792**	
Avg Monthly Benefit	$ -	$ -	$ 2,500	$ 2,720	$ 3,642	$ 3,984	$ 4,392	$ 6,617	$ 8,863	$ 9,842	$ 10,718		**$ 8,614**

Exhibit C-5i
Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2022
Safety Plan C

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	1	2	3	$ 2,984
35-39	-	-	-	-	-	-	-	-	-	1	3	4	3,289
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	1	1	2	3,326
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	2	2	3,069
60-64	-	-	-	-	-	-	-	-	-	3	4	7	1,503
65-69	-	-	-	-	-	-	-	-	-	-	1	1	2,168
70-74	-	-	-	-	-	-	-	-	-	1	-	1	24,861
75-79	-	-	-	-	-	-	-	-	1	-	-	1	19,364
80-84	-	-	-	-	-	-	-	-	-	-	-	-	-
85-89	-	-	-	-	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	-	-	-	-	-	-	1	7	13	**21**	
Avg Monthly Benefit	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 19,364	$ 5,414	$ 2,658		**$ 4,372**

Appendix D Member Contribution Rates

This section illustrates the member normal contribution rates and the normal plus cost-of-living contribution rates by entry age.

Exhibit D-1
Normal Member Contribution Rates

	General					Safety		
Entry Age	Plan A	Plan B	Plan C	Plan D	Plan G	Plan A	Plan B	Plan C
16	2.78%	5.57%	4.77%	4.77%	7.48%	4.47%	8.94%	11.49%
17	2.84%	5.68%	4.86%	4.86%	7.48%	4.47%	8.94%	11.49%
18	2.90%	5.79%	4.96%	4.96%	7.48%	4.47%	8.94%	11.49%
19	2.95%	5.91%	5.06%	5.06%	7.48%	4.55%	9.09%	11.49%
20	3.01%	6.03%	5.16%	5.16%	7.48%	4.58%	9.16%	11.49%
21	3.07%	6.15%	5.27%	5.27%	7.48%	4.61%	9.22%	11.49%
22	3.13%	6.27%	5.37%	5.37%	7.48%	4.69%	9.38%	11.49%
23	3.20%	6.39%	5.48%	5.48%	7.48%	4.77%	9.54%	11.49%
24	3.26%	6.52%	5.59%	5.59%	7.48%	4.85%	9.70%	11.49%
25	3.33%	6.65%	5.70%	5.70%	7.48%	4.89%	9.77%	11.49%
26	3.39%	6.79%	5.82%	5.82%	7.48%	4.92%	9.84%	11.49%
27	3.46%	6.92%	5.93%	5.93%	7.48%	5.00%	10.01%	11.49%
28	3.53%	7.06%	6.05%	6.05%	7.48%	5.09%	10.18%	11.49%
29	3.60%	7.21%	6.17%	6.17%	7.48%	5.18%	10.36%	11.49%
30	3.68%	7.35%	6.30%	6.30%	7.48%	5.23%	10.47%	11.49%
31	3.75%	7.50%	6.42%	6.42%	7.48%	5.29%	10.58%	11.49%
32	3.83%	7.66%	6.55%	6.55%	7.48%	5.38%	10.77%	11.49%
33	3.91%	7.81%	6.69%	6.69%	7.48%	5.48%	10.96%	11.49%
34	3.98%	7.96%	6.82%	6.82%	7.48%	5.58%	11.16%	11.49%
35	4.06%	8.12%	6.96%	6.96%	7.48%	5.69%	11.37%	11.49%
36	4.14%	8.28%	7.10%	7.10%	7.48%	5.79%	11.59%	11.49%
37	4.22%	8.43%	7.25%	7.25%	7.48%	5.90%	11.80%	11.49%
38	4.30%	8.59%	7.39%	7.39%	7.48%	6.01%	12.02%	11.49%
39	4.38%	8.75%	7.54%	7.54%	7.48%	6.12%	12.24%	11.49%
40	4.46%	8.91%	7.69%	7.69%	7.48%	6.23%	12.47%	11.49%
41	4.54%	9.08%	7.83%	7.83%	7.48%	6.35%	12.69%	11.49%
42	4.62%	9.24%	7.98%	7.98%	7.48%	6.45%	12.90%	11.49%
43	4.70%	9.41%	8.13%	8.13%	7.48%	6.55%	13.10%	11.49%
44	4.78%	9.57%	8.28%	8.28%	7.48%	6.64%	13.28%	11.49%
45	4.86%	9.73%	8.44%	8.44%	7.48%	6.70%	13.40%	11.49%
46	4.94%	9.88%	8.59%	8.59%	7.48%	6.70%	13.41%	11.49%
47	5.01%	10.03%	8.75%	8.75%	7.48%	6.70%	13.41%	11.49%
48	5.07%	10.15%	8.91%	8.91%	7.48%	6.70%	13.41%	11.49%
49	5.12%	10.24%	9.06%	9.06%	7.48%	6.70%	13.41%	11.49%
50	5.15%	10.29%	9.21%	9.21%	7.48%	6.70%	13.41%	11.49%
51	5.16%	10.32%	9.36%	9.36%	7.48%	6.70%	13.41%	11.49%
52	5.16%	10.32%	9.49%	9.49%	7.48%	6.70%	13.41%	11.49%
53	5.16%	10.32%	9.61%	9.61%	7.48%	6.70%	13.41%	11.49%
54	5.16%	10.32%	9.69%	9.69%	7.48%	6.70%	13.41%	11.49%
55	5.16%	10.32%	9.74%	9.74%	7.48%	6.70%	13.41%	11.49%
56	5.16%	10.32%	9.76%	9.76%	7.48%	6.70%	13.41%	11.49%
57	5.16%	10.32%	9.76%	9.76%	7.48%	6.70%	13.41%	11.49%
58	5.16%	10.32%	9.76%	9.76%	7.48%	6.70%	13.41%	11.49%
59	5.16%	10.32%	9.76%	9.76%	7.48%	6.70%	13.41%	11.49%
60	5.16%	10.32%	9.76%	9.76%	7.48%	6.70%	13.41%	11.49%

Exhibit D-2
Normal Plus Cost-of-Living Member Contribution Rates

	General					Safety		
Entry Age	Plan A	Plan B	Plan C	Plan D	Plan G	Plan A	Plan B	Plan C
16	5.06%	7.02%	6.02%	6.04%	9.24%	8.37%	11.93%	14.76%
17	5.17%	7.16%	6.13%	6.15%	9.24%	8.37%	11.93%	14.76%
18	5.28%	7.30%	6.26%	6.28%	9.24%	8.37%	11.93%	14.76%
19	5.37%	7.45%	6.39%	6.41%	9.24%	8.52%	12.13%	14.76%
20	5.48%	7.60%	6.51%	6.53%	9.24%	8.57%	12.22%	14.76%
21	5.59%	7.76%	6.65%	6.67%	9.24%	8.63%	12.30%	14.76%
22	5.70%	7.91%	6.78%	6.80%	9.24%	8.78%	12.52%	14.76%
23	5.83%	8.06%	6.92%	6.94%	9.24%	8.93%	12.73%	14.76%
24	5.94%	8.22%	7.05%	7.08%	9.24%	9.08%	12.94%	14.76%
25	6.06%	8.39%	7.19%	7.22%	9.24%	9.15%	13.04%	14.76%
26	6.17%	8.56%	7.34%	7.37%	9.24%	9.21%	13.13%	14.76%
27	6.30%	8.73%	7.48%	7.51%	9.24%	9.36%	13.36%	14.76%
28	6.43%	8.90%	7.63%	7.66%	9.24%	9.53%	13.58%	14.76%
29	6.55%	9.09%	7.79%	7.81%	9.24%	9.69%	13.82%	14.76%
30	6.70%	9.27%	7.95%	7.98%	9.24%	9.79%	13.97%	14.76%
31	6.83%	9.46%	8.10%	8.13%	9.24%	9.90%	14.12%	14.76%
32	6.97%	9.66%	8.27%	8.29%	9.24%	10.07%	14.37%	14.76%
33	7.12%	9.85%	8.44%	8.47%	9.24%	10.26%	14.62%	14.76%
34	7.25%	10.04%	8.61%	8.63%	9.24%	10.44%	14.89%	14.76%
35	7.39%	10.24%	8.78%	8.81%	9.24%	10.65%	15.17%	14.76%
36	7.54%	10.44%	8.96%	8.99%	9.24%	10.84%	15.46%	14.76%
37	7.68%	10.63%	9.15%	9.18%	9.24%	11.04%	15.74%	14.76%
38	7.83%	10.83%	9.33%	9.36%	9.24%	11.25%	16.04%	14.76%
39	7.98%	11.03%	9.51%	9.54%	9.24%	11.45%	16.33%	14.76%
40	8.12%	11.24%	9.70%	9.73%	9.24%	11.66%	16.64%	14.76%
41	8.27%	11.45%	9.88%	9.91%	9.24%	11.88%	16.93%	14.76%
42	8.41%	11.65%	10.07%	10.10%	9.24%	12.07%	17.21%	14.76%
43	8.56%	11.87%	10.26%	10.29%	9.24%	12.26%	17.48%	14.76%
44	8.70%	12.07%	10.45%	10.48%	9.24%	12.43%	17.72%	14.76%
45	8.85%	12.27%	10.65%	10.68%	9.24%	12.54%	17.88%	14.76%
46	8.99%	12.46%	10.84%	10.87%	9.24%	12.54%	17.89%	14.76%
47	9.12%	12.65%	11.04%	11.08%	9.24%	12.54%	17.89%	14.76%
48	9.23%	12.80%	11.24%	11.28%	9.24%	12.54%	17.89%	14.76%
49	9.32%	12.91%	11.43%	11.47%	9.24%	12.54%	17.89%	14.76%
50	9.38%	12.98%	11.62%	11.66%	9.24%	12.54%	17.89%	14.76%
51	9.40%	13.01%	11.81%	11.85%	9.24%	12.54%	17.89%	14.76%
52	9.40%	13.01%	11.98%	12.01%	9.24%	12.54%	17.89%	14.76%
53	9.40%	13.01%	12.13%	12.17%	9.24%	12.54%	17.89%	14.76%
54	9.40%	13.01%	12.23%	12.27%	9.24%	12.54%	17.89%	14.76%
55	9.40%	13.01%	12.29%	12.33%	9.24%	12.54%	17.89%	14.76%
56	9.40%	13.01%	12.32%	12.36%	9.24%	12.54%	17.89%	14.76%
57	9.40%	13.01%	12.32%	12.36%	9.24%	12.54%	17.89%	14.76%
58	9.40%	13.01%	12.32%	12.36%	9.24%	12.54%	17.89%	14.76%
59	9.40%	13.01%	12.32%	12.36%	9.24%	12.54%	17.89%	14.76%
60	9.40%	13.01%	12.32%	12.36%	9.24%	12.54%	17.89%	14.76%

Appendix E Historical Information

This section presents historical statistical information on LACERA's membership and the calculated contribution rates.

Exhibit E-1
Active Membership Data

Valuation Date (June 30)	General Members					Safety Members					Total Members				
	Number	Annual Salary (in millions)	Average Age	Average Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average Service	Average Monthly Salary
1998	65,782	$ 2,837	44.7	12.9	$ 3,594	10,947	$ 725	39.9	13.8	$ 5,519	76,729	$ 3,562	44.0	13.0	$ 3,870
1999	68,652	$ 3,105	44.6	12.7	$ 3,769	11,024	$ 753	40.0	13.7	$ 5,696	79,676	$ 3,858	43.9	12.8	$ 4,035
2000	71,940	$ 3,353	44.4	12.5	$ 3,884	11,264	$ 790	39.8	13.8	$ 5,849	83,204	$ 4,143	43.8	12.6	$ 4,150
2001	75,048	$ 3,608	44.5	12.3	$ 4,006	12,021	$ 860	39.6	13.0	$ 5,967	87,069	$ 4,468	43.9	12.4	$ 4,277
2002	77,062	$ 3,833	44.7	12.3	$ 4,145	12,190	$ 894	39.6	13.8	$ 6,115	89,252	$ 4,727	44.0	12.5	$ 4,414
2003	75,995	$ 3,954	45.2	12.7	$ 4,336	11,765	$ 899	40.1	13.7	$ 6,370	87,760	$ 4,853	44.5	12.9	$ 4,609
2004	74,826	$ 3,967	45.6	13.1	$ 4,418	11,409	$ 885	40.6	14.7	$ 6,467	86,235	$ 4,852	44.9	13.3	$ 4,689
2005	75,167	$ 4,046	45.8	13.2	$ 4,486	11,217	$ 905	41.0	14.9	$ 6,722	86,384	$ 4,951	45.2	13.4	$ 4,777
2006	77,167	$ 4,267	45.7	13.0	$ 4,608	11,464	$ 969	41.2	15.0	$ 7,047	88,631	$ 5,236	45.1	13.3	$ 4,924
2007	79,829	$ 4,673	45.7	12.8	$ 4,878	12,267	$ 1,104	40.8	14.4	$ 7,499	92,096	$ 5,777	45.1	13.0	$ 5,227
2008	81,664	$ 5,017	45.8	12.8	$ 5,119	12,828	$ 1,187	40.5	13.7	$ 7,714	94,492	$ 6,204	45.1	12.9	$ 5,471
2009	82,878	$ 5,348	46.1	13.1	$ 5,377	12,910	$ 1,240	40.8	14.0	$ 8,002	95,788	$ 6,588	45.4	13.2	$ 5,731
2010	81,413	$ 5,318	46.6	13.6	$ 5,444	12,997	$ 1,257	41.3	14.5	$ 8,062	94,410	$ 6,575	45.9	13.7	$ 5,804
2011	80,145	$ 5,295	47.0	14.0	$ 5,506	12,641	$ 1,240	41.9	15.1	$ 8,172	92,786	$ 6,535	46.3	14.2	$ 5,869
2012	79,467	$ 5,272	47.3	14.4	$ 5,528	12,485	$ 1,230	42.3	15.5	$ 8,209	91,952	$ 6,502	46.7	14.6	$ 5,892
2013	79,006	$ 5,253	47.6	14.8	$ 5,541	12,539	$ 1,235	42.3	15.7	$ 8,207	91,545	$ 6,488	46.9	14.9	$ 5,906
2014	79,943	$ 5,488	47.6	14.9	$ 5,720	12,523	$ 1,253	42.6	15.8	$ 8,337	92,466	$ 6,741	47.0	15.0	$ 6,075
2015	81,228	$ 5,706	47.6	14.8	$ 5,854	12,446	$ 1,300	42.8	16.0	$ 8,702	93,674	$ 7,006	46.9	15.0	$ 6,233
2016	82,916	$ 5,950	47.4	14.6	$ 5,980	12,528	$ 1,343	42.8	16.0	$ 8,931	95,444	$ 7,293	46.8	14.8	$ 6,367
2017	84,513	$ 6,290	47.3	14.5	$ 6,202	12,698	$ 1,388	42.5	15.6	$ 9,110	97,211	$ 7,678	46.7	14.6	$ 6,582
2018	85,703	$ 6,610	47.2	14.4	$ 6,428	12,771	$ 1,452	42.2	15.3	$ 9,471	98,474	$ 8,062	46.6	14.5	$ 6,822
2019	86,392	$ 6,816	47.3	14.4	$ 6,574	12,794	$ 1,540	42.0	15.1	$ 10,032	99,186	$ 8,356	46.6	14.5	$ 7,020
2020	86,930	$ 7,186	47.3	14.4	$ 6,889	13,178	$ 1,591	41.4	14.4	$ 10,058	100,108	$ 8,777	46.5	14.4	$ 7,306
2021	85,963	$ 7,438	47.5	14.6	$ 7,210	13,138	$ 1,651	41.4	14.2	$ 10,471	99,101	$ 9,088	46.7	14.5	$ 7,642
2022	83,689	$ 7,335	47.6	14.7	$ 7,304	12,850	$ 1,627	41.6	14.3	$ 10,551	96,539	$ 8,962	46.8	14.7	$ 7,736

Exhibit E-2
Retired Membership Data

Valuation Date (June 30)	General Members				Safety Members				Total Members			
	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit
1998	35,462	$ 692	71.1	$ 1,626	7,425	$ 267	62.5	$ 3,001	42,887	$ 959	69.6	$ 1,864
1999	35,837	$ 725	71.4	$ 1,686	7,674	$ 291	63.1	$ 3,166	43,511	$ 1,016	70.0	$ 1,947
2000	36,596	$ 780	71.4	$ 1,778	8,032	$ 324	63.1	$ 3,358	44,628	$ 1,104	69.9	$ 2,062
2001	37,077	$ 890	71.6	$ 2,001	8,319	$ 382	63.4	$ 3,828	45,396	$ 1,272	70.1	$ 2,336
2002	37,618	$ 914	71.8	$ 2,025	8,624	$ 403	63.7	$ 3,892	46,242	$ 1,317	70.3	$ 2,374
2003	38,283	$ 984	71.9	$ 2,142	8,949	$ 443	63.9	$ 4,128	47,232	$ 1,427	70.4	$ 2,518
2004	39,097	$ 1,056	72.0	$ 2,250	9,235	$ 478	64.2	$ 4,318	48,332	$ 1,534	70.5	$ 2,645
2005	40,251	$ 1,138	72.1	$ 2,355	9,518	$ 514	64.6	$ 4,504	49,769	$ 1,652	70.7	$ 2,766
2006	41,309	$ 1,224	72.2	$ 2,469	9,683	$ 549	65.0	$ 4,728	50,992	$ 1,773	70.8	$ 2,898
2007	41,584	$ 1,280	72.2	$ 2,565	9,808	$ 578	65.4	$ 4,914	51,392	$ 1,858	70.9	$ 3,013
2008	42,298	$ 1,356	72.4	$ 2,671	10,052	$ 623	65.8	$ 5,167	52,350	$ 1,979	71.1	$ 3,150
2009	42,825	$ 1,423	72.6	$ 2,768	10,244	$ 663	66.3	$ 5,394	53,069	$ 2,086	71.4	$ 3,275
2010	43,752	$ 1,514	72.7	$ 2,883	10,444	$ 706	66.7	$ 5,638	54,196	$ 2,220	71.6	$ 3,414
2011	44,726	$ 1,597	72.9	$ 2,976	10,645	$ 746	67.0	$ 5,836	55,371	$ 2,343	71.7	$ 3,526
2012	45,899	$ 1,686	73.0	$ 3,061	10,871	$ 789	67.3	$ 6,049	56,770	$ 2,475	71.9	$ 3,633
2013	46,939	$ 1,774	73.2	$ 3,149	11,147	$ 837	67.5	$ 6,261	58,086	$ 2,611	72.1	$ 3,746
2014	47,867	$ 1,836	73.4	$ 3,196	11,362	$ 876	67.8	$ 6,427	59,229	$ 2,712	72.3	$ 3,816
2015	48,958	$ 1,898	73.5	$ 3,231	11,648	$ 914	68.0	$ 6,541	60,606	$ 2,813	72.5	$ 3,867
2016	50,034	$ 1,988	73.6	$ 3,311	11,880	$ 965	68.3	$ 6,766	61,914	$ 2,952	72.6	$ 3,974
2017	51,083	$ 2,079	73.8	$ 3,391	12,241	$ 1,030	68.4	$ 7,012	63,324	$ 3,109	72.7	$ 4,091
2018	52,292	$ 2,192	73.9	$ 3,493	12,588	$ 1,104	68.5	$ 7,308	64,880	$ 3,296	72.8	$ 4,233
2019	53,560	$ 2,316	73.9	$ 3,603	12,947	$ 1,184	68.6	$ 7,620	66,507	$ 3,500	72.9	$ 4,385
2020	54,693	$ 2,436	74.0	$ 3,712	13,319	$ 1,270	68.8	$ 7,946	68,012	$ 3,706	73.0	$ 4,541
2021	55,828	$ 2,552	74.1	$ 3,809	13,669	$ 1,350	68.8	$ 8,228	69,497	$ 3,902	73.0	$ 4,679
2022	57,606	$ 2,716	74.0	$ 3,928	13,965	$ 1,434	68.9	$ 8,560	71,571	$ 4,150	73.0	$ 4,832

Exhibit E-3
Contribution Rates

Valuation Date (June 30)	General Plans					Safety Plans					Total All Plans				
	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution
1998	10.27%	3.06%	7.21%	0.00%	7.21%	25.00%	8.70%	16.30%	0.00%	16.30%	13.27%	4.21%	9.06%	0.00%	9.06%
1999	10.98%	3.20%	7.78%	0.00%	7.78%	25.41%	9.12%	16.29%	0.00%	16.29%	13.81%	4.36%	9.45%	0.00%	9.45%
2000	10.91%	3.33%	7.58%	0.00%	7.58%	25.22%	9.44%	15.78%	0.00%	15.78%	13.66%	4.51%	9.15%	0.00%	9.15%
2001	11.27%	3.45%	7.82%	0.00%	7.82%	25.47%	9.27%	16.20%	0.00%	16.20%	14.01%	4.57%	9.44%	0.00%	9.44%
2002	12.04%	3.53%	8.51%	0.21%	8.72%	25.92%	9.37%	16.55%	0.21%	16.76%	14.66%	4.63%	10.03%	0.21%	10.24%
2003	12.25%	3.72%	8.53%	4.66%	13.19%	25.89%	9.55%	16.34%	4.66%	21.00%	14.80%	4.81%	9.99%	4.66%	14.65%
2004	12.20%	3.82%	8.38%	6.41%	14.79%	24.61%	9.61%	15.00%	6.41%	21.41%	14.48%	4.88%	9.60%	6.41%	16.01%
2005	12.22%	3.91%	8.31%	5.33%	13.64%	24.69%	9.68%	15.01%	5.33%	20.34%	14.50%	4.97%	9.53%	5.33%	14.86%
2006	12.22%	4.07%	8.15%	3.49%	11.64%	24.70%	9.70%	15.00%	3.49%	18.49%	14.54%	5.12%	9.42%	3.49%	12.91%
2007	13.15%	4.38%	8.77%	2.24%	11.01%	26.04%	10.18%	15.86%	2.24%	18.10%	15.67%	5.51%	10.16%	2.24%	12.40%
2008	13.18%	4.47%	8.71%	1.99%	10.70%	26.01%	10.22%	15.79%	1.99%	17.78%	15.68%	5.59%	10.09%	1.99%	12.08%
2009	13.29%	4.57%	8.72%	4.12%	12.84%	26.08%	10.21%	15.87%	4.12%	19.99%	15.75%	5.65%	10.10%	4.12%	14.22%
2010	13.32%	4.68%	8.64%	6.47%	15.11%	25.00%	10.19%	14.81%	6.47%	21.28%	15.59%	5.75%	9.84%	6.47%	16.31%
2011	13.36%	4.91%	8.45%	7.89%	16.34%	25.09%	10.50%	14.59%	7.89%	22.48%	15.65%	6.00%	9.65%	7.89%	17.54%
2012	13.50%	5.01%	8.49%	10.09%	18.58%	25.42%	10.52%	14.90%	10.09%	24.99%	15.81%	6.08%	9.73%	10.09%	19.82%
2013	13.25%	5.01%	8.24%	11.90%	20.14%	24.67%	10.26%	14.41%	11.90%	26.31%	15.47%	6.03%	9.44%	11.90%	21.34%
2014	13.14%	5.09%	8.05%	10.04%	18.09%	24.71%	10.23%	14.48%	10.04%	24.52%	15.37%	6.08%	9.29%	10.04%	19.33%
2015	13.28%	5.22%	8.06%	8.49%	16.55%	24.71%	10.26%	14.45%	8.49%	22.94%	15.46%	6.18%	9.28%	8.49%	17.77%
2016	14.51%	5.72%	8.79%	9.73%	18.52%	25.54%	10.57%	14.97%	9.73%	24.70%	16.62%	6.65%	9.97%	9.73%	19.70%
2017	14.62%	5.87%	8.75%	10.10%	18.85%	25.69%	10.56%	15.13%	10.10%	25.23%	16.70%	6.76%	9.94%	10.10%	20.04%
2018	14.77%	6.04%	8.73%	10.99%	19.72%	25.70%	10.59%	15.11%	10.99%	26.10%	16.80%	6.88%	9.92%	10.99%	20.91%
2019	16.24%	6.74%	9.50%	11.73%	21.23%	28.58%	11.78%	16.80%	11.73%	28.53%	18.54%	7.68%	10.86%	11.73%	22.59%
2020	16.31%	6.86%	9.45%	13.75%	23.20%	28.95%	11.88%	17.07%	13.75%	30.82%	18.69%	7.80%	10.89%	13.75%	24.64%
2021	16.35%	6.94%	9.41%	13.58%	22.99%	29.09%	11.88%	17.21%	13.58%	30.79%	18.75%	7.87%	10.88%	13.58%	24.46%
2022	16.85%	7.23%	9.62%	14.72%	24.34%	29.97%	12.45%	17.52%	14.72%	32.24%	19.33%	8.21%	11.12%	14.72%	25.84%

Exhibit E-4
Funded Status History

Dollars in Millions

Valuation Year	Actuarial Accrued Liability (AAL)	Market Value Basis: Market Value of Assets (MVA)[1]	Market Value Basis: Unfunded AAL (UAAL)/Surplus MVA Basis	Market Value Basis: Funded Ratio MVA Basis	Actuarial Value Basis: Actuarial Value of Assets (AVA)[1]	Actuarial Value Basis: Unfunded AAL (UAAL)/Surplus AVA Basis	Actuarial Value Basis: Funded Ratio AVA Basis	Annual Total Payroll	Asset Smoothing Ratio (AVA / MVA)	Asset Volatility Ratio (MVA / Payroll)	Liability Volatility Ratio (AAL / Payroll)
1996 [2]	17,300	18,600	1,300	107.5%	17,700	400	102.3%	3,356	95.2%	5.5	5.2
1997 [2]	19,300	21,100	1,800	109.3%	19,600	300	101.6%	3,373	92.9%	6.3	5.7
1998	20,960	22,332	1,372	106.5%	20,851	(109)	99.5%	3,562	93.4%	6.3	5.9
1999	22,785	24,382	1,597	107.0%	23,536	751	103.3%	3,858	96.5%	6.3	5.9
2000	24,721	27,257	2,536	110.3%	25,427	706	102.9%	4,143	93.3%	6.6	6.0
2001	26,490	23,916	(2,574)	90.3%	26,490	-	100.0%	4,469	110.8%	5.4	5.9
2002	28,437	24,085	(4,352)	84.7%	28,262	(175)	99.4%	4,730	117.3%	5.1	6.0
2003	30,474	24,616	(5,858)	80.8%	26,564	(3,910)	87.2%	4,934	107.9%	5.0	6.2
2004	32,700	28,094	(4,606)	85.9%	27,089	(5,611)	82.8%	4,942	96.4%	5.7	6.6
2005	34,375	30,904	(3,471)	89.9%	29,497	(4,878)	85.8%	5,051	95.4%	6.1	6.8
2006	36,259	34,256	(2,003)	94.5%	32,820	(3,439)	90.5%	5,333	95.8%	6.4	6.8
2007	39,503	40,073	570	101.4%	37,042	(2,461)	93.8%	5,886	92.4%	6.8	6.7
2008	41,975	37,834	(4,141)	90.1%	39,662	(2,313)	94.5%	6,257	104.8%	6.0	6.7
2009	44,469	29,723	(14,746)	66.8%	39,542	(4,927)	88.9%	6,673	133.0%	4.5	6.7
2010	46,646	32,629	(14,017)	69.9%	38,839	(7,807)	83.3%	6,739	119.0%	4.8	6.9
2011	48,599	38,587	(10,012)	79.4%	39,194	(9,405)	80.6%	6,705	101.6%	5.8	7.2
2012	50,809	37,453	(13,356)	73.7%	39,039	(11,770)	76.8%	6,675	104.2%	5.6	7.6
2013	53,247	41,334	(11,913)	77.6%	39,932	(13,315)	75.0%	6,656	96.6%	6.2	8.0
2014	54,942	47,223	(7,719)	86.0%	43,654	(11,288)	79.5%	6,815	92.4%	6.9	8.1
2015	56,819	48,308	(8,511)	85.0%	47,328	(9,491)	83.3%	7,078	98.0%	6.8	8.0
2016	62,199	47,347	(14,852)	76.1%	49,358	(12,841)	79.4%	7,390	104.2%	6.4	8.4
2017	65,311	52,217	(13,094)	80.0%	52,166	(13,145)	79.9%	7,749	99.9%	6.7	8.4
2018	68,527	55,737	(12,790)	81.3%	55,233	(13,294)	80.6%	8,079	99.1%	6.9	8.5
2019	74,635	57,712	(16,923)	77.3%	57,617	(17,018)	77.2%	8,423	99.8%	6.9	8.9
2020	78,275	57,925	(20,350)	74.0%	59,763	(18,512)	76.3%	8,819	103.2%	6.6	8.9
2021	81,898	72,282	(9,616)	88.3%	64,909	(16,989)	79.3%	9,080	89.8%	8.0	9.0
2022	86,320	68,973	(17,347)	79.9%	68,712	(17,608)	79.6%	9,048	99.6%	7.6	9.5

1. *Asset values exclude non-valuation reserves*
2. *Only rounded values are available.*

Exhibit E-5
Reconciliation of Changes in Unfunded Actuarial Accrued Liability or Surplus

Dollars in Millions

Valuation Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Prior Year UAAL	9,405	11,770	13,315	11,288	9,491	12,841	13,145	13,294	17,018	18,512	16,989
Normal Cost	1,237	1,430	1,163	1,068	1,118	1,246	1,243	1,352	1,553	1,634	1,681
Contributions	(1,646)	(1,455)	(1,824)	(1,936)	(1,902)	(1,880)	(2,116)	(2,303)	(2,459)	(2,774)	(2,959)
Interest	724	895	999	814	682	954	968	976	1,212	1,311	1,202
Changes in Assumptions/Methodology	457	511	-	-	2,922	-	-	2,528	-	-	1,364
Changes in Benefit Provisions	-	-	-	-	-	-	-	-	-	-	-
Expected Current Year UAAL	10,177	13,151	13,653	11,234	12,311	13,161	13,240	15,847	17,324	18,683	18,277
Actual Current Year UAAL	11,770	13,315	11,288	9,491	12,841	13,145	13,294	17,018	18,512	16,989	17,608
Total (Gain)/Loss on UAAL	1,593	164	(2,365)	(1,743)	530	(16)	54	1,171	1,188	(1,694)	(669)
Asset (Gains)/Losses	2,337	893	(1,664)	(1,263)	496	(421)	(411)	477	701	(2,039)	(996)
Salary Increases	(629)	(563)	(291)	79	162	277	223	486	388	484	(21)
All Other Actuarial (Gains)/Losses	(115)	(166)	(410)	(559)	(128)	128	242	208	99	(139)	348

Exhibit E-6
Reconciliation of Changes in Calculated Employer Contribution Rate

Valuation Year	Prior Year Contribution Rate	Changes in Existing Amortization Bases	Assumption/ Method Changes	Salary/Payroll Variations	Plan Amendments	Asset (Gains)/Losses	Demographic/Other (Gains)/Losses	Current Year Contribution Rate
2004	14.65%	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	16.01%
2005	16.01%	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	N/A[1]	14.86%
2006	14.86%	-0.29%	0.00%	0.02%	0.00%	-1.82%	0.14%	12.91%
2007	12.91%	-0.28%	1.34%	0.61%	0.00%	-2.14%	-0.04%	12.40%
2008	12.40%	-0.17%	0.00%	0.21%	0.00%	-0.24%	-0.12%	12.08%
2009	12.08%	-0.04%	-1.76%	0.21%	0.00%	3.91%	-0.18%	14.22%
2010	14.22%	0.00%	-0.27%	-0.10%	0.00%	2.29%	0.17%	16.31%
2011	16.31%	0.00%	0.25%	-0.14%	0.00%	1.39%	-0.27%	17.54%
2012	17.54%	0.00%	0.54%	-0.11%	0.00%	1.92%	-0.07%	19.82%
2013	19.82%	0.00%	0.82%	-0.01%	0.00%	0.74%	-0.03%	21.34%
2014	21.34%	0.00%	0.00%	-0.15%	0.00%	-1.43%	-0.43%	19.33%
2015	19.33%	0.00%	0.00%	0.04%	0.00%	-1.04%	-0.56%	17.77%
2016	17.77%	0.00%	2.87%	0.20%	0.00%	0.39%	-0.02%	21.21%
2017	21.21%	0.00%	0.00%	0.05%	0.00%	-0.32%	0.06%	21.00%
2018	21.00%	0.00%	0.00%	0.04%	0.00%	-0.30%	0.17%	20.91%
2019	20.91%	0.00%	1.10%	0.20%	0.00%	0.42%	-0.04%	22.59%
2020	22.59%	0.00%	1.09%	0.04%	0.00%	0.58%	0.34%	24.64%
2021	24.64%	0.00%	1.10%	0.39%	0.00%	-1.69%	0.02%	24.46%
2022	24.46%	0.00%	1.38%	0.49%	0.00%	-0.80%	0.31%	25.84%

1. Data not available.

Exhibit E-7
Funding Policy History

	Description of changes, if any	Effective Date	Impact on Contribution Rate	Impact on Funded Ratio	Rationale
2009	Changed from 3-year to 5-year asset smoothing. Included STAR reserve as a valuation asset. Adopted 30-year layered amortization period.	June 30, 2009	-1.68% [1]	4.40%	See June 30, 2009 valuation report.
2010	Included STAR reserve as a valuation asset.	June 30, 2010	-0.52% [1]	1.40%	See June 30, 2010 valuation report.
2011	Included STAR reserve as a valuation asset.	June 30, 2011	-0.52% [1]	1.20%	See June 30, 2011 valuation report.
2012	Included STAR reserve as a valuation asset for 2012 and future valuations (adopted February 2013).	June 30, 2012	-0.53% [1]	1.20%	See June 30, 2012 valuation report.
2019	Adopted 20-year layered amortization period for new layers. Existing layers are set to be no greater than 22 years, so they are fully amortized no later than 2042.	June 30, 2019	0.30%	0.00%	See June 30, 2019 valuation report.
2022	Excluded STAR reserve from valuation assets.	June 30, 2022	0.46%	-0.70%	See June 30, 2022 valuation report.

1. Note that savings due to inclusion of STAR reserve as valuation asset are not cumulative from year to year.

Exhibit E-8
History of Changes in Economic Assumptions

Valuation Year	Price Inflation	Wage Inflation	Real Wage Inflation[1]	Investment Return Assumption	Real Investment Return[2]	Effective Date	Change in Contribution Rate	Change in Funded Ratio
2004	3.50%	3.75%	0.25%	7.75%	4.25%	July 1, 2004	1.65%	N/A[3]
2007	3.50%	4.00%	0.50%	7.75%	4.25%	July 1, 2007	0.66%	-1.3%
2011	3.45%	3.95%	0.50%	7.70%	4.25%	July 1, 2011	0.25%	-0.3%
2012	3.35%	3.85%	0.50%	7.60%	4.25%	July 1, 2012	0.54%	-0.7%
2013	3.00%	3.50%	0.50%	7.50%	4.50%	July 1, 2013	0.37%	-0.1%
2016	2.75%	3.25%	0.50%	7.25%	4.50%	July 1, 2016	1.14%	-1.4%
2019	2.75%	3.25%	0.50%	7.00%	4.25%	July 1, 2019	2.20%	-2.3%

1. Excess of assumed wage inflation over price inflation.
2. Excess of assumed investment return over price inflation.
3. Information not available.

Exhibit E-9
History of Changes in Demographic and Other Non-Economic Assumptions

	Demographic Assumption Revisions	Effective Date	Change in Contribution Rate	Change in Funded Ratio	Rationale
2004	Mortality, merit salary scale, retirement, termination, probability of refund, probability of eligible survivor revised.	July 1, 2004	-0.63%	N/A[1]	Refer to the 2004 Investigation of Experience Report.
2007	Mortality, retirement, termination, probability of refund, merit salary scale for Safety members revised.	July 1, 2007	0.68%	N/A[1]	Refer to the 2007 Investigation of Experience Report.
2010	Mortality, retirement, termination, probability of refund, assumed benefit commencement age revised.	July 1, 2010	-0.27%	-0.1%	Refer to the 2010 Investigation of Experience Report.
2013	Mortality, retirement, termination, probability of refund, merit salary scale for Safety members, probability of eligible survivor, assumption for beneficiary age, reciprocity assumption revised.	July 1, 2013	0.45%	-0.6%	Refer to the 2013 Investigation of Experience Report.
2016	Mortality, retirement, termination, probability of eligible survivor, assumed benefit commencement age, reciprocity assumption revised.	July 1, 2016	1.73%	-2.5%	Refer to the 2016 Investigation of Experience Report.
2019	Mortality, retirement, termination, probability of refund, merit salary scale, assumed benefit commencement age.	July 1, 2019	0.80%	-0.4%	2019 Investigation of Experience.
2022	Mortality, retirement, termination, probability of refund, merit salary scale, probability of eligible survivor, assumption for beneficiary age, reciprocity assumption revised.	July 1, 2022	0.92%	-0.7%	2022 Investigation of Experience.

1. Information not available.

Appendix F Glossary

The following definitions include excerpts from a list adopted by the major actuarial organizations in the United States. In some cases, the definitions have been modified for specific applicability to LACERA and include terms used exclusively by LACERA. Defined terms are capitalized throughout this Appendix.

Accrued Benefit

The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.

Actuarial Accrued Liability

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.

Actuarial Gain (Loss)

A measure of the difference between actual experience and that expected based on a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

Actuarial Valuation

The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Contingency Reserve

Reserves accumulated for future earning deficiencies, investment losses, and other contingencies. Additions include investment income and other revenues; deductions include investment expense, administrative expense, interest allocated to other reserves, funding the STAR Reserve, and distributions to the Contribution Credit Reserve. Amounts are allocated to the Contingency Reserve to the extent there are positive recognized earnings to allocate. The California Government Code (Sections 31592 and 31592.2) requires the Contingency Reserve to be set at a minimum of 1.0% of the market value of total assets.

County Contribution Credit Reserve

The accumulated balance of the County's proportionate share of excess earnings as stipulated in the Retirement System Funding Agreement between LACERA and the County. Additions include distributions from excess earning during the fiscal years ending 1994 through 1998 and related earnings. Deductions include payments, as the County authorizes, for future employer contributions due LACERA and for funding a portion of the Retiree Healthcare Program under the provisions of Internal Revenue Code 401(h).

Employer Reserve

The accumulation of employer contributions for future retirement benefit payments. Additions include contributions from employers and related earnings. Deductions include annuity payments to retired members and survivors, lump sum death benefit payments to member survivors, and supplemental disability payments.

Entry Age Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.

Funded Ratio

A measurement of the funded status of the Plan. The Funded Ratio is calculated by dividing the Valuation Assets by the Actuarial Accrued Liability. For example, a Funded Ratio of 90% indicates assets are 10% less than liabilities.

Funding Goal

The Funding Goal is the funded status the Board of Investments would like LACERA to achieve. The main goal is to provide benefit security for its members as well as to achieve and maintain stable employer contributions that are as low as possible. A Funded Ratio equal to 100% is the Funding Goal.

Layered Amortization Period

Payment of each year's change in the Unfunded Actuarial Accrued Liability (UAAL) is amortized over separate closed periods. For LACERA, the original UAAL as of June 30, 2009 is being amortized over a closed 30-year period. Subsequent changes in the UAAL were amortized over new closed 30-year periods. Effective with the June 30, 2019 valuation all existing layers with more than 22 years remaining as of June 30, 2020 were re-amortized over closed 22-year periods. All new UAAL layers thereafter are amortized over closed 20-year periods beginning with the date the contribution is first expected to be made. All amortization payments are based on a level percent of pay.

Member Reserve

The accumulation of member contributions. Additions include member contributions and related earnings. Deductions include annuity payments to retirees and refunds to members.

Non-Valuation Reserves

Reserves excluded from the calculation of contribution rates, including the Contingency Reserve, the County Contribution Credit Reserve, and any other reserves specifically excluded by the Board of Investments.

Normal Cost

That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.

Plan Year

A 12-month period beginning July 1 and ending June 30.

Projected Benefits

Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.

STAR Reserve

Reserves accumulated for the payment of cost-of-living benefits as defined in California Government Code Section 31874.3.

Supplemental Targeted Adjustment for Retirees (STAR) Benefits Supplemental cost-of-living payments to retired members to restore purchasing power at a specified percentage level, as described in California Government Code Section 31874.3.

Surplus Funding

The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability. Standard actuarial terminology defines this as the “Funding Excess.” LACERA uses the term “Surplus Funding.”

Unfunded Actuarial Accrued Liability

The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.

Valuation Date

The date upon which the Normal Cost, Actuarial Accrued Liability, and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the ending of a Plan Year.

Valuation Reserves

All reserves excluding the Non-Valuation Reserves

Attachment II

Milliman's 2022 Investigation of Experience for Retirement Benefit Assumptions Report

Milliman

Los Angeles County Employees Retirement Association

2022 Investigation of Experience for Retirement Benefit Assumptions

Prepared by:

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January 6, 2023

Board of Investments
Los Angeles County Employees Retirement Association
300 North Lake Avenue, Suite 820
Pasadena, CA 91101-4199

Re: **Los Angeles County Employees Retirement Association**

Dear Trustees of the Board:

It is a pleasure to submit this report of our investigation of the experience of the Los Angeles County Employees Retirement Association (LACERA) for the three-year period ending June 30, 2022. The results of this investigation are the basis for recommended changes in actuarial assumptions for the actuarial valuation of retirement benefits to be performed as of June 30, 2022.

The purpose of this report is to communicate the results of our review of the actuarial methods and the economic and demographic assumptions to be used in the completion of the upcoming valuation. Several of our recommendations represent changes from the prior methods or assumptions and are designed to better anticipate the emerging experience of LACERA.

We have provided financial information showing the estimated hypothetical impact of the recommended assumptions if they had been used in the June 30, 2021 actuarial valuation. We believe the recommended assumptions provide a reasonable estimate of anticipated experience affecting LACERA. Nevertheless, the emerging costs will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions. Future actuarial measurements may differ significantly from the current measurements presented in this report due to factors such as the following:

- Plan experience differing from the actuarial assumptions,
- Future changes in the actuarial assumptions,
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as potential additional contribution requirements due to changes in the plan's funded status), and
- Changes in the plan provisions or accounting standards.

Due to the scope of this assignment, we did not perform an analysis of the potential range of such measurements.

In preparing this report, we relied without audit on information (some oral and some in writing) supplied by LACERA's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. We used LACERA's benefit provisions as stated in our June 30, 2021 actuarial valuation report. In our examination, after discussion with LACERA and making certain adjustments, we have found the data to be reasonably consistent and comparable with data used for other purposes. The experience study results are dependent on the integrity of this information. If any of this information is inaccurate or incomplete, our determinations may need to be revised.

We certify that the assumptions developed in this report satisfy ASB Standards of Practice, in particular, No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and No. 35 (Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations).

This investigation of experience report recommends assumptions to be used in the valuation to provide an estimate of the System's financial condition as of a single date. The valuation can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System 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.

The results for the estimated financial impact were developed using models employing standard actuarial techniques. 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. Reliance on other experts is reflected in Milliman's capital market assumptions, and in Milliman's expected return model maintained by Milliman investment consultants.

Milliman's work is prepared solely for the internal business use of LACERA. 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 exception(s):

(a) The System may provide a copy of Milliman's work, in its entirety, to the System'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 the System.

(b) The System 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.

The consultants who worked on this assignment are retirement actuaries. Milliman's advice is not intended to be a substitute for qualified legal, investment, or accounting counsel.

The signing actuaries are 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, we hereby certify that, to the best of our knowledge and belief, this 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. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

We would like to acknowledge the help in the preparation of the data for this investigation given by the LACERA staff. We look forward to our discussions and the opportunity to respond to your questions and comments at your next meeting.

Sincerely,

Nick Collier, ASA, EA, MAAA
Consulting Actuary

Craig Glyde, ASA, EA, MAAA
Consulting Actuary

Table of Contents

1. Executive Summary and Recommendations

Milliman has performed the triennial investigation of experience for the period July 1, 2019 through June 30, 2022. Although new information is added to our investigation based on the study period, the analysis and accompanying recommendations encompass a longer period by reflecting results from prior investigations. This report contains the findings of this investigation and includes several recommended changes in assumptions.

Calculating appropriate contribution rates is dependent on the assumptions used to project the future benefit payments and then to discount the value of future benefits to determine the present values. Therefore, the assumptions are critical in assisting the System in adequately funding future retirement benefits.

Summary

This section describes the key findings of this investigation of experience. We have recommended several changes to the demographic assumptions and actuarial methods. If adopted, these changes would have an effect on the member and employer contribution rates effective July 1, 2023. The potential impact to the members is discussed on the next page. The potential impact to employers is discussed at the end of this section.

We will refer to our recommended assumptions as the “recommended” or “proposed” assumptions throughout this report. We have provided a summary of the proposed changes to the assumptions later in this section. The Board of Investments has the ultimate decision on the assumptions to be used in the actuarial valuation.

The triennial study period of July 1, 2019 to June 30, 2022 overlapped with the COVID pandemic which impacted the results for that three-year period. In particular, we observed more retiree deaths than predicted by the assumptions, and there were more terminations and service retirements than predicted by the assumptions. We believe both of these were related to the pandemic and are not indicative of long-term trends. Results for the triennial period were reviewed, but changes were only made if they were also supported by experience from prior studies or reflective of emerging best practice in assumption setting.

Introduction

Section 2 discusses the following:

- How the investigation of experience study was performed.
- Actuarial Standards of Practice No. 27 and No. 35.
- The presentation of results you will see in this report.

Actuarial Methods (Includes Amortization Periods and Member Contribution Rates)

Section 3 describes the actuarial methods used in performing our valuation and in assisting LACERA to administer the plan. We are recommending three changes in the actuarial methods used in the valuation.

1. Under LACERA’s current amortization policy, annual changes in the Unfunded Actuarial Accrued Liability (UAAL) are funded over separate 20-year periods as a level percentage of payroll. These annual payments are referred to as “layers.” This approach of amortizing the changes in the UAAL due to assumption changes and actuarial gains and losses over 20 years is consistent with actuarial guidance and is similar to other California retirement systems. We are recommending one modification to better comply with actuarial guidance. If there is an increase in the UAAL due to changes in the benefit provisions, we recommend the impact of that increase be amortized over a 10-year period.
2. Under LACERA’s funding policy, the reserve value for STAR benefits is included in the Valuation Assets; however, the liability for any STAR benefits that may be granted in the future is not included in the liability

portion of valuation. We recommend the funding policy be changed to exclude the STAR reserve from the Valuation Assets for consistency with the treatment of STAR benefits.

3. We believe that the current asset valuation method where actuarial asset gains and losses are smoothed over five years is appropriate for LACERA's valuation. A five-year period is used by a majority of large public retirement systems. We are recommending one modification which should result in slightly smoother employer contribution rates in the future. The modified method would still smooth asset gains and losses over 5 years; however, before smoothing is applied, the current year gain (or loss) is offset against prior losses (or gains), if any. In addition to smoother employer contribution rates, the offsetting method is expected to reduce the likelihood and magnitude of spikes or dips in employer contribution rates in most cases.

An update to the operating tables LACERA uses in the calculation of optional forms of payment will be needed to reflect any changes in the COLA, mortality, and investment return assumptions. Based on the recommended changes, the only change would be due to the update to the mortality projection scale.

New member contribution rates will be calculated based on the 2022 triennial valuation using the assumptions adopted. We have estimated the new member rates based on the proposed assumptions, as shown in Section 3. These estimates show that there is expected to be increases in member rates in most cases under the proposed assumptions. Note that the actual member contribution rates cannot be determined until completion of the June 30, 2022 valuation.

Sample member contribution rates are shown in the following table. Note that all estimated member contribution rates also include the proposed demographic assumption changes and are the total member contribution rate (i.e., Normal + COLA).

Entry Age	Member Contribution Rates[1] Current	Estimated New	Estimated Monthly Increase % of Pay	Estimated Monthly Increase Average $[2]
General D				
25	6.95%	7.18%	0.23%	$ 19
35	8.56%	8.77%	0.21%	17
45	10.49%	10.63%	0.14%	11
General G				
All Ages	9.08%	9.18%	0.10%	6
Safety B				
25	12.61%	13.00%	0.39%	45
35	14.99%	15.13%	0.14%	16
45	17.83%	17.83%	0.00%	0
Safety C				
All Ages	14.33%	14.33%	0.00%	0

1. Final member contribution rates will not be determined until the June 30, 2022 actuarial valuation is completed.

2. Average increases are based on the estimated percent of pay increase and the average monthly compensation for active members of the specified plan.

Economic Assumptions

Section 4 discusses the economic assumptions: price inflation, general wage growth (which includes price inflation and productivity), payroll growth, investment return, and future retiree COLA increases. There have been significant changes in the economic environment since the last experience study; however, we believe the current assumptions remain appropriate and we are recommending no change.

Balancing both the current high price inflation and forecasts that are somewhat lower than the current assumption, we recommend the price inflation assumption remain at 2.75%. Related to the price inflation assumption, we also recommend the following.

- We recommend the 2.75% price inflation we applied both on a local basis (indirectly affecting general wage growth, payroll and COLA assumptions) and a national basis (indirectly affecting the investment return assumption).
- We recommend the wage inflation assumption remain equal to the local price inflation plus 0.5%, for a total of 3.25%, as there is a high correlation between price and wage inflation.
- We recommend no change in the assumed cost-of-living adjustment (COLA) for retiree benefits, which is equal to the price inflation assumption subject to plan maximum increases and COLA accumulation bank levels. Due to current COLA accumulation bank levels, the assumed COLA for Plan A retirees retired before April 1, 2022 is 3.0%. For other Plan A retirees the assumed COLA is equal to local price inflation. For all other plans the assumed COLA is 2.0% (with pro-rata adjustment based on pre-2002 service for General Plan E).

Based on the January 2022 capital market assumptions, there was less than a 50% probability that the current investment return of 7.0% would be met over the next 10 to 20 years; however, recent changes in the economic environment have increased the expected return as of July 2022 to at or above the 7.0% return. Considering both the January and July 2022 expected returns, we are recommending retaining the investment return assumption of 7.0%.

The following table shows our recommended economic assumptions which are equal to the current assumption.

Assumption	Current = Proposed
Investment Return[1]	7.00%
National Price Inflation	2.75%
Local Price Inflation	2.75%
Wage Growth	3.25%
Payroll Growth	3.25%
COLAs for Retirees (Plan A / Other Plans)[2]	2.75% / 2.00%

1. Net of both investment and administration expenses. For GASB financial reporting, the recommended investment return assumption is 0.15% higher.

2. The first of the two numbers applies to Plan A; the second number applies to the remainder of the plans (although the Plan E COLA is pro-rated percentage of 2.00% based on pre-2002 service). To account for existing Plan A COLA accumulation balances, retirees and beneficiaries with a retirement date prior to April 1, 2022 are assumed to receive 3.00% annual COLAs.

Analysis by Compensation Level

In our analysis of the active demographic assumptions (merit salary, active death, service retirement, disability, and termination), we reflect the impact of compensation levels by weighting the results by compensation. That is, a member with annual compensation of $80,000 has twice the impact on the observed rates in comparison to a member with annual compensation of $40,000. We observed some differences in member behavior based on compensation. For example, members with higher levels of compensation tended to have higher probabilities of retiring at a given age. These compensation-weighted probabilities are shown as the “Actual” bars in the graphs in Section 5 through Section 9. This approach is consistent with the previous experience study.

Merit Salary Increases

Section 5 discusses the individual salary increases due to promotion and longevity – the merit component of salaries. Merit salary increases were generally higher than the assumed increases. We are recommending increases in the assumption for both General and Safety members at most service levels to reflect actual experience.

Death from Active Status

Section 6 discusses the probability of a member dying while in active employment.

For nonservice-connected deaths, the actual rates were greater than what the current assumptions predicted. This experience is likely at least partially related to the pandemic, and as a consequence we are recommending no update to the base mortality tables, nor the plan and gender-specific adjustment factors applied to those base rates. However, we are recommending an update to the mortality improvement scale from the ultimate rate of MP-2014 to the ultimate rate of MP-2021. MP-2021 is the most recent mortality improvement scale published by the Society of Actuaries (SOA) and we believe it is appropriate to use in the valuation of LACERA. This change will result in lower mortality rates for most active members.

For the service-connected death assumption, we are not recommending a change given the limited data for this assumption.

Service Retirement

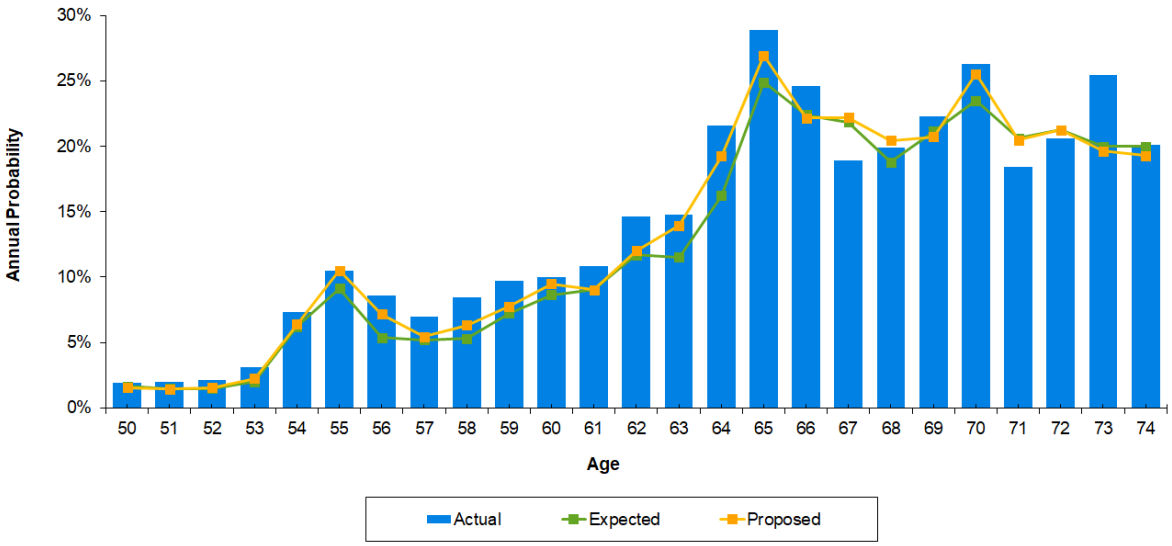
Section 7 discusses the probability of an eligible active member taking a service retirement at a specific age and service level. The results of our study showed actual retirement rates, weighted by compensation, that were approximately 25% higher than those expected by the assumptions. As noted above, we believe a portion of these extra retirements is related to the pandemic and not necessarily indicative of a long-term trend. As such, our recommendation will not reflect this experience to the extent it is not supported by the experience from earlier study periods.

Historically, rates of retirement have been analyzed based on a members's age and membership class. We have observed that rates of retirement also vary based on a member's years of service. That is, a member age 60 with 30 years of service is more likely to retire than a member age 60 with 10 years of service.

Based on the above, we are recommending modest adjustments to the age-based service retirement rates, and the addition of service-based adjustment factors to reflect different rates of retirement for similarly aged members with a different number of years of service. These revisions are projected to provide a better estimate of liabilities and cashflows.

The following graph shows the actual experience for all members from the current experience study (light blue bars). The proposed assumptions are shown as an orange line and compared to the current assumptions (green line).

Service Retirement Rates – All Plans



Disability Retirement

Section 8 discusses the probability of an active member becoming disabled. We studied both service-connected disability and nonservice-connected disability.

We have found that in many systems, including LACERA, there is generally at least a six-month lag between the actual occurrence of a disability retirement and the subsequent approval and reporting of that same retirement, which can lead to underreporting of disability retirements. After accounting for this reporting lag, the actual number of disability retirements, specifically service-connected disability retirements, is higher than expected by

the assumptions. As a portion of these disability retirements could be due to the pandemic, we are recommending no change to the disability retirement assumptions. However, if this experience continues over the next study period we will likely recommend changes to these assumptions.

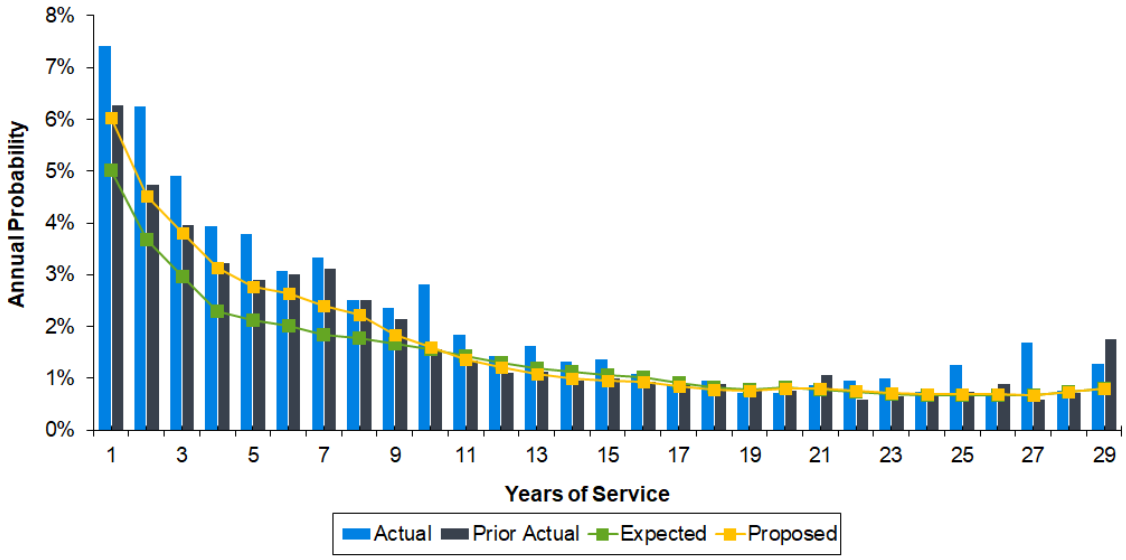
Termination

Section 9 summarizes the results of our study of terminations of employment for reasons other than death, service retirement, or disability. As used in the actuarial valuation, termination rates refer to both voluntary and involuntary terminations of employment.

The results of our study showed actual termination rates, weighted by compensation, that were approximately 50% higher than those expected by the assumptions. As noted above, we believe a portion of these extra terminations is related to the pandemic and not necessarily indicative of a long-term trend. As such, our recommendation will not reflect this experience to the extent it is not supported by the experience from earlier study periods.

The following graph shows the actual experience for all members from the current experience study (light blue bars), as well as the actual experience from the prior experience study (dark gray bars). The proposed assumptions are shown as an orange line and compared to the current assumptions (green line).

Termination from Employment Rates – All Plans



For General Plan D and G members we are recommending increases to the termination rates at service less than 10 years, and small decreases between 10 and 20 years of service. We are also recommending minor changes for Safety and General Plan E members.

Probability of Refund

In Section 10, we report the actual number of vested members electing a refund upon termination was 92% of the expected number. We are recommending small reductions in this assumption for General members to reflect the recent experience.

Retiree Mortality

The mortality assumption is used to predict the life expectancy of both members currently in pay status and those expected to receive a benefit in the future. The results of the study showed there were approximately 7% more deaths than the assumptions predicted. Since retirees with larger-than-average benefits tend to have lower mortality than those with smaller-than-average benefits we reflect the impact of benefit amounts by weighting the results based on the benefit amount. This approach is consistent with the prior experience study.

Although we observed more deaths than expected, it can be assumed that a portion of these "excess deaths" were related to the pandemic, and may not be expected to be part of a long-term trend. As a consequence we are recommending no update to the base mortality tables, nor the plan and gender-specific adjustment factors applied to those base rates. However, we are recommending an update to the mortality improvement scale from the ultimate rate of MP-2014 to the ultimate rate of MP-2021. MP-2021 is the most recent mortality improvement published by the Society of Actuaries (SOA) and we believe it is appropriate to use in the valuation of LACERA. This change will result in higher mortality rates (and shorter life expectancy) for most retired members.

Additional details are provided in Section 11.

Miscellaneous Assumptions

Section 12 discusses some other assumptions that are made. We are recommending the following:

- Modifying the assumption that a female member will have an eligible survivor at retirement who is eligible for the unreduced continuance benefit from a 50% probability to a 48% probability.
- Changing the assumption that an active male's beneficiary is 4 years younger to 3 years younger.
- Updating the current assumption for the probability of a deferred vested member establishing reciprocity and retiring with another system – from 16% to 17% for General members and from 35% to 36% for Safety members.

Summary of Recommendations

The following table summarizes our recommendations. The next section provides an overview of the financial impact of these proposed changes.

<table>
<tr><th>Assumption</th><th>Recommendation</th></tr>
<tr><td>Actuarial Methods</td><td>Exclude STAR Reserve from Valuation Assets.

Amortize benefit changes / improvements that increase UAAL over 10 years.

Modify the asset valuation method to include an offsetting of gains and losses prior to applying asset smoothing.</td></tr>
<tr><td>Other Actuarial Methods</td><td>Update operating tables used in the calculation of optional forms of payment to include recommended changes.</td></tr>
<tr><td>Economic</td><td><table><tr><th>Assumption</th><th>Current = Proposed</th></tr><tr><td>Investment Return</td><td>7.00%</td></tr><tr><td>National Price Inflation</td><td>2.75%</td></tr><tr><td>Local Price Inflation</td><td>2.75%</td></tr><tr><td>Wage Growth</td><td>3.25%</td></tr><tr><td>Payroll Growth</td><td>3.25%</td></tr><tr><td>COLAs for Retirees (Plan A / Other Plans)</td><td>2.75% / 2.00%</td></tr></table></td></tr>
<tr><td>Merit Salary Increase</td><td>Increases, particularly at longer service durations.</td></tr>
<tr><td>Death While Active</td><td>Update mortality improvement scale to ultimate rates of MP-2021.</td></tr>
<tr><td>Service Retirement</td><td>Change to reflect the impact of a member’s service on retirement probabilities.</td></tr>
<tr><td>Disability Retirement</td><td>No change.</td></tr>
<tr><td>Termination</td><td>Increases in rates at lower levels of service, primarily for General members.</td></tr>
<tr><td>Probability of Refund</td><td>Small reductions.</td></tr>
<tr><td>Retiree Mortality</td><td>Update mortality improvement scale to ultimate rates of MP-2021.</td></tr>
<tr><td>Miscellaneous</td><td>Minor changes.</td></tr>
</table>

Estimated Financial Impact

The following exhibit is designed to give the reader an idea of how the proposed changes may affect LACERA as a whole. Note that these estimates represent the immediate impact. Ultimately, the long-term cost of any retirement system is based on the benefits provided by employers, and the actual experience of the system.

The financial impact was evaluated by performing additional valuations with the June 30, 2021 valuation data and benefits, and reflecting the proposed assumption changes. This allows us to evaluate the relative financial impact of the various proposed changes; however, it should be noted that these are just estimates and the actual impact may vary when the June 30, 2022 valuation is completed. We have projected these results forward to June 30, 2022. Note that the impact of the various assumption changes by component is somewhat dependent on the order in which they are evaluated.

Projected Results of June 30, 2022 Valuation With Proposed Assumptions

	Funded Ratio	Total Employer Contribution % of Payroll	Total Employer Contribution $ millions
June 30, 2021 Valuation	**79.3%**	**24.5%**	**$ 2,205**
Estimated June 30, 2022 Valuation (before changes)	**81.0%**	**24.2%**	**$ 2,178**
Recommended Actuarial Method Changes			
Alternate Asset Smoothing	0.0%	0.2%	$ 18
Exclude STAR Reserve from Funding Assets	-0.5%	0.5%	44
Total Method Changes	**-0.5%**	**0.7%**	**$ 62**
Recommended Economic Assumption Changes			
Economic Assumptions	**0.0%**	**0.0%**	**$ -**
Recommended Demographic Assumption Changes			
Merit Salary Increases	-0.5%	0.7%	$ 62
Service Retirement	-0.9%	1.1%	98
Mortality	0.5%	-0.6%	(52)
Other	0.1%	-0.2%	(15)
Demographic Assumption Changes	**-0.8%**	**1.0%**	**$ 93**
Recommended Changes			
Total Recommended Changes	**-1.3%**	**1.7%**	**$ 155**
Estimated June 30, 2022 Valuation (with all changes)	**79.7%**	**25.9%**	**$ 2,333**

1. Impact estimated based on June 30, 2021 actuarial valuation. New assumptions will be implemented with the June 30, 2022 actuarial valuation and affect contribution rates effective July 1, 2023, so actual results will vary.

2. Impact of proposed changes will vary by plan; however, relative increase for the combined General plans and the combined Safety plans should be similar.

Conclusion

We recommend that the Board adopt the proposed actuarial assumptions and methods shown in Appendix A. We believe these assumptions reasonably reflect future expectations.

2. Introduction

Funding and Valuation Principles

While our goal is to make the best possible estimate of future experience, it is important for the Board to recognize that the future will almost certainly differ from our current best efforts to forecast it. Routine scheduled evaluations of the actuarial assumptions, such as through this experience investigation, are a sound methodology to identify where assumptions differ from emerging experience and to fine-tune the actuarial estimates to keep them as close as possible to emerging experience.

It is expected that there will be years in which the actual investment return will exceed the actuarial assumption, and there will be years when the actual experience will not meet the assumed rate. It is the annualized expected median long-term rate that is used to actuarially project and finance the retirement benefits.

A higher investment return assumption will tend to result in lower required contributions in the short term (and higher required contributions in the long term), while a lower investment return assumption will tend to require higher contributions in the short term (and lower required contributions in the long term). However, the actual contributions will ultimately be determined by the actual experience, so in the long term, this should approximately balance out.

The actuarial assumptions are usually divided into two groups: economic and demographic. The economic assumptions must not only reflect LACERA's actual experience but also consider the long-term expectation of future economic growth for the nation as well as the global economy.

The non-economic, or demographic assumptions, are based on LACERA's actual experience, adjusted to reflect trends and historical experience. Thus, the economic assumptions are more subjective than the demographic assumptions, and the demographic assumptions are much more dependent on recent experience.

Overview

This report presents the results of an investigation of the recent actuarial experience of LACERA. We will refer to this investigation as an experience study.

Throughout this report, we refer to "expected" and "proposed" actuarial assumptions. The "expected" assumptions are those used for our actuarial valuation of LACERA as of June 30, 2021. They may also be referred to as the "current" assumptions. The current assumptions and methods were adopted by the Board based on Milliman's 2019 experience study. The "proposed" or "recommended" assumptions are those we recommend for use in the valuation as of June 30, 2022 and for subsequent valuations until further changes are made.

The choice of economic assumptions (price inflation, investment return, general wage growth, payroll growth, and retiree COLA increase) is discussed in Section 4 of this report. These assumptions are generally chosen on the basis of expectations as to the effect of future economic conditions on the operation of LACERA.

Sections 5 through 12 of this report show the results of our study of demographic assumptions. These assumptions tend to be more objective than the economic assumptions. The exhibits are detailed comparisons between actual and expected decrements (members leaving active or retired status, for reasons such as retirement or death) on both the current and proposed bases. Each exhibit is identified by two numbers corresponding to the section of the report and the specific exhibit within that section. For example, Exhibit 7-1 is referred to in Section 7, retirement rates.

For each type of assumption, graphs show the actual, the expected and proposed rates, usually by some combination of gender, plan, years of service, and age. Ratios larger than 100% on the current basis generally indicate that the rates may need to be raised; ratios smaller than 100% generally indicate that rates may need to be lowered.

For each exhibit, the actual decrement rates for the current and prior period are shown as bar graphs on either a quinquennial-age basis, a years-of-service basis, or on an age-by-age basis. The current assumptions – the "expected" rates – used in the June 30, 2021 actuarial valuation, are shown, as well as the new proposed assumptions, as line graphs. Therefore, the assumption changes we are proposing are illustrated by the difference between the two lines in each exhibit. Note that in cases where no change is being proposed, only the proposed rate line is shown. On most graphs, we have also shown the actual results from the prior study period for comparison.

Actuarial Standard of Practice No. 27: Selection of Economic Assumptions for Measuring Pension Obligations

Actuarial Standard of Practice No. 27 (ASOP 27) provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans such as LACERA.

Because no one knows what the future holds, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience.

ASOP 27 states that each economic assumption selected by the actuary should be reasonable. The assumption is reasonable if it has the following characteristics:

- It is appropriate for the purpose of the measurement.
- It reflects the actuary's professional judgment.
- It takes into account relevant historical and current economic data.
- It reflects the actuary's estimate of future experience and observation of the estimates in market data.
- It has no significant bias (i.e., it is not significantly optimistic or pessimistic), but may specifically make provision for adverse deviation.

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

In our opinion, the economic assumptions we recommend for Retirement Board consideration in this report have been developed in accordance with ASOP 27.

Actuarial Standard of Practice No. 35: Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations

Actuarial Standard of Practice No. 35 (ASOP 35) governs the selection of demographic and other non-economic assumptions for measuring pension obligations. ASOP 35 states that the actuary should use professional judgment to estimate possible future outcomes based on past experience and future expectations, and select assumptions based upon application of that professional judgment. The actuary should select reasonable demographic assumptions in light of the particular characteristics of the defined benefit plan that is the subject of the measurement.

ASOP 35 Steps

The actuary should follow these steps in selecting the demographic assumptions:

1. **Identify the types of assumptions.** Types of demographic assumptions include but are not limited to: retirement, mortality, termination of employment, disability, election of optional forms of payment, administrative expenses, family composition, and treatment of missing or incomplete data. The actuary should consider the purpose and nature of the measurement, the materiality of each assumption, and the characteristics of the covered group in determining which types of assumptions should be incorporated into the actuarial model.
2. **Consider the relevant assumption universe.** The relevant assumption universe includes experience studies or published tables based on the experience of other representative populations, the experience of the plan sponsor, the effects of plan design, general trends, and future expectations.
3. **Consider the assumption format.** The assumption format includes whether assumptions are based on parameters such as gender, age, service, or calendar year. The actuary should consider the impact the format may have on the results, the availability of relevant information, the potential to model anticipated plan experience, and the size of the covered population.
4. **Select the Specific Assumptions.** In selecting an assumption the actuary should consider the potential impact of future plan design as well as the factors listed above.
5. **Select a Reasonable Assumption.** The assumption should be expected to appropriately model the contingency being measured. The assumption should not be anticipated to produce significant actuarial gains or losses.

ASOP 35 General Considerations and Application

Each individual demographic assumption should satisfy the criteria of ASOP 35. In selecting demographic assumptions, the actuary should also consider: the internal consistency between the assumptions, materiality, cost effectiveness, and the combined effect of all assumptions. At each measurement date, the actuary should consider whether the selected assumptions continue to be reasonable, but the actuary is not required to do a complete assumption study at each measurement date. In our opinion, the demographic assumptions recommended in this report have been developed in accordance with ASOP 35.

Actuarial Standard of Practice No. 44: Selection and Use of Asset Valuation Methods for Pension Valuations

Actuarial Standard of Practice No. 44 (ASOP 44) governs the selection of asset valuation methods. For plans using an asset smoothing method, considerations include: 1) whether actuarial investment gains and losses are recognized over a reasonable period of time; 2) whether there is any significant bias toward the smoothed value overstating or understating compared to the market value; and 3) whether realized and unrealized actuarial investment gains and losses are treated similarly. In our opinion, the asset valuation method recommended in this report has been developed in accordance with ASOP 44.

3. Actuarial Methods

As part of the triennial investigation, we have reviewed the valuation methods and other issues related to the actuarial assumptions. Actuarial Standard of Practice No. 4 (ASOP 4), *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*, provides guidance to actuaries giving advice on selecting actuarial methods for defined benefit plans. Actuarial Standard of Practice No. 44 (ASOP 44), *Selection and Use of Asset Valuation Methods for Pension Valuations,* provides guidance on methods for recognizing investment gains and losses through the asset valuation method. As part of the current experience study, we reviewed the valuation methods and other issues related to the actuarial assumptions in the context of these ASOPs. This section contains a discussion of actuarial cost methods, the valuation of assets, and other miscellaneous assumptions used in the valuation.

Actuarial Cost Method

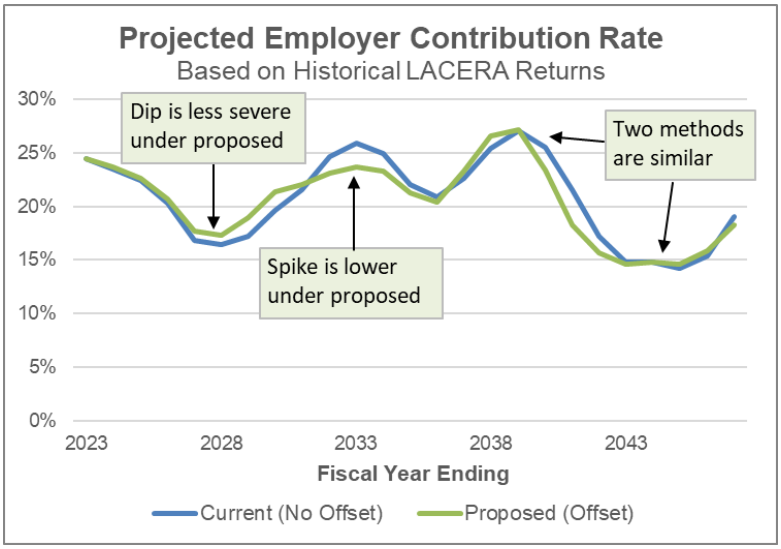
The actuarial valuation is prepared using the entry age actuarial cost method. We believe that this cost method is appropriate for LACERA's valuation. It is also the cost method that is required for financial reporting under GASB Statements 67 and 68. We recommend no change. Note that this is by far the most common method used for public sector retirement systems (used by about 90% of large public retirement systems), as it results in more stability in normal costs and provides a level allocation of costs as a percentage of pay over each individual's working lifetime. The entry age actuarial cost method satisfies the requirements of ASOP 4 for cost methods.

Valuation Assets

We believe that the current asset valuation method where actuarial asset gains and losses are smoothed over five years is appropriate for LACERA's valuation. A five-year period is used by a majority of large public retirement systems. We are recommending one modification which should result in slightly smoother employer contribution rates in the future:

> To the extent that there is a loss for the year and there are unrecognized gains from previous years, or to the extent that there is a gain for the year and there are unrecognized losses from previous years, the gain or loss for the year shall be used to offset unrecognized gains or losses from previous years in the order of oldest to most recent. Any remaining gain or loss for the year is recognized over a five-year period.

Based on our analysis, the addition of the offsetting should result in slightly smoother employer contribution rates. As an example, if LACERA's returns for the last 25 years were to repeat over the next 25 years and all other assumptions are met, we see a slightly smoother employer contribution rate pattern under the offsetting method (green lines) than under the current method without offsetting (blue lines).



The proposed asset valuation method satisfies the requirements of ASOP 44 that discusses the selection of asset valuation methods.

It should be noted that the California Actuary Advisory Panel (CAAP) has published a paper on model actuarial funding policies which include guidelines for asset smoothing. LACERA's method of five-year smoothing without a corridor falls in the "Acceptable Practices" category under these guidelines (categories described below for reference). We do not believe the addition of the offsetting of asset gains and losses would change this.The main difference between LACERA's method and the method described in the "Model Practices" is that the model practice includes a corridor of no greater than 50% to 150%, and LACERA has no corridor for five-year smoothing. We believe a five-year period is short enough that a corridor is not needed.

Categories Under CAAP Guidelines	
Model Practices	Those practices most consistent with the Level Cost Acturial Model (LCAM) developed by CAAP.
Acceptable Practices	Generally those which, while not consistent with the LCAM, are well established in practice and typically do not require additional analysis.
Acceptable Practices with Conditions	May be acceptable in some circumstances either to reflect different policy objectives or on the basis of additional analysis.
Non-Recommended Practices	Systems using these practices should acknowledge the policy concerns identified in the CAAP Guidelines.
Unacceptable Practices	No description provided by CAAP, but implication appears to be clear.

Amortization of UAAL

Under LACERA's current amortization policy, annual changes in the Unfunded Actuarial Accrued Liability (UAAL) are funded over separate 20-year periods as a level percentage of payroll. These annual payments are referred to as "layers." This approach of amortizing the changes in the UAAL due to assumption changes and actuarial gains and losses over 20 years is consistent with actuarial guidance and similar to other California retirement systems.

We are recommending one modification to better comply with actuarial guidance. If there is an increase in the UAAL due to changes in the benefit provisions, we recommend the impact of the increase be amortized over a 10-year period.

Treatment of STAR Reserve

Under LACERA's funding policy, the reserve value for STAR benefits is included in the Valuation Assets; however, the liability for any STAR benefits that may be granted in the future is not included in the liability portion of valuation. We recommend the valuation be changed to exclude the STAR reserve from the Valuation Assets for consistency with the treatment of STAR benefits.

Administrative Expense Treatment

Expenses are reflected in the valuation either implicitly or explicitly. Under the implicit method, an adjustment is made to the investment return assumption to reflect that administrative expenses are paid from investment earnings. Under the explicit method, the member and/or employer contribution rates are loaded by a percentage or amount to estimate the administrative expenses for the coming year. LACERA uses the implicit method. We believe this method is appropriate for LACERA and recommend continued usage.

Operating Tables

We are recommending a change in mortality projection assumption. If this change is adopted, the operating tables should be updated to reflect the change.

Blended Mortality Table

We have studied the following factors that apply to the blended mortality tables used in the operating factors:

- **Gender Proportion:** We found that males account for 37% of the total present value of benefits for current General members and 85% for current Safety members, compared to 33% and 86% respectively in the prior study.

  We are recommending the General Unisex mortality table use a blending of 35% male and 65% female (no change) and the Safety Unisex mortality table use a blending of 85% male and 15% female (no change).
- **Assumed Retirement Year:** Since a generational mortality assumption is complex administratively to apply for operating tables, we recommend a static projection of mortality rates be used instead. To generate the static mortality table we recommend using the average retirement age of General (age 64) and Safety members (age 56) and project the base mortality table rate to 2026 for that age. Mortality rates at all other ages would then be projected to the corresponding year based on the average retirement age in 2026. For example, age 64 is the average retirement age for General members, so the mortality base table rate for age 64 is projected to 2026. The mortality rate at age 74 (10 years from age 64) would then be the base table rate for age 74 projected an additional 10 years to 2036. Note that we recommend that the projected mortality rates be limited such that the rates not be greater than the corresponding base mortality rate.

- **Retirement Type:** LACERA uses healthy mortality (i.e., the mortality table used for service retirees) in cases where a member retires as a disability, but the benefit is based on the service retirement formula. We believe this continues to be a reasonable approach.

Reflecting the proposed assumptions in the optional monthly annuities would result in changes in the modified (or Unmodified Plus) benefit amount for future retirees who elect optional forms of payment. It would not affect the unmodified benefit.

Sample member contribution rates are shown in the following table. Note that all estimated member contribution rates include the proposed demographic assumption changes and are the total member rate (i.e., Normal + COLA).

Entry Age	Estimated Member Contribution Rates[1]			
	Current	Estimated New	Estimated Monthly Increase % of Pay	Estimated Monthly Increase Average $[2]
General D				
25	6.95%	7.18%	0.23%	$ 19
35	8.56%	8.77%	0.21%	17
45	10.49%	10.63%	0.14%	11
General G				
All Ages	9.08%	9.18%	0.10%	6
Safety B				
25	12.61%	13.00%	0.39%	45
35	14.99%	15.13%	0.14%	16
45	17.83%	17.83%	0.00%	0
Safety C				
All Ages	14.33%	14.33%	0.00%	0

1. Final member contribution rates will not be determined until the COLA portion is calculated in the June 30, 2022 actuarial valuation.

2. Average increases are based on the estimated percent of pay increase and the average monthly compensation for active members of the specified plan.

4. Economic Assumptions

Actuarial Standard of Practice (ASOP) 27, *Selection of Economic Assumptions for Measuring Pension Obligations*, provides guidance to actuaries giving advice on selecting economic assumptions for measuring obligations under defined benefit plans. As future events are unknown, the best an actuary can do is to use professional judgment to estimate possible future economic outcomes. These estimates are based on a mixture of past experience, future expectations, and professional judgment. The actuary should consider a number of factors, including the purpose and nature of the measurement, and appropriate recent and long-term historical economic data. However, the standard explicitly advises the actuary not to give undue weight to recent experience. To meet the standard, the assumption should reflect "the actuary's estimate of future experience" and "it has no significant bias (i.e., it is not significantly optimistic or pessimistic)…"

Each economic assumption should individually satisfy this standard. Furthermore, with respect to any particular valuation, each economic assumption should be consistent with every other economic assumption over the measurement period.

This section will discuss the economic assumptions. We have recommended no changes in these assumptions. We believe this set of assumptions satisfies ASOP 27.

The following table shows the current economic assumptions which is also our recommendation.

Assumption	Current = Proposed
Investment Return[(1)]	7.00%
National Price Inflation	2.75%
Local Price Inflation	2.75%
Wage Growth	3.25%
Payroll Growth	3.25%
COLAs for Retirees (Plan A / Other Plans)[(2)]	2.75% / 2.00%

1. Net of both investment and administration expenses. For GASB financial reporting, the recommended investment return assumption is 0.15% higher.

2. The first of the two numbers applies to Plan A; the second number applies to the remainder of the plans (although the Plan E COLA is pro-rated percentage of 2.00% based on pre-2002 service). To account for existing Plan A COLA balances, retirees and beneficiaries with a retirement date prior to April 1, 2022 are assumed to receive 3.00% annual COLAs.

1. Price Inflation

Use in the Valuation

When we refer to inflation in this report, we are generally referring to price inflation, both on a local and national basis. The national inflation assumption has an indirect impact on the results of the actuarial valuation through the development of the investment return assumption. The local price inflation affects the general wage increases and the payroll increase assumption. The price inflation assumptions do not have a direct impact on the valuation results, except where it affects the assumed COLA to be paid (local inflation) and the assumed increase in the PEPRA wage limit (national inflation).

The long-term relationship between inflation and investment return has long been recognized by economists. The basic principle is that the investors demand a "real return" – the excess of actual investment returns over national inflation. If inflation rates are expected to be high, investors will demand investment returns that are also expected to be high enough to exceed inflation, while lower inflation rates will result in lower expected investment returns, at least in the long run.

The current valuation assumption for both local and national inflation is 2.75% per year. Our recommendation is to retain the assumption.

Historical Perspective

The data for inflation shown below is based on the national Consumer Price Index, US City Average, All Urban Consumers (CPI-U) as published by the Bureau of Labor Statistics.

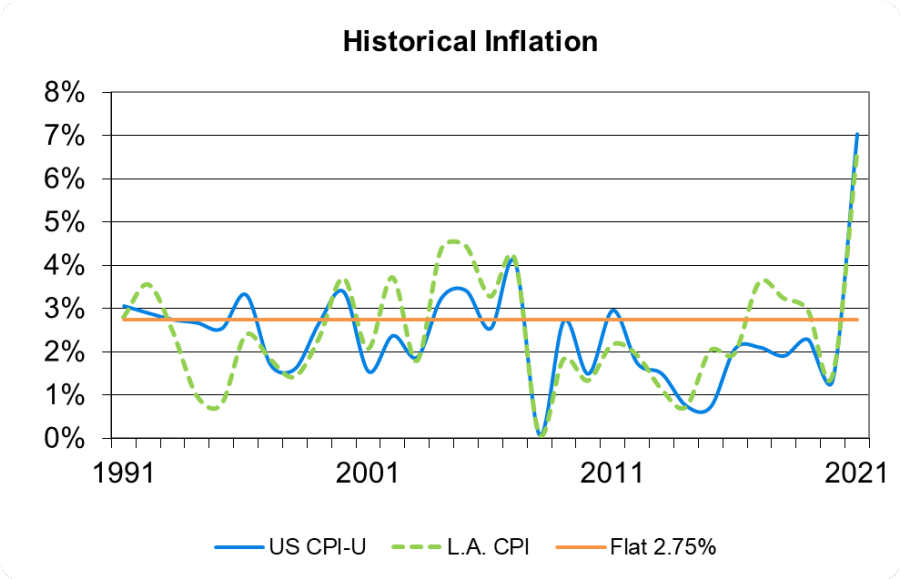
Although economic activities in general and inflation in particular, do not lend themselves to prediction on the basis of historical analysis, historical patterns and long term trends are a factor to be considered in developing the inflation assumption.

There are numerous ways to review historical data, with significantly differing results. The table below shows the compounded annual inflation rate for various 10-year periods, and for the 50-year period ended in December 2021. Note that the 50-year average is heavily influenced by the inflation of the late 1970s and early 1980s. The last 30 years have averaged closer to 2.5% on both a local and national basis.

	CPI Increase	
Decade	National	Local
2012-2021	2.1%	2.6%
2002-2011	2.5%	2.7%
1992-2001	2.5%	2.2%
1982-1991	3.9%	4.1%
1972-1981	8.6%	8.9%
Prior 50 Years		
1972-2021	3.9%	4.1%

The inflation assumption as it relates to the investment return assumption should be based more on national and even global inflation; whereas, the inflation assumption used in the wage growth, payroll growth, and COLA increase assumptions is tied to inflation in California. There have been differences between U.S. and Los Angeles-area CPI changes over time. For the 50-year period from 1972 to 2021 the CPI increase for the Los Angeles area has been on average 0.17% higher than national inflation.

The following graph shows historical CPI increases. The national CPI increase has generally been less than 2.75% over the last 10 years of the period, with 2021 being a notable exception. Also shown for comparison are CPI increases specific to the Los Angeles area, which has exceeded national CPI by about 0.10% on average over the 30-year period shown.



Forecasts of Inflation

Since 2020, national and local CPI have exceeded the assumed 2.75%, and most forecasts are for this to continue in the near term. Over the longer term, CPI is expected to decline as the Federal Reserve has a stated goal of inflation closer to 2.0%. However, it is uncertain over what time period that will occur and what inflation level will be reached. Most long-term forecasts of national inflation are lower than 2.75% although they have increased in response to economic conditions, and many investment consultants' 10-year estimate of average annual inflation is higher than their 20-year estimate.

Since the U.S. Treasury started issuing inflation indexed bonds (TIPS), it is possible to determine the approximate rate of inflation anticipated by the financial markets by comparing the yields on inflation indexed bonds with traditional fixed government bonds. Current market prices as of November 2022 suggest investors expect inflation to be 2.74% over the next 20 years and 2.46% over the next 30 years. Most long-term forecasts of future price inflation by economists and investment professionals are lower than 2.75%, although they are generally greater than 2.0%.

Additionally, we reviewed the expected increase in the CPI by the Office of the Chief Actuary for the Social Security Administration. In the 2022 Trustees Report, the projected average annual increase in the CPI over the next 75 years under the intermediate cost assumptions was 2.40%.

Recommendation

We considered both the current high inflationary environment and long-term forecasts that are generally lower than the current 2.75% assumption. We recommend leaving the local and national inflation assumptions at 2.75%, which is consistent with the implied inflation from TIPS over the next 20 years.

Consumer Price Inflation (Local and National)	
Current Assumption	2.75%
Recommended Assumption	2.75%

2. Wage and Payroll Growth

Use in the Valuation

Estimates of future salaries are based on two types of assumptions: 1) general wage increase and 2) merit increase. Rates of increase in the general wage level of the membership are directly related to inflation, while individual salary increases due to promotion and longevity generally occur even in the absence of inflation. The promotion and longevity assumptions, referred to as the merit scale, will be reviewed with the other demographic assumptions (see Section 5).

The current assumption is for wage growth of 0.50% above the inflation assumption.

Historical Perspective

We have used statistics from the Social Security Administration on the National Average Wage back to 1972.

There are numerous ways to review this data. For consistency with our observations of other indices, the table below shows the compounded annual rates of wage growth for various 10-year periods and for the 50-year period ending in 2021. The excess of wage growth over price inflation represents "productivity" (or the increase in the standard of living, also called the real wage inflation rate).

Decade	Wage Growth	CPI Increase	Real Wage Inflation
2012-2021	3.2%	2.1%	1.1%
2002-2011	2.7%	2.5%	0.2%
1992-2001	4.2%	2.5%	1.7%
1982-1991	4.7%	3.9%	0.8%
1972-1981	7.8%	8.6%	-0.8%
Prior 50 Years			
1972-2021	4.5%	3.9%	0.6%

LACERA-Specific Experience

We reviewed the increase in the average compensation for LACERA members since 1989. Over that period, the average compensation increased by 3.19% annually, compared to a 2.61% average annual increase in inflation. Therefore, for LACERA members only, we estimate real wage inflation has averaged 0.58% (3.19% less 2.61%) over the last three decades.

Forecasts of Future Wages

Wage inflation has been projected by the Office of the Chief Actuary of the Social Security Administration. In the 2022 Trustees Report, the ultimate long-term annual increase in the National Average Wage is estimated to be 1.15% higher than the Social Security intermediate inflation assumption of 2.4% per year.

Recommendation

Over the last 50 years, the actual experience, on a national basis, has been close to the current assumption, although this has varied considerably by decade, with the last 10 year's real wage inflation exceeding the assumption. Actual experience for employees participating in LACERA has also been close to the assumption over the last 30 years. We believe that wages will continue to grow at a greater rate than prices over the long

term, although not to the extent projected by Social Security. We are recommending that the long-term assumed real wage inflation rate remain at 0.50% per year.

Real Wage Inflation Rate	
Current assumption	0.50%
Recommended assumption	0.50%

The wage growth assumption is the total of the local price inflation assumption and the real wage inflation rate. If the real wage inflation assumption remains at 0.50% and the local price inflation assumption is set at 2.75%, this would result in a total wage growth assumption 3.25%.

Payroll Increase Assumption

In addition to setting salary assumptions for individual members, the aggregate payroll of LACERA is expected to increase, without accounting for the possibility of an increase (or decrease) in membership. See comments on growth in membership discussed below.

The current payroll increase assumption is equal to the general wage growth assumption of 3.25%. It is our general recommendation to set these two assumptions to be equal, unless the active population is projected to decline or there is projected to be a material change in the make-up of the population. Over the past 20 years LACERA has experienced an overall increase in its active population, and we believe it is reasonable to assume the active population will remain at approximately the current level. We are not aware of any expected changes in the make-up of the population (such as an increased proportion of lower paid employees) that would materially affect the payroll. Therefore, we are recommending that the payroll increase assumption continue to be set equal to total wage growth assumption.

Growth in Active Membership

We propose continuing the assumption that no future growth or decline in active membership will occur. This assumption affects the Unfunded Actuarial Accrued Liability (UAAL) amortization payment rate. With no assumed growth in membership, future salaries are assumed to grow due to wage growth increases only. If increases should occur because of additional members, there will be a larger pool of salaries over which to spread the UAAL, if any, resulting in an actuarial gain.

3. Investment Return

Use in the Valuation

The investment return assumption is one of the primary determinants in the calculation of the expected cost of LACERA's benefits, providing a discount of the future benefit payments that reflects the time value of money. This assumption has a direct impact on the calculation of liabilities, normal costs, member contribution rates, and the factors for optional forms of benefits. The current investment return assumption for LACERA is 7.00% per year, net of all administrative and investment-related expenses.

January 2022 Expected Long-Term Investment Return

To estimate the expected long-term return we have looked at capital market assumptions from three sources: Milliman, Meketa (LACERA's external investment consultant), and a survey of other investment consulting firms (Horizon Survey of Capital Market Assumptions, 2022 edition). We have combined these capital market assumptions with LACERA's target asset allocation. The target asset allocation is summarized in the following table:

Class	Target Allocation
Global Equity	32%
Private Equity	17%
Non-Core Private Real Estate	4%
Liquid Credit	4%
Illiquid Credit	7%
Core / Value-Add Real Estate	6%
Natural Resources / Commodities	3%
Custom Infrastructure	5%
TIPs	3%
Investment Grade Bonds	7%
Custom Hedge Funds	6%
Long-Term Government Bonds	5%
Cash Equivalents	1%

Combining the capital market assumptions with the target asset allocation policy, we calculated both the 10- and 20-year expected returns for each of the three sources. These expected returns have been reduced for administrative and investment expenses, as discussed later, and are the median expected return on a geometric basis for LACERA's assets. Note that we have also indicated the associated inflation assumptions for the capital market assumptions. A higher inflation assumption will generally lead to a higher expected return.

2022 Beginning of Year	Meketa	Milliman	Horizon
Based on 10-Year Assumptions			
Median Annualized Return	**5.6%**	**5.8%**	**6.4%**
Assumed Inflation	2.2%	2.4%	2.5%
Based on 20-Year Assumptions			
Median Annualized Return	**6.6%**	**6.6%**	**7.0%**
Assumed Inflation	2.2%	2.3%	2.4%

Notes:

1. Returns are net of assumed expenses of 0.20% of assets.
2. The Horizon Survey reports a limited number of asset classes. In cases where there was not a corresponding asset class in the survey, Milliman's assumptions for the corresponding time horizon were used.
3. Horizon 10-year assumptions include some consultants with less than 10 years. Horizon 20-year assumptions include some consultants with more than 20 years and are based on a subgroup of less than half of the full group.

When actuaries recommend the investment return assumption, they generally consider a long-term time horizon. As LACERA is a mature plan (over half the value of accrued liabilities are expected to be paid in the next 15 years), we have considered both the 10-year and 20-year time horizons in making our recommendation. This reflects the time horizon over which the majority of LACERA's acturial accrued liability is to be paid.

July 2022 Expected Long-Term Investment Return

The capital market assumptions used in the previous calculation of the expected return were as of January 2022 (or the end of 2021). Subsequent to those capital market assumptions being determined, there has been a significant increase in yields on fixed income and a decrease in the price-to-earnings ratio. Both Milliman and Meketa issued mid-year updates to their capital market assumptions that reflected this changing environment.

Mid-Year Update 2022	Meketa	Milliman	Horizon
Based on 10-Year Assumptions			
Median Annualized Return	**7.3%**	**6.9%**	Not
Assumed Inflation	2.1%	2.5%	Available
Based on 20-Year Assumptions			
Median Annualized Return	**7.8%**	**7.3%**	Not
Assumed Inflation	2.1%	2.4%	Available

Notes:

1. Returns are net of assumed expenses of 0.20% of assets.
2. The Horizon Survey is annual, so no mid-year update is available.

The mid-year update reflects a significant increase in the expected return as compared to the beginning-of-year forecasts.

Relationship Between Inflation and Investment Return Assumptions

The real return is the investment return that can be achieved above national price inflation. For example, Milliman's 10-year expected return reflecting the mid-year update of capital market assumptions is 6.9% with a underlying price inflation assumed to be 2.5%. Therefore, using a building block approach, the real return is 4.4% (6.9% less 2.5%). In theory, if actual inflation is consistent with the proposed assumption of 2.75%, the expected return would by 0.25% higher at 7.15% (4.4% real return plus 2.75% inflation). However, if inflation is higher than the underlying assumption there is generally an offsetting impact in the short-term as higher inflation generally results in lower fixed income values. Therefore, we have considered the difference in the inflation assumptions in our analysis, but our primary consideration is on the nominal investment return when making our recommendations.

Administrative and Investment-Related Expenses

The investment return used for the valuation is assumed to be net of all administrative and investment-related expenses. Most asset classes in the Milliman capital market assumptions are effectively net of investment expenses. It is our understanding this is true for Meketa and the investment consultants included in the Horizon survey. Asset classes that are readily marketable, such as global equity and fixed income, do not reflect expenses in the expected return assumption. For those classes, we assume investment fees based on the cost of indexing, as it is unlikely LACERA would pay active managers unless it was expected the net return could at least match the index return. Additionally, we adjust for other investment-related expenses, such as custodian bank fees and outside consultants. Our assumption is that investment expenses will be 0.05% of assets.

The following table shows the ratio of administrative expenses to the LACERA Plan assets over the last 10 fiscal years ending June 30. The expense ratio is calculated as the expense amount divided by the beginning asset balance at fair market value.

($million) Year Beginning	Beginning Market Assets	Admin. Expense Amount	Admin. Expense Ratio
2012	$38,307	$54	0.14%
2013	41,774	59	0.14
2014	47,722	63	0.13
2015	48,818	67	0.14
2016	47,847	67	0.14
2017	52,743	78	0.15
2018	56,300	83	0.15
2019	58,295	85	0.15
2020	58,510	91	0.16
2021	73,012	100	0.14

For the administrative expenses, we have assumed a small increase in the assumption to 0.15% of market assets (from 0.13%), as the actual ratio has averaged 0.15% over the last five years. Accounting for this, combined with the 0.05% we have assumed for investment-related expenses, we have included a reduction of 0.20% in our calculation of the expected return. For example, Meketa calculated a 7.5% 10-year expected return based on the mid-year update; we have used 7.3% in our analysis, reflecting this 0.20% reduction.

The expense assumption does not have a direct impact on the actuarial valuation results, but it does provide a measure of gross return on investments that will be needed to meet the actuarial assumption used for the valuation. For example, our recommended investment return assumption is 7.0%, so LACERA would need to earn a gross return on its assets of 7.2% in order to net the 7.0% for funding purposes.

We recommend the 0.15% adjustment for administrative expenses be added to the investment return assumption adopted to determine the discount rate used in LACERA's GASB 67 and 68 valuations, as GASB requires the discount rate to be the long-term expected rate of return gross of administrative expenses, but net of investment expenses.

Excess Earnings

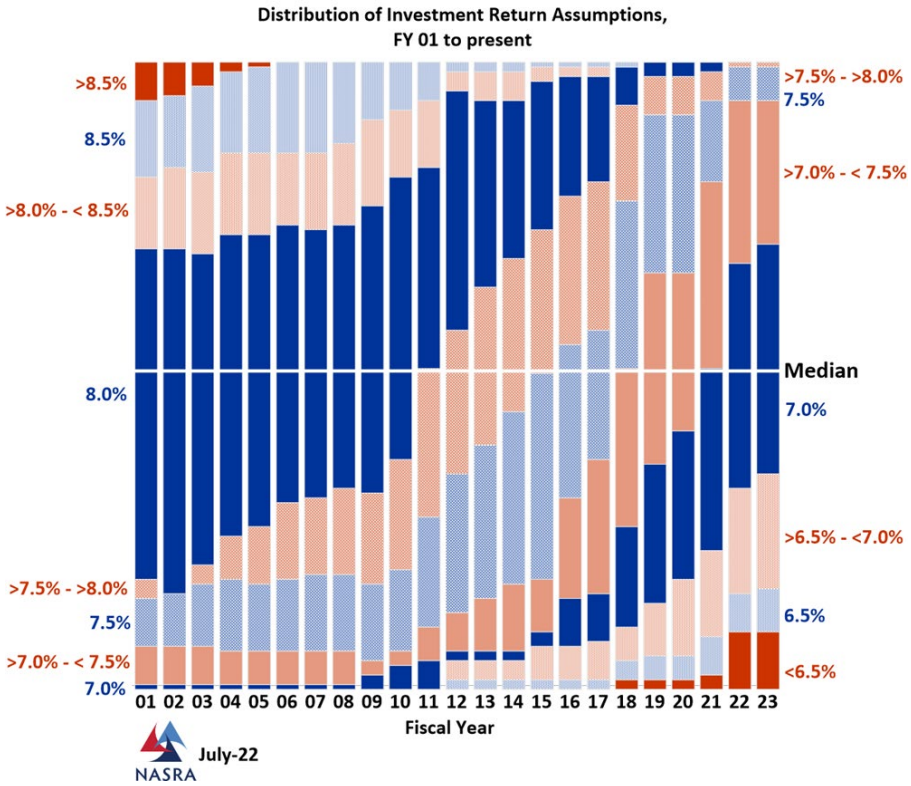
Section 31592.2 of the 1937 Act provides the Retirement Board with the authority to set aside earnings of the retirement fund during any year in excess of the total interest credited to contributions when such surplus exceeds 1.00% of the total assets of the retirement system.

Under LACERA's Retirement Benefit Funding Policy, it is the intention of the Board of Investments to distribute no excess earnings unless the plan is fully funded and then to only provide limited benefits on the basis of excess earnings after the plan is fully funded. Since it is expected to be quite some time before LACERA once again reaches full funding status, the likelihood of any excess earnings being distributed for discretionary benefits is quite low in the foreseeable future. Further Section 7522.44 may further restrict the Board's ability to distribute excess earnings. Therefore, for purposes of the 2022 experience study, we do not propose to recognize any additional excess earnings benefits for future years when setting the investment return assumption. This issue should be addressed again in 2025 as part of the 2025 experience study.

If the Board of Investments determines that the fund should share excess earnings with members when times are good, but the fund is not able to collect additional revenue when investment returns lag expectations, there is a cost to LACERA over time. Thus, if the Board changes its policy toward excess earnings, it must find some way to recognize an obligation for benefits attributable to excess earnings. An excess earnings policy would result in increased payments made by LACERA to members over the long term. If these potential future benefits are not recognized in setting the investment return assumption or in determining LACERA's future benefit payments, the total liabilities will be understated.

Peer System Comparison

According to the *Public Fund Survey*, the average investment return assumption for statewide systems has been steadily declining. As of the most recent study, the median rate is 7.0%. The following chart shows a progression of the distribution of the investment return assumptions. In 2001, very few systems had an assumption of 7.0% or lower and over 80% had an assumption of 8.0% or greater. As of fiscal year 2022, over 70% have an assumption of 7.0% or lower.



Conclusion

Based on the January 2022 capital market assumptions, there was less than a 50% probability that the current investment return of 7.0% would be met over the next 10 to 20 years; however, recent changes in the economic environment have increased the expected return as of July 2022 to at or above the 7.0% return. Considering both the January and July 2022 expected returns, we are recommending retaining the investment return assumption of 7.0%.

Investment Return (net of all expenses)	
Current assumption	7.0%
Recommended Assumption	7.0%

Post-Retirement Cost-of-Living Adjustments (COLA)

The current assumption is that retiree COLAs will be equal to price inflation subject to plan maximum increases and COLA accumulation bank levels. Due to current COLA accumulation bank levels, the assumed COLA for Plan A retirees retired before April 1, 2022 is 3.0%. For other Plan A retirees the assumed COLA is equal to local price inflation. For all other plans the assumed COLA is 2.0% (with pro-rata adjustment based on pre-2002 service for General Plan E). We recommend this assumption be continued.

5. Salary Increases Due to Promotion and Longevity (Merit Increases)

As discussed in Section 4, estimates of future salaries are based on assumptions for two types of increases:

1. Increases in each individual's salary due to promotion or longevity, which occur even in the absence of inflation; and
2. Increases in the general wage level of the membership, which are closely related to inflation and increases in productivity.

In section 4, we reviewed the general wage growth assumption. In this section, we will study increases due to promotion or longevity. We generally refer to these increases as merit increases.

Results

Merit increases are assumed to be related to two factors. We studied each of these factors to see if they were significant, and, if so, what the impact was. Our findings were as follows:

- **Service:** Members in the early stages of their careers tend to get larger merit increases. In other studies, we have found years of service to have the most significant impact on merit increases. We found this to be true with LACERA.
- **Membership:** The current rates assume that Safety members receive larger salary increases than General members, particularly later in their career. Similar to prior experience studies, we observed that Safety members received significantly larger merit increases at certain service levels (19, 24 and 29 years of service), consistent with the 2018 contract for deputy sheriffs which includes longevity pay increases at those service levels. Other than those service levels, we observed higher than assumed increases in most service levels. We observed a similar trend for General members with the observed increases exceeding the assumption, primarily at 9 or more years of service.

Methodology

In studying merit increases, we first calculated the increase in member salaries that was due to general wage growth. We then remove this from the total salary increase actually observed for each individual in successive years. The remaining portion of salary increase is the merit increase.

There can be significant year-to-year variations in the calculated general wage growth, and this can lead to disparities in the observed merit salary increases. To reduce these variations, we use a 15-year period in our studies of merit salary increases. We also reviewed the results for the prior two study periods (2016 to 2022) to identify any trends. In general, the merit increases over the last six years have been higher than the 15-year average; however, given the variations that can occur over shorter timeframes, we relied on the 15-year analysis in making our recommendations.

Recommendation

For General members, merit salary increases were higher than assumed for members at all service intervals. We recommend increases in the merit salary increase assumption for General members at service levels of 9 years and higher to better reflect this experience. At shorter service levels we believe the current assumption remains reasonable.

For Safety members, the main observation was that merit salary increases were higher than assumed for members with longer service. At some shorter service levels we observed smaller merit salary increases than assumed. We recommend decreases in the merit salary increase assumption at service years 2 to 5 and increases at most service levels starting at 7 years of service. The recommended rates are shown numerically in Appendix A.

Exhibit 5-1
Salary Increases by Service – General Members

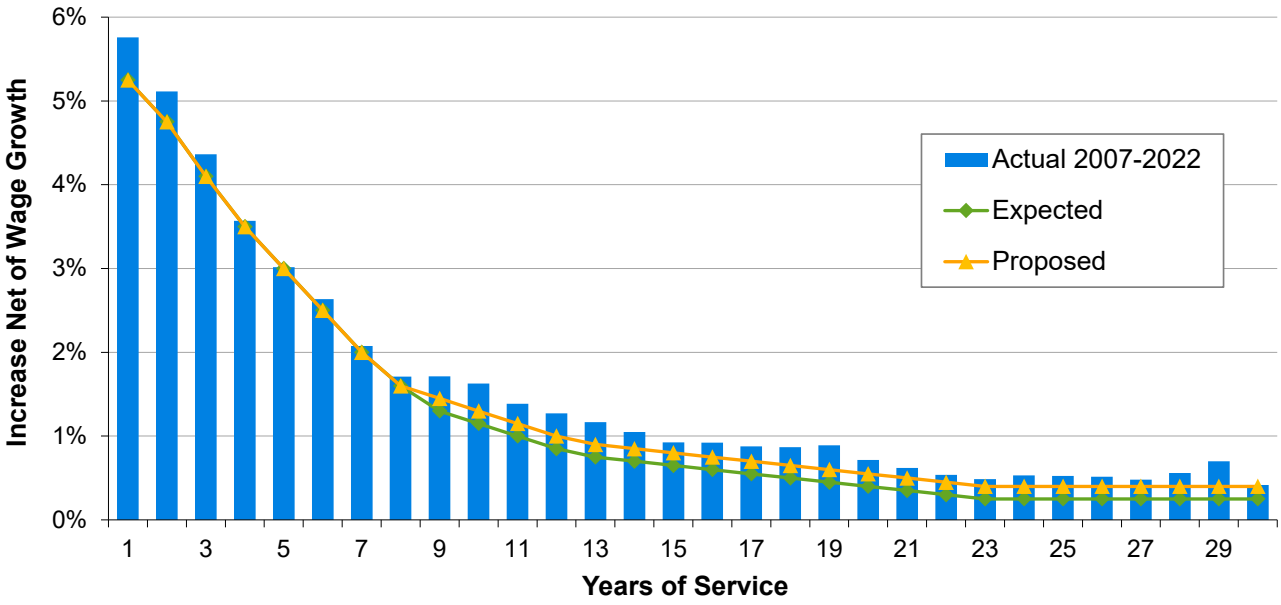
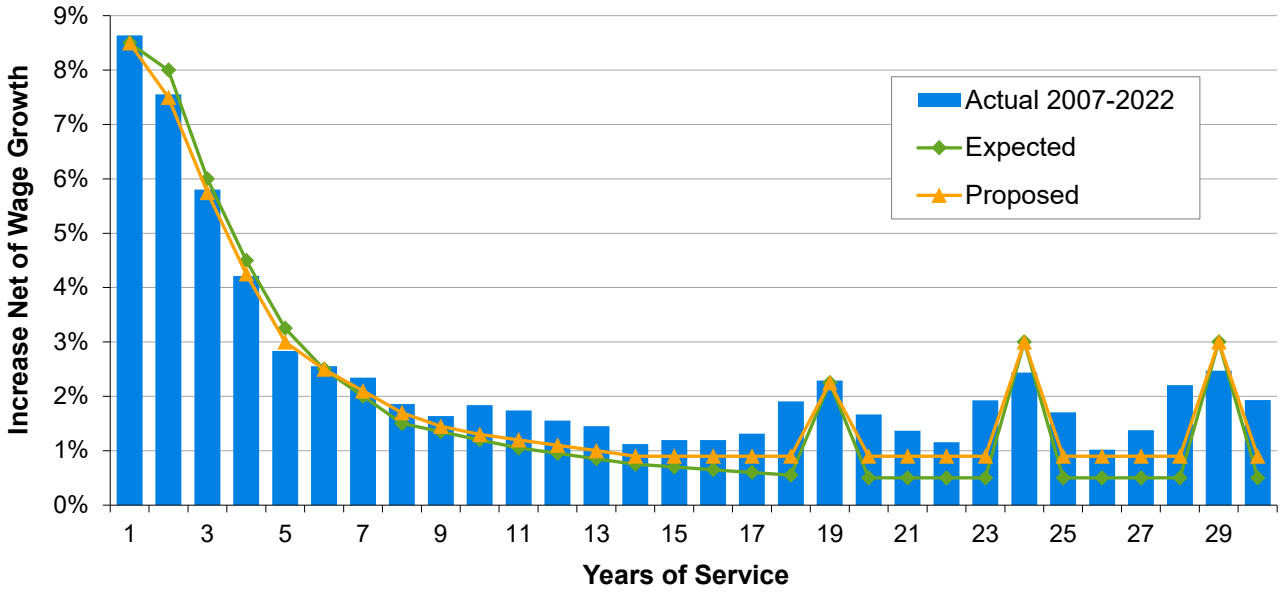


Exhibit 5-2
Salary Increases by Service – Safety Members



6. Death from Active Status

We studied rates of mortality among active members. At any given age, the current assumption is a lower probability of death for an active member than for a retired member. We feel this is reasonable as a person who is actively working tends to be healthier on average, and therefore less likely to die than the general population.

Results: Service-Connected Deaths

The current assumptions for service-connected deaths are zero for General members and 0.01% per year for Safety members. Since the actual experience is extremely limited, we recommend retaining the current service-connected death assumption for active members. The data is not a statistically significant enough size to merit studying separately.

Results: Nonservice-Connected Deaths (Ordinary Deaths)

The table below shows a comparison of the actual-to-expected deaths of active members by plan and gender for this study period, weighted by compensation. The study period of July 1, 2019 to June 30, 2022 significantly overlaps with the COVID-19 pandemic and this likely at least partially explains the higher number of deaths compared to expected, and the elevated levels of active mortality over this period may not reasonably be expected to continue.

We are recommending no changes to the mortality base tables underlying the ordinary death assumption. However, we recommend reflecting a more recent mortality improvement projection scale. A mortality improvement scale projects the expected changes in mortality over time to reflect that a member aged 35, for example, is expected to experience different rates of mortality, and have a different life expectancy, than a member aged 35 in a future year. The recommended assumptions are discussed on the following page.

Active mortality (weighted by compensation)

Plan	Gender	Actual	Expected	Actual / Expected	Proposed	Actual / Proposed
General A-D & G[(1)]	Male	18,591,084	15,063,572	123%	15,126,926	123%
General A-D & G[(1)]	Female	19,611,792	16,730,379	117%	16,573,807	118%
Safety	Male	4,980,936	3,619,542	138%	3,531,029	141%
Safety	Female	507,456	384,892	132%	371,072	137%
	Total	**43,691,268**	**35,798,385**	**122%**	**35,602,834**	**123%**

1. Note that Plan E has been excluded from this study, as we believe that these deaths may be under-reported because Plan E does not provide a death benefit for active members.

The results of the study are shown graphically in Exhibits 6-1 to 6-4. The proposed rates are also shown numerically in Appendix A. The rates are currently based on three factors. We studied each of these factors to see if they were significant, and, if so, what the impact was. Our findings were as follows:

- **Age:** Members at older ages tend to have a greater probability of dying than younger members. This is almost universally true in mortality studies.
- **Gender:** Male members tend to have a greater probability of dying than females. This trend is generally true for all mortality studies, and we found this to be true with LACERA.
- **Membership:** Safety members have comparatively lower rates of mortality while in active status than General members. These lower rates of death while still in active employment are most likely a result of the much earlier retirement ages available to Safety members and their higher rates of disability while

active. That is, Safety members who are less healthy than the rest of the population will tend to leave active employment sooner, and only the healthiest group remains in active Safety employment at ages 50 and above when there is a higher probability of active death.

Projection Scale for Mortality Improvement

The Society of Actuaries (SOA) publishes mortality improvement scales on a regular basis, typically annually. These improvement scales are a complex matrix of rates that vary based on a member's age and birth year. The scales include projections for past and future years until reaching an "ultimate" rate of improvement for individual ages at a future year.

In 2016 LACERA adopted the ultimate rates of the MP-2014 mortality improvement scale for the 2016 and future valuations. In subsequent iterations of the mortality improvement scales the ultimate rate of improvement remained unchanged, until the release of MP-2020 in the fall of 2020. An updated projection scale (MP-2021) was issued last year with similar ultimate rates. MP-2021, like MP-2020, relies heavily on Social Security experience for years 1958 through 2018. Compared to the ultimate rates of MP-2014, the ultimate rates of MP-2021 assume larger mortality improvements at ages less than 83 (i.e fewer deaths at each year of age) and smaller mortality improvements at ages 83 and higher (i.e. more deaths at each year of age).

Recommendation

Based on results of the study, we are recommending no change to the mortality base tables. To reflect future increases in life expectancies and the most recently available published data, we are also recommending updating the mortality improvement projection scale from MP-2014 ultimate to MP-2021 ultimate. A summary of the active mortality assumption (current and proposed) is shown below:

Class	Gender	Current Table[1]	Proposed Table[1]
General	Male	PubG-2010 (120%) Male with MP-2014 Ultimate projection scale	PubG-2010 (120%) Male with MP-2021 Ultimate projection scale
General	Female	PubG-2010 (130%) Female with MP-2014 Ultimate projection scale	PubG-2010 (130%) Female with MP-2021 Ultimate projection scale
Safety	Male	PubS-2010 (100%) Male with MP-2014 Ultimate projection scale	PubS-2010 (100%) Male with MP-2021 Ultimate projection scale
Safety	Female	PubS-2010 (100%) Female with MP-2014 Ultimate projection scale	PubS-2010 (100%) Female with MP-2021 Ultimate projection scale

1. All tables are the Pub-2010 Employee mortality tables for General and Safety members.

See Section 11 (Retiree Mortality) for additional discussion about mortality improvement.

Exhibit 6-1
Nonservice-Connected Death – General A-D & G Male Members

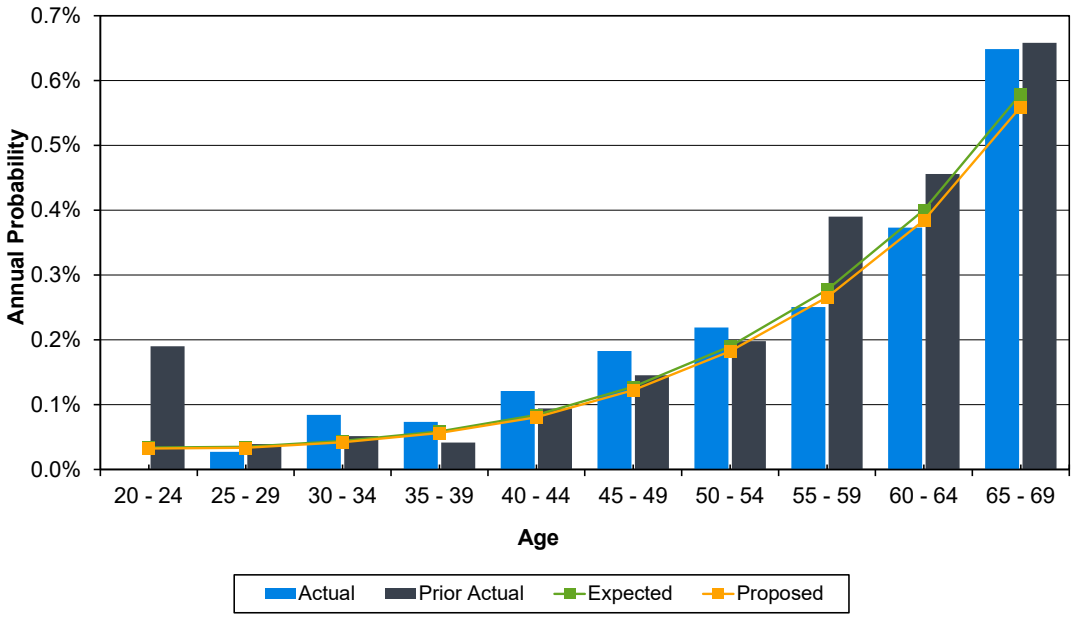


Exhibit 6-2
Nonservice-Connected Death – General A-D & G Female Members

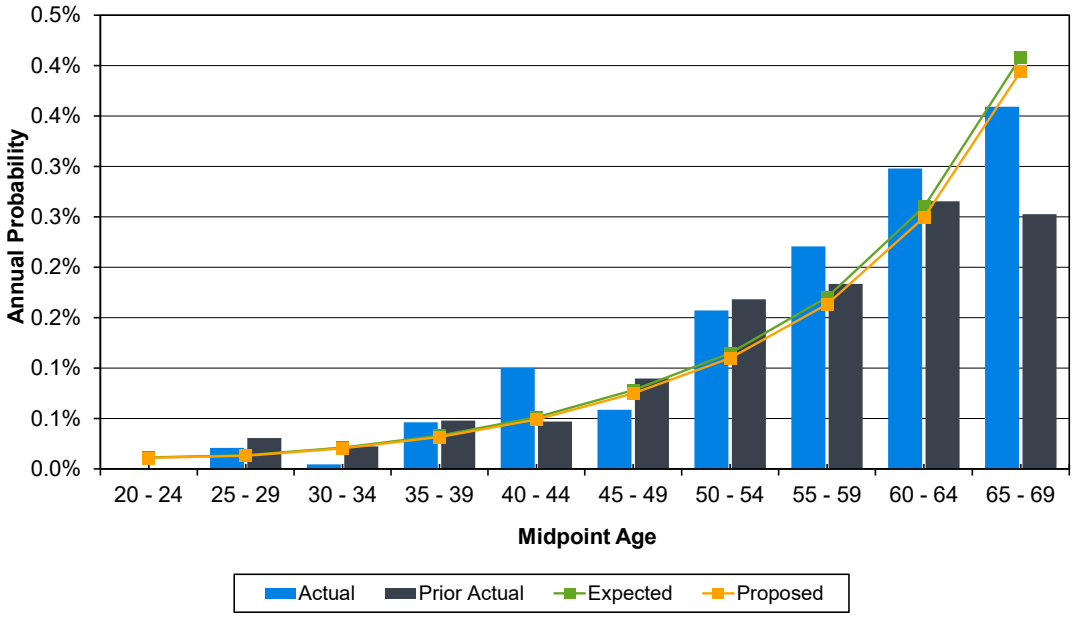


Exhibit 6-3
Nonservice-Connected Death – Safety Male Members

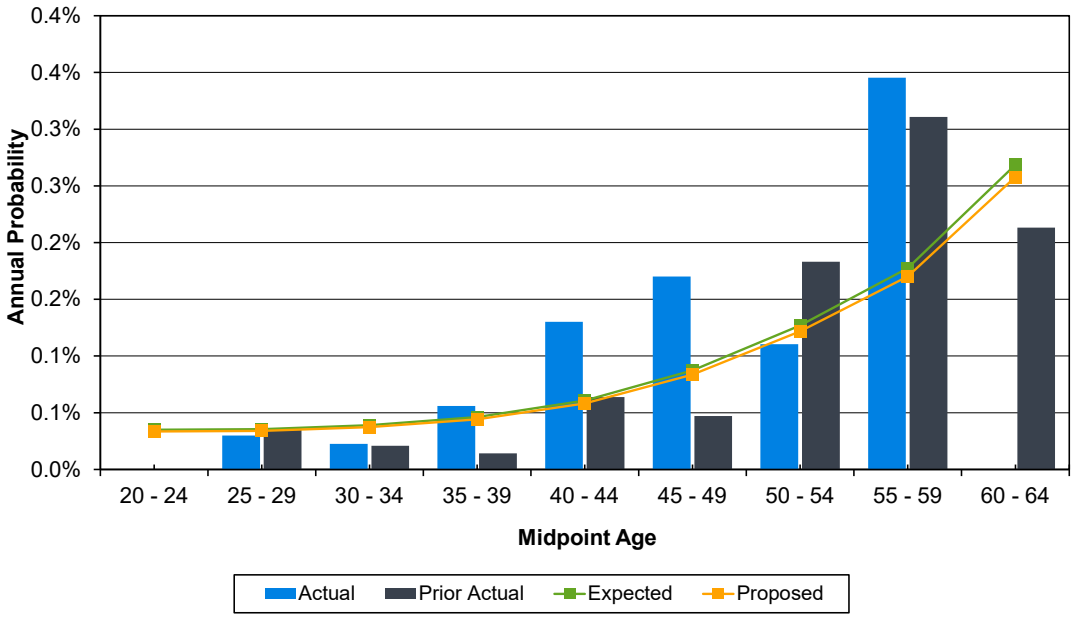
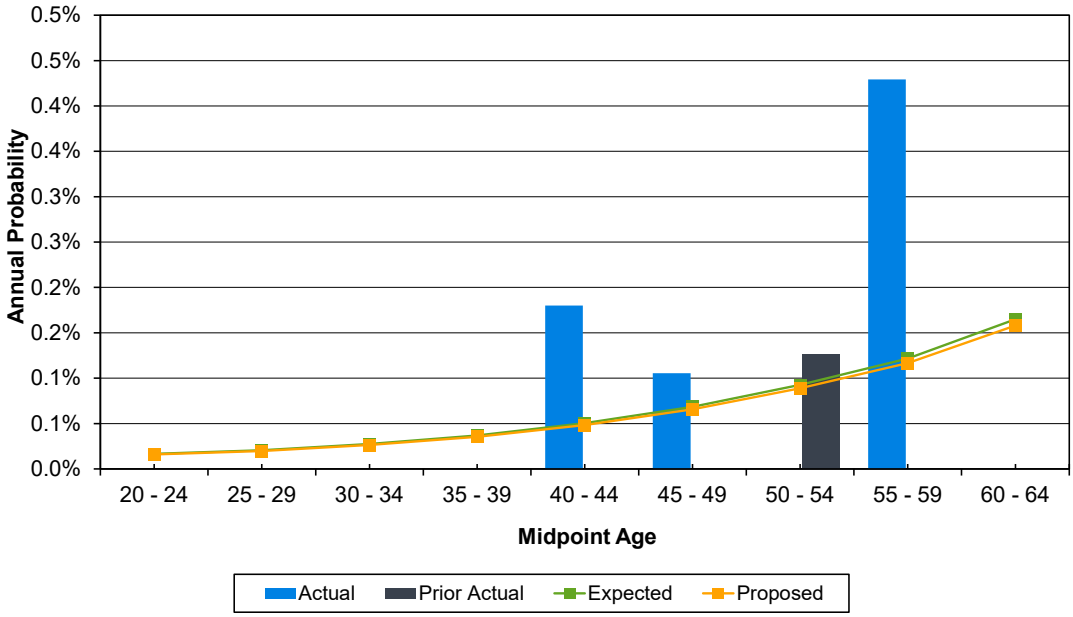


Exhibit 6-4
Nonservice-Connected Death – Safety Female Members



7. Service Retirements

Exhibits 7-1 through 7-3 show the actual and expected rates of service retirements during the study period. These rates are weighted by compensation level. Overall, the actual rates of service retirements exceeded the expected rates, although there were some differences by plan.

General Plan G and Safety Plan C have very few actual retirements since most members in those plans entered LACERA within the last 10 years. General Plans A through C and Safety Plan A have less than 100 combined active members as of June 30, 2022. There were not enough service retirements in any of these plans to perform a meaningful statistical analysis of their experience. As such, our analysis relies primarily on the experience of General Plans D and E, and Safety Plan B.

In prior studies retirement rates have been based primarily on two factors – age and class of membership. We have also observed differences in decrements based upon compensation levels, and therefore we apply a weighting based on compensation level. In addition, we have observed that rates of retirement differ based on number of years of service as well as age;therefore, in this study we reviewed the rates of retirement based on age, service and class of membership. We found that in general, members with more years of service have a higher probability of retiring at a given age than those with less years of service.

For the three-year period, there was a significant increase in employees leaving their jobs, particularly in 2021, in both the public and private sector. This was true of both employees who were eligible for retirement and those who were not. Therefore, we believe that the high level of service retirements may be temporary. Accordingly, our recommendations focus more on fitting retirement patterns better, and the adjustments in the expected number of retirements was only made if it was also consistent with experience from the prior experience study.

Results

For General Plans D and E, and Safety Plan B, the actual number of retirements from active service, weighted by compensation, exceeded the expected number. However, as can be seen in Exhibits 7-1 through 7-3, the pattern of retirements by age varied somewhat compared to expected.

Service Retirements (weighted by compensation)			
Class	**Actual**	**Expected**	**Actual / Expected**
General A-C	6,802,500	8,727,670	78%
General D	467,628,204	354,545,879	132%
General E	224,347,476	204,557,147	110%
Safety B	183,907,920	139,826,097	132%
Total	882,686,100	707,656,793	125%

Note that the numbers shown above are for ages 50 to 74 for General members and ages less than 65 for Safety members. The values in the table are weighted by compensation, so the first line of the table indicates that individuals with total annual compensation of $6,802,500 retired from active status compared to the expected value of $8,727,670 based on the valuation assumption.

As noted above, we also studied the incidence of retirement by years of service for General Plans D and E, and Safety Plan B members, as these plans have sufficiently large populations. To do this, we first determined an age-based assumption for each class of member, and then compared how that proposed age-based assumption compared to actual experience for members with different lengths of service. The tables below show the actual

probability of retirement by years of service compared to what would have been predicted to occur with the proposed age-based assumption.

	General Members (Plan D)			General Members (Plan E)		
Service	Actual Probability of Retirement	Proposed Probability of Retirement	Actual / Proposed	Actual Probability of Retirement	Proposed Probability of Retirement	Actual / Proposed
< 5	n/a	n/a	n/a	n/a	n/a	n/a
5 - 9	45%	23%	199%	n/a	n/a	n/a
10 - 14	4%	7%	66%	7%	9%	70%
15 - 19	5%	7%	76%	6%	10%	64%
20 - 24	6%	6%	88%	7%	10%	64%
25 - 29	8%	6%	136%	9%	8%	108%
30+	14%	7%	197%	14%	10%	142%

Note that the experience for General Plan D members with 5 to 9 years of service includes only a small number of members who are eligible to retire on account of attaining age 70 and is not statistically significant.)

	Safety Members (Plan B)		
Service	Actual Probability of Retirement	Proposed Probability of Retirement	Actual / Proposed
< 5	n/a	n/a	n/a
5 - 9	n/a	n/a	n/a
10 - 14	2%	7%	30%
15 - 19	3%	8%	39%
20 - 24	2%	3%	57%
25 - 29	7%	6%	125%
30+	20%	11%	188%

These results show that at lower years of service actual retirements are less than under the proposed age-only assumptions, and at higher years of service actual retirements are higher than under the proposed age-only assumptions, for both plans.

Recommendation

We are recommending the following changes in the rates of service retirement:

1. Revisions to the age-based service retirement rates; and
2. The addition of a service-based adjustment component.

The service-based adjustment component will be a percentage that will be applied to the age-based service retirement rate to determine the applicable assumed rate of service retirement for an individual of a given age and length of service. We recommend that the proposed retirement probabilities be adjusted based on years of completed service by the percentages shown in the table below.

Proposed Adjustments to Age-Based Retirement Rates			
Service	General Members (all Plans except Plan E)	General Members (Plan E)	Safety Members
< 5	80%	70%	30%
5 - 9	80%	70%	30%
10 - 14	80%	70%	30%
15 - 19	80%	70%	40%
20 - 24	90%	70%	70%
25 - 29	110%	100%	110%
30+	160%	130%	170%

As an illustration of how this service-based adjustment works, assume that the age-based age 65 service retirement rate for a General Plan D member is 23%. Then, for a member with between 20 and 24 years of service, the assumed rate of service retirement will be 20.7% (23% x 90%) and for a member with more than 30 years of service, the assumed rate of service retirement will be 36.8% (23% x 160%).

Exhibits 7-4 and 7-5 shows actual, expected and proposed retirement rates separately for members of General Plan D and Safety Plan B with different lengths of service.

These revisions result in higher expected retirements overall for General and Safety members, and the proposed service retirement rates more closely follow the pattern of anticipated retirements. A comparison of the actual and expected retirements under the proposed assumptions is shown in the table below.

Service Retirements (weighted by compensation)			
Class	Actual	Proposed	Actual / Proposed
General A-C	6,802,500	8,054,244	84%
General D	467,628,204	390,966,684	120%
General E	224,347,476	205,700,607	109%
Safety B	183,907,920	170,664,392	108%
Total	882,686,100	775,385,927	114%

Additionally, we recommend continuing the 100% probability of retirement at certain age and service combinations (shown in Appendix A) where the benefit is approximately 100% (or greater) of final average compensation.

Exhibit 7-1
Service Retirement – General D Members

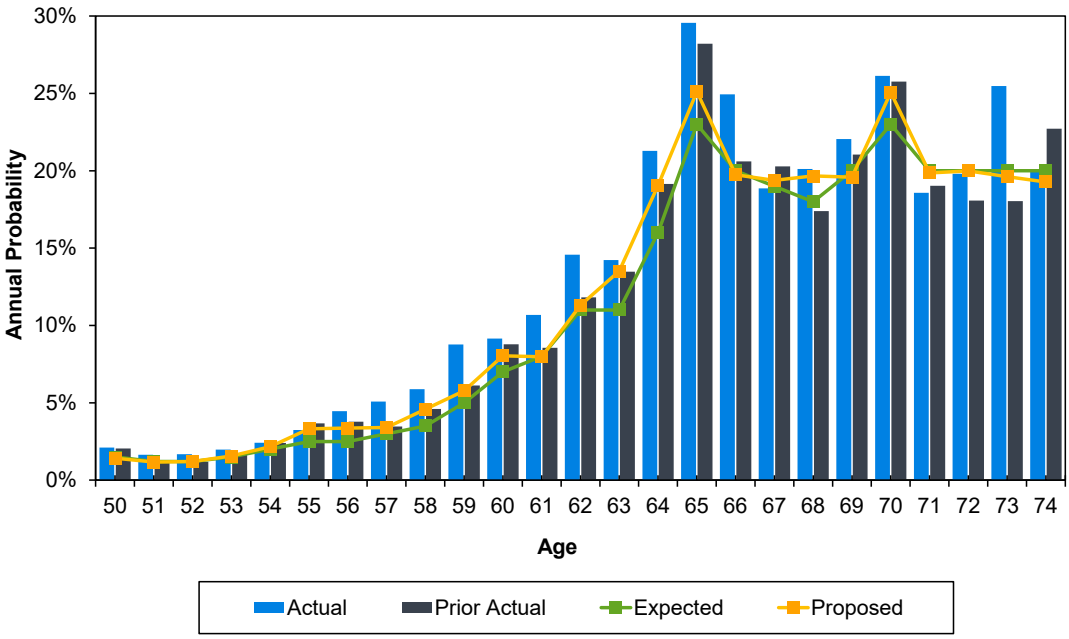


Exhibit 7-2
Service Retirement – General E Members

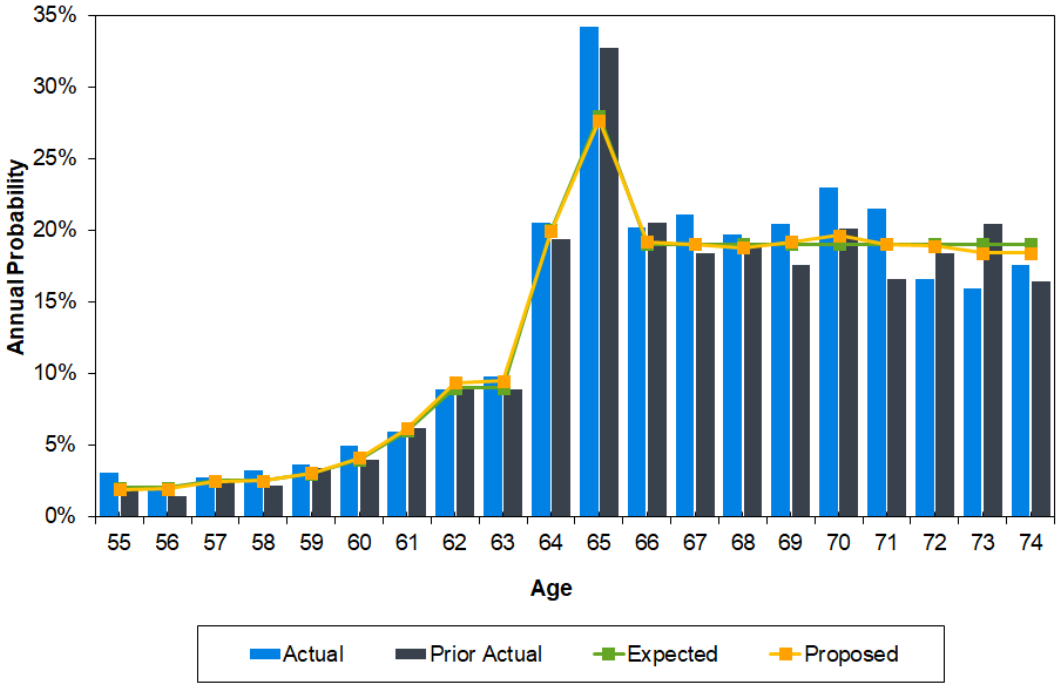


Exhibit 7-3
Service Retirement – Safety Members

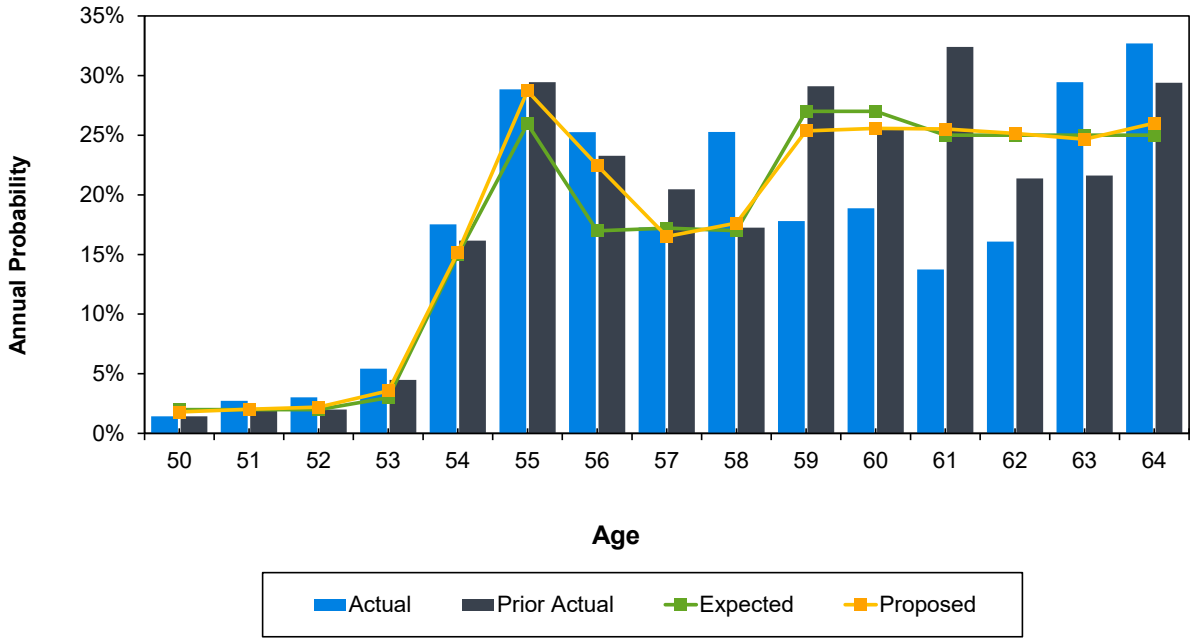


Exhibit 7-4
Service Retirement – General Plan D Members (by Service)

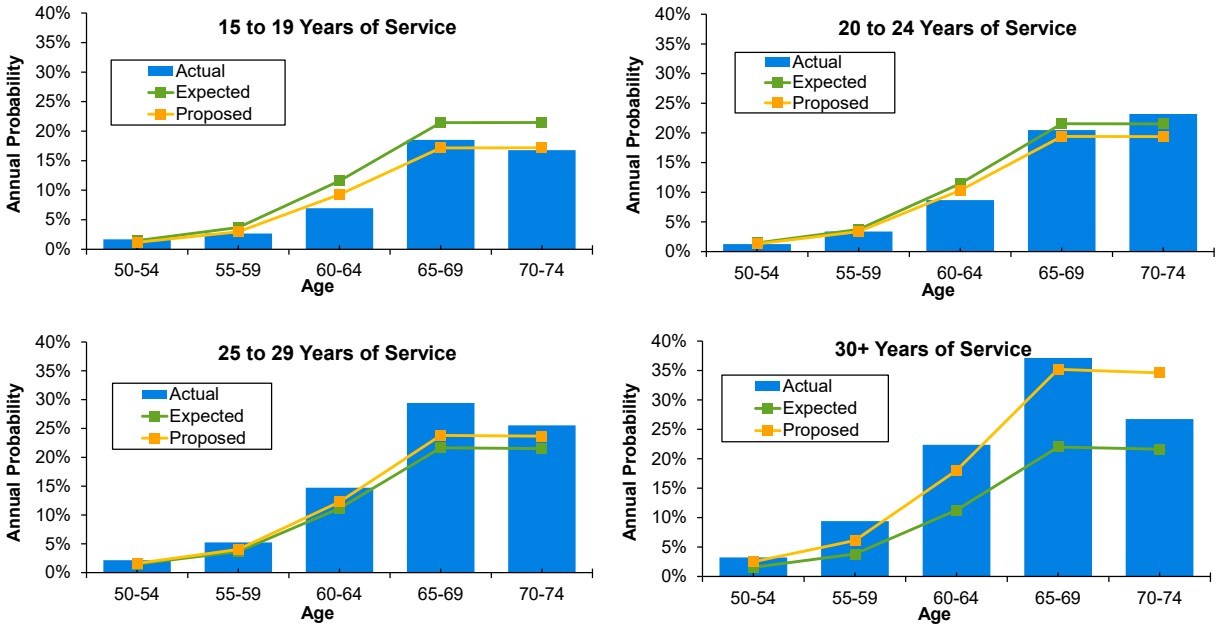
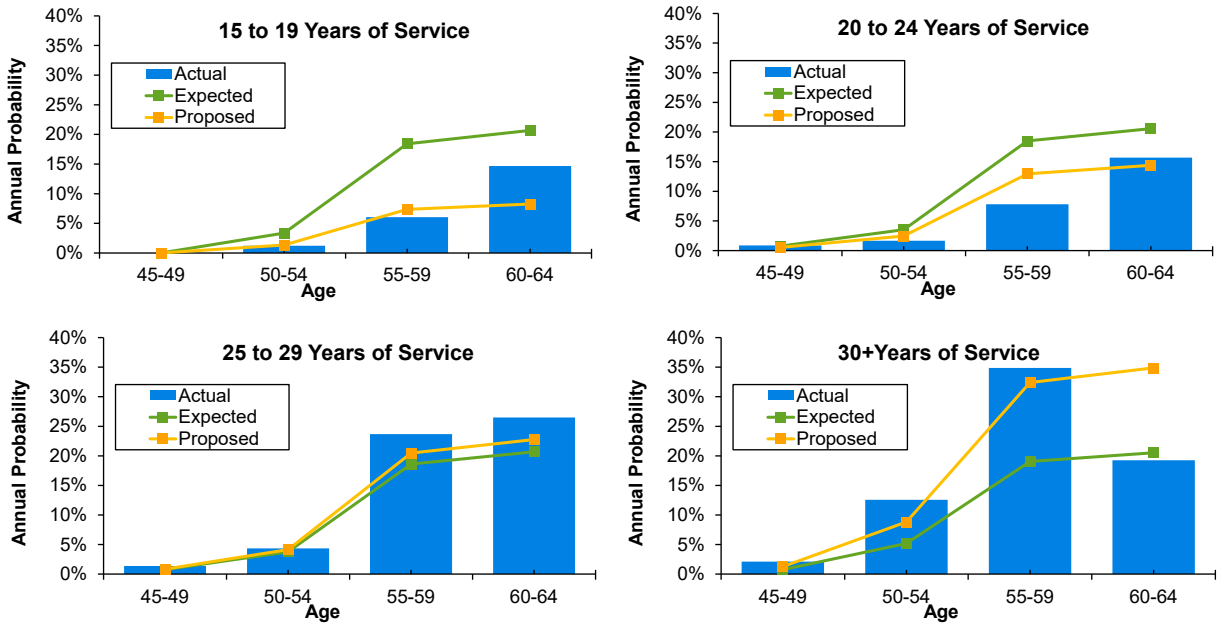


Exhibit 7-5
Service Retirement – Safety Plan B Members (by Service)



8. Disability Retirements

LACERA allows a member to start receiving benefits prior to eligibility for service retirement if the member becomes disabled. There are two types of disability:

- **Service-Connected Disability:** This is available only to members who are disabled for the performance of duty. There is no service requirement for this benefit, and the service-connected disability benefit generally pays a larger benefit than nonservice-connected disability.
- **Nonservice-Connected Disability:** This is available to a disabled member upon satisfying the vesting requirement.

We have found that in many systems, including LACERA, there is generally at least a six-month lag between the actual occurrence of a disability retirement and the subsequent approval and reporting of that same retirement. In many cases the actual decrement from active service shows in the data as a service retirement, and that service retirement is subsequently reclassified. Since our analysis shown here is based on those active members who have a direct decrement to disability retirement (that is, the change from active status to disability occurs within the same fiscal year) it may underreport the actual number of disability retirements. We discuss this below, and have accounted for it in our recommendation.

Results: Service-Connected Disability

Overall, the actual number of service-connected disabilities, weighted by compensation level, were close to that expected by the current assumptions, although there were some variations between different groups. The following is a comparison of the actual to expected service-connected disabilities for active members by gender and member class for this study period, weighted by compensation level.

Service-Connected Disability Retirements (weighted by compensation)

Plan	Gender	Actual	Expected	Actual / Expected
General A-D & G	Male	6,949,908	9,463,188	73%
General A-D & G	Female	11,596,092	12,027,390	96%
Safety	Male	62,339,544	57,549,026	108%
Safety	Female	9,243,672	10,314,828	90%
Total	**Total**	**90,129,216**	**89,354,432**	101%

Overall, there are 230 General member service-connected disabilities and 460 Safety member service-connected disabilities included in the above analysis. In addition, over the study period 154 retired General members and 571 retired Safety members were reclassified from a service retirement to a service-connected disability retirement.

Exhibits 8-1 to 8-4, at the end of this section, show the results of the analysis graphically.

Results: Nonservice-Connected Disability

Actual experience for nonservice-connected disabilities, weighted by compensation level, was lower than the assumptions for General members predicted, which is consistent with the prior study. Overall we do not view this difference as material given the small number of nonservice-connected disability retirements, and the underreporting noted above. The following is a comparison of the actual-to-expected nonservice-connected disabilities for active General members for this study period, weighted by compensation level. For Safety members there were only four nonservice-connected disabilities, so we have not included them in the table.

Nonservice-Connected Disability Retirements (weighted by compensation)				
Plan	Gender	Actual	Expected	Actual / Expected
General A-D & G	Male	836,040	2,567,535	33%
General A-D & G	Female	2,449,176	3,897,822	63%
Total	**Total**	**3,285,216**	**6,465,357**	51%

Overall there are 44 nonservice-connected disabilities included in the above analysis. In addition, over the study period 26 retired members were reclassified from a service retirement to a nonservice-connected disability retirement.

Exhibits 8-5 to 8-6, at the end of this section, show the results of the analysis graphically.

Recommendation: Service-Connected Disability

After accounting for retired members whose retirement type was reclassified to service-connected disability over the study period, there were significantly more service-connected disability retirements than expected by the assumptions, particularly for Safety members. Consistent with our approach to all decrement analysis in this study, we are attempting to not assign too much credibility to experience during the COVID pandemic period, in case any changes are temporary. As a result, we are recommending no change to the service-connected disability retirement assumptions at this time. However, if this experience continues over the next study period we will likely recommend increases in these assumptions.

Note that for many members who retire due to service-connected disability, their benefit calculated under the service retirement provisions will be larger than that calculated under the disability retirement provisions. As a result, their monthly retirement allowance will be the same regardless of whether they retire for disability. Consequently, the impact on plan liabilities is somewhat muted, except for differences between mortality assumptions and the unmodified continuance allowance provisions.

Recommendation: Nonservice-Connected Disability

Actual experience for nonservice-connected disabilities was lower than the assumptions for General members predicted, even after accounting for retired members whose retirement type was reclassified to nonservice-connected disability over the study period. Given the relatively small number of nonservice-connected disability retirements we do not consider these differences material. For this reason, and our approach of not assigning too much credibility to experience during the COVID pandemic period, we are recommending no change to the nonservice-connected disability retirement assumptions at this time.

For Safety members there were only four nonservice-connected disabilities, so we recommend continuing the current practice of assuming all Safety disability retirements are service-connected.

Exhibit 8-1
Service-Connected Disability Retirement – General A-D & G Male Members

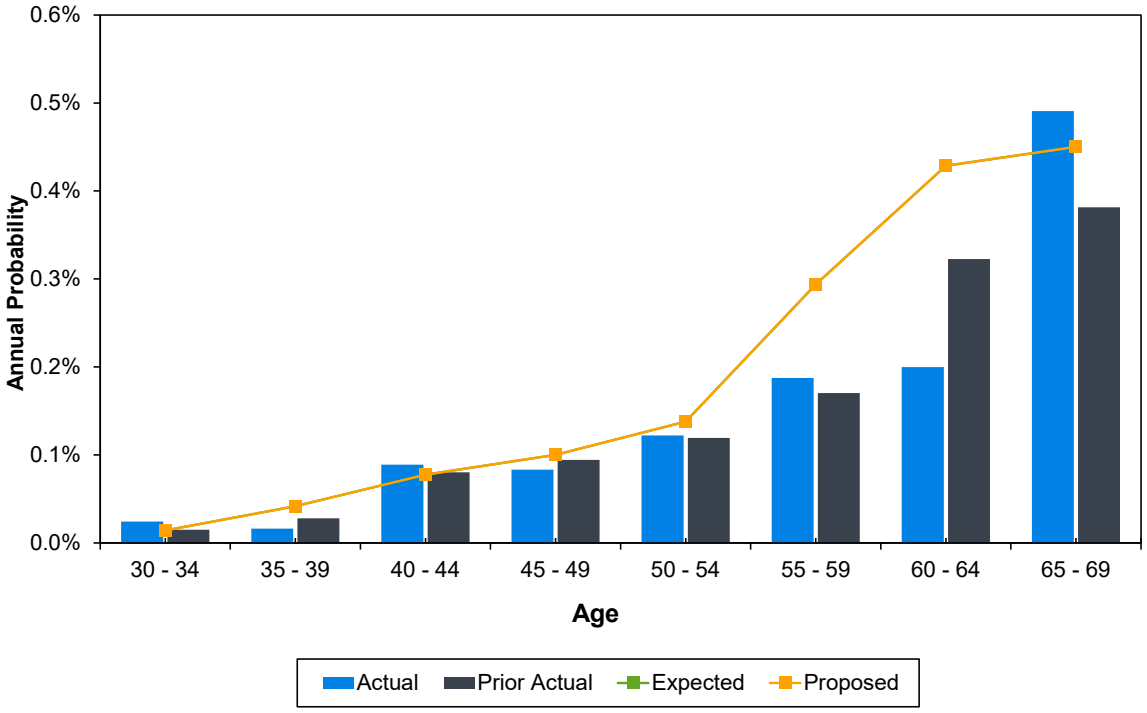


Exhibit 8-2
Service-Connected Disability Retirement – General A-D & G Female Members

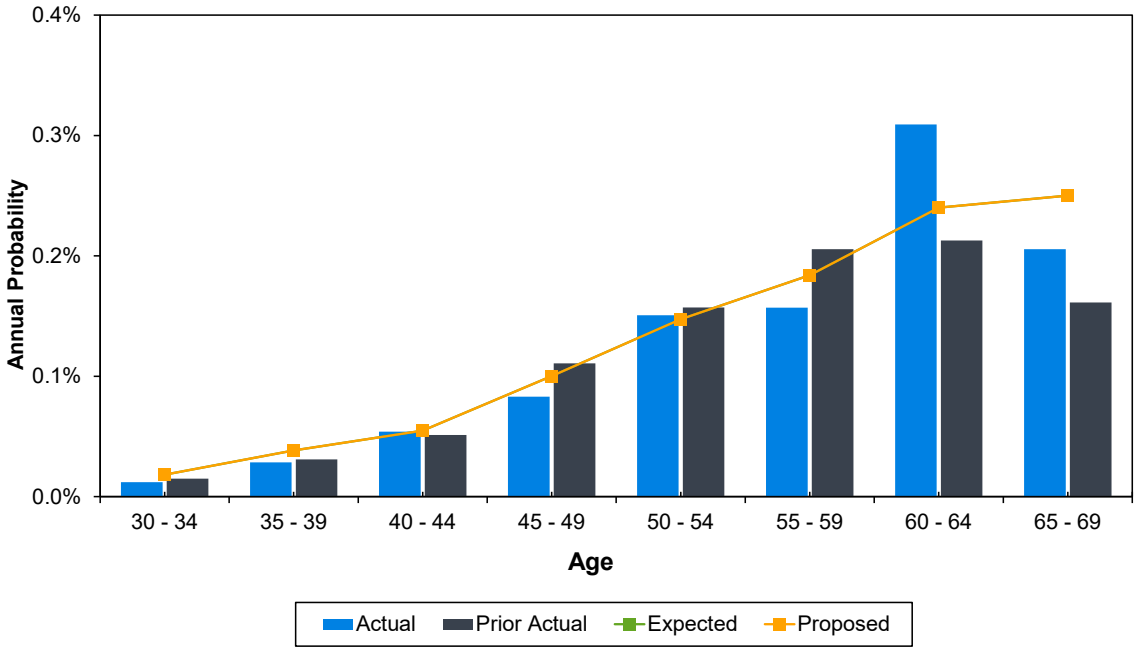


Exhibit 8-3
Service-Connected Disability Retirement – Safety Male Members

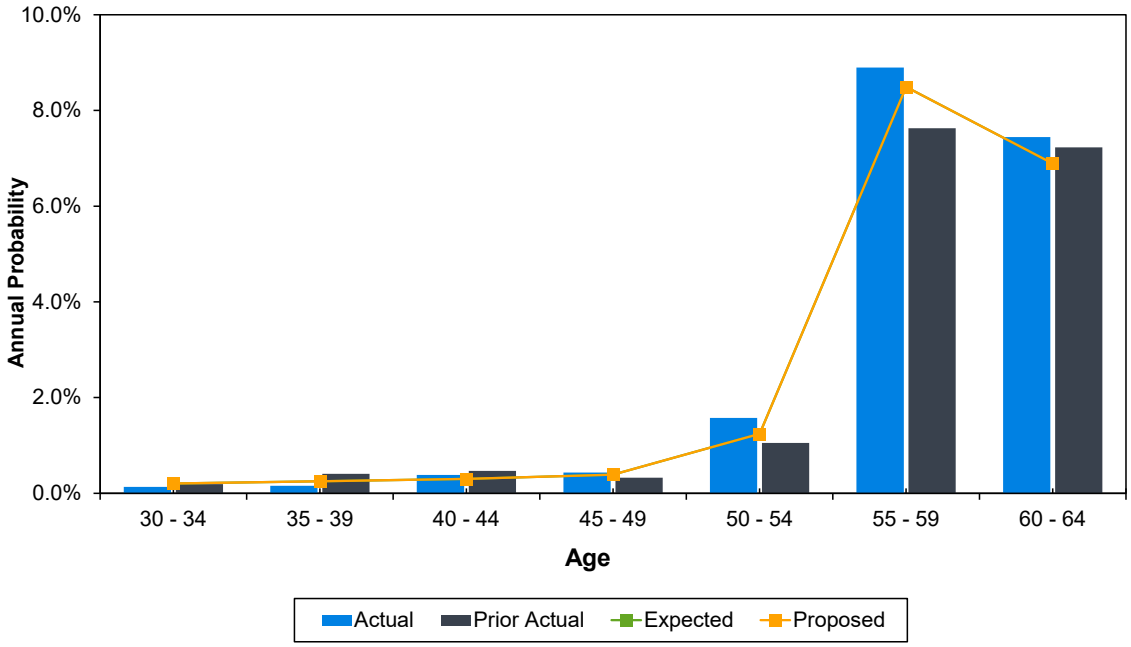


Exhibit 8-4
Service-Connected Disability Retirement – Safety Female Members

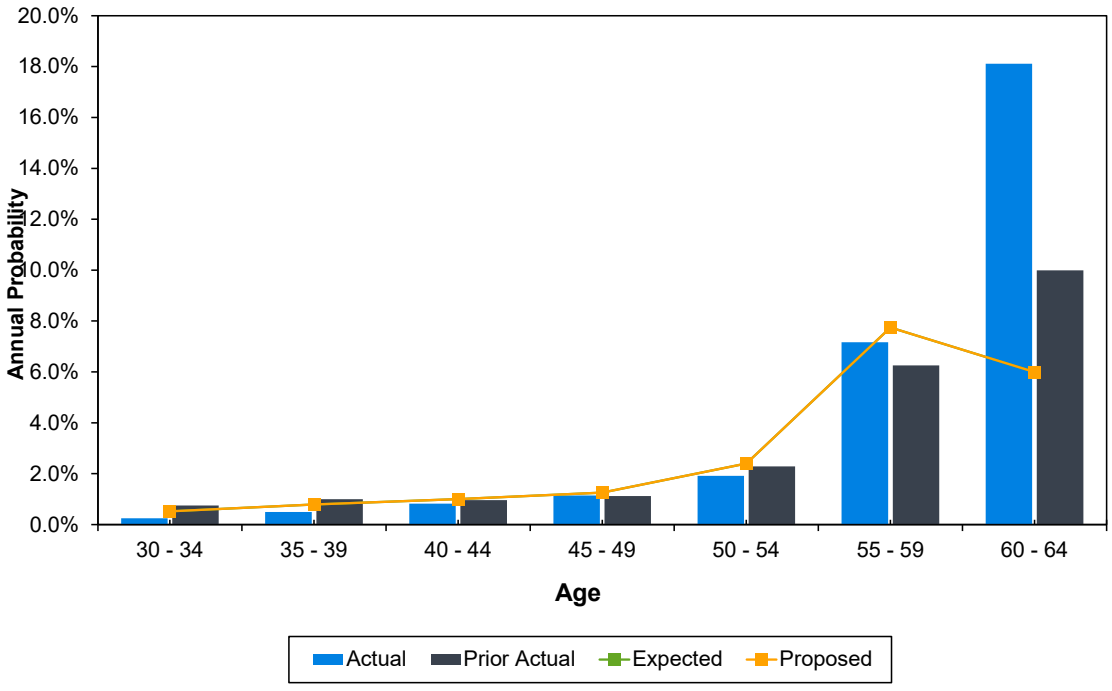


Exhibit 8-5
Nonservice-Connected Disability Retirement – General A-D & G Male Members

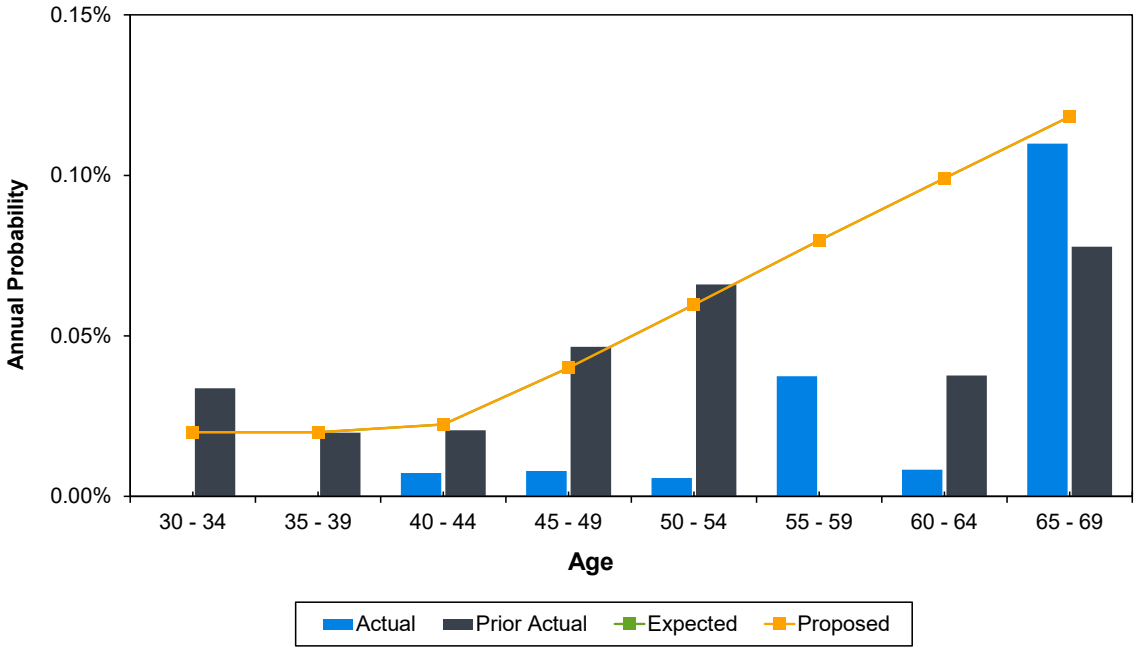
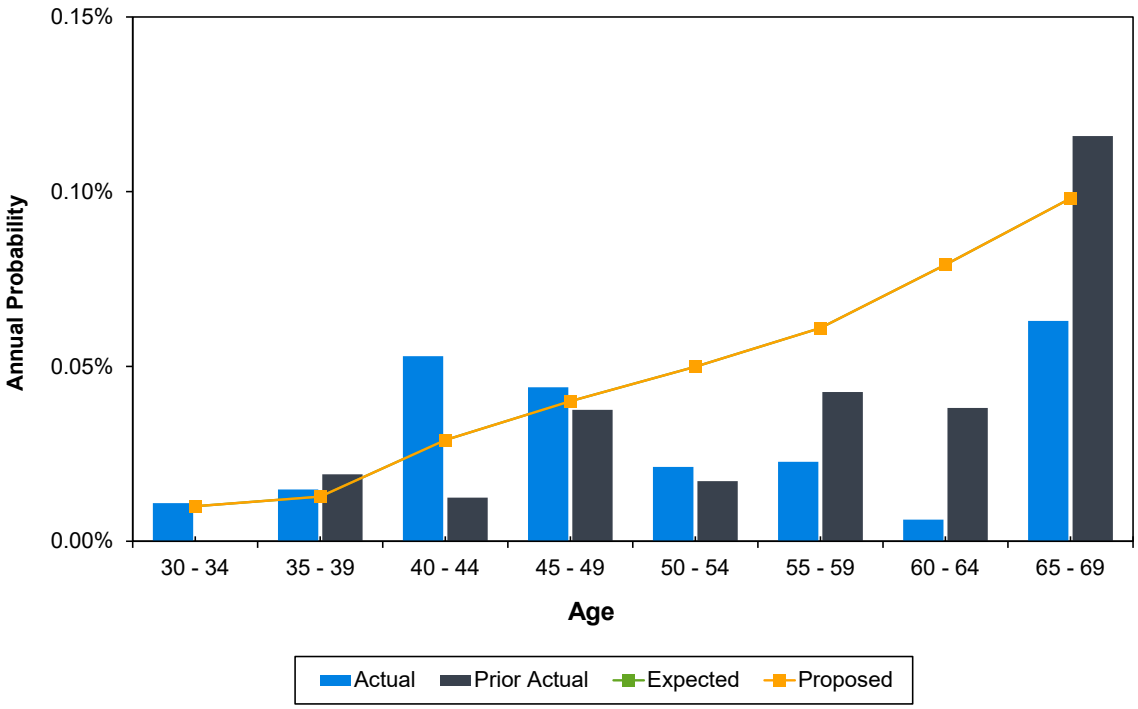


Exhibit 8-6
Nonservice-Connected Disability Retirement – General A-D & G Female Members



9. Terminations (Includes both Refunds and Vested Terminations)

This section of the report summarizes the results of our study of terminations of employment for reasons other than death, service retirement, or disability. As used in the actuarial valuation, termination rates refer to both voluntary and involuntary terminations of employment. A member who terminates, but does not retire, is assumed to either take a refund (a withdrawal) or to terminate employment but leave their member contributions with the System (a vested termination). We will refer to the combination of the two rates as the aggregate termination rate. This approach sets a probability that the member will terminate, and then assumes a certain portion of the members terminating will elect a refund. The probability of refund is discussed in more detail in Section 10.

We have found in our analysis of LACERA experience that termination rates vary by member class and the stage of a member's career. That is, members in the early stages of their career generally have a higher probability of terminating. This is consistent with our findings from other studies. As such, we analyze termination rates separately for General and Safety members, and based on a member's length of service with LACERA.

Results: Aggregate Terminations (Refunds and Vested Terminations)

As shown in the table below, the overall number of terminations, weighted by compensation level, was higher than expected for all plans. Although the actual terminations were greater, this pattern is consistent with the experience from the prior study. The following is a comparison of the actual to expected terminations by plan for this study period, weighted by compensation level.

Termination of Employment (weighted by compensation)			
Plan	**Actual**	**Expected**	**Actual / Expected**
General D & G	402,079,080	264,955,911	152%
General E	27,038,472	23,084,273	117%
Safety	44,791,668	28,015,182	160%
Total	**473,909,220**	**316,055,365**	**150%**

Exhibits 9-1 to 9-3 at the end of this section show the results of the study graphically. Total terminations were greater than the assumptions predicted, with some variance by plan and at different service intervals. This total experience is consistent with the experience of other retirement systems during this study period, which is likely at least partially due to the COVID pandemic.

We studied General Plans D and G together, and Safety Plans B and C together. General Plans A through C and Safety Plan A no longer have many members impacted by the termination assumption so are not considered in this analysis. General Plan D and Safety Plan B provide experience for members with longer service while General Plan G and Safety Plan C provide experience for members with shorter service.

Recommendation

For General Plans D and G we recommend increasing termination rates for members with less than 10 years of service, and slightly lowering termination rates for members who have between 10 and 20 years of service. We also recommend slight increases for members with more than 20 years of service.

For General Plan E we recommend increasing termination rates for members with 8 to 10 years of service, and no change at all other service durations.

Although we reviewed the results of the most recent three-year period, we only made recommendations where the proposed changes were consistent with prior experience.

General Plans A to C are closed and no new employees are covered by these plans since May of 1979. The total membership is aging and has 30 years of service in most cases. Under the current approach to applying termination rates, once a member is eligible for retirement, no termination is assumed. Thus, these rates represent the very low probabilities there are still members not yet eligible for retirement that could terminate. The current rate of termination is assumed at a flat 0.5%, regardless of age or years of service. We recommend no change to this assumption.

For Safety members we recommend higher termination rates for members with less than two years of service, and no change for members with two or more years of service.

A comparison of the actual and expected terminations under the proposed assumptions, weighted by compensation level, is shown in the table below.

Termination of Employment (weighted by compensation)

Plan	Actual	Proposed	Actual / Proposed
General D & G	402,079,080	317,831,977	127%
General E	27,038,472	23,411,879	115%
Safety	44,791,668	30,906,182	145%
Total	**473,909,220**	**372,150,038**	**127%**

Exhibit 9-1
Termination Rates – General Plan D & G Members

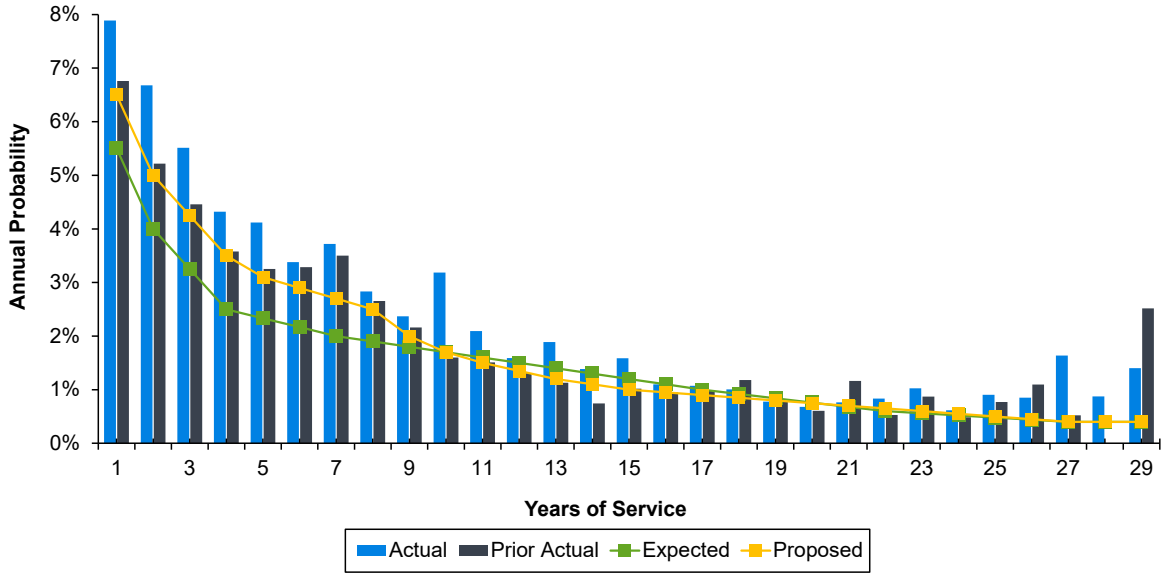


Exhibit 9-2
Termination Rates – General Plan E Members

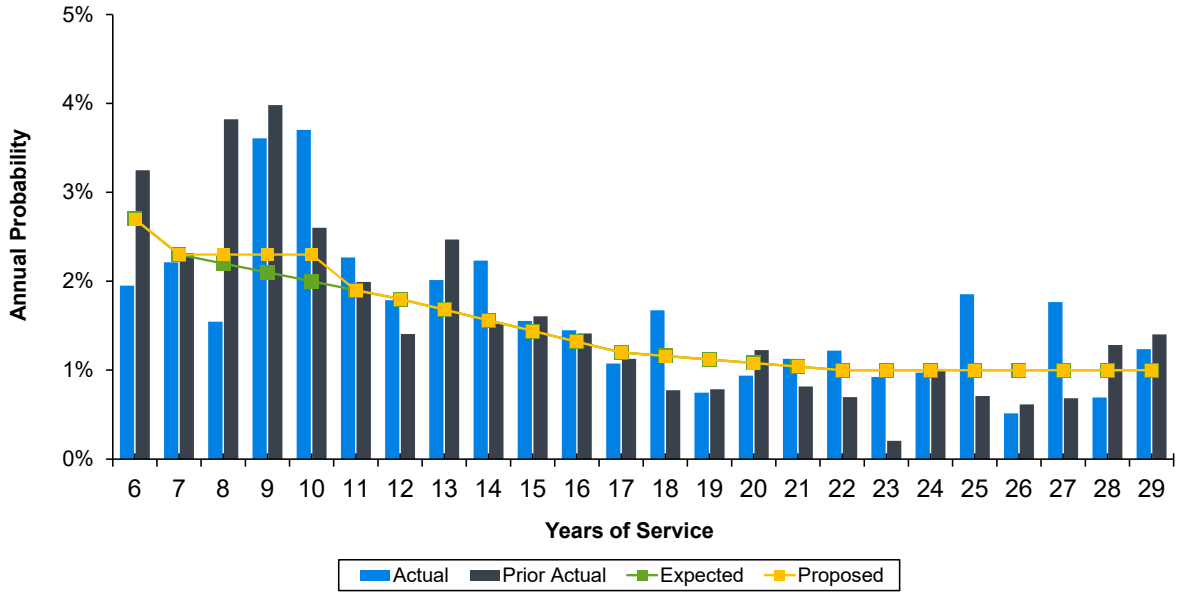
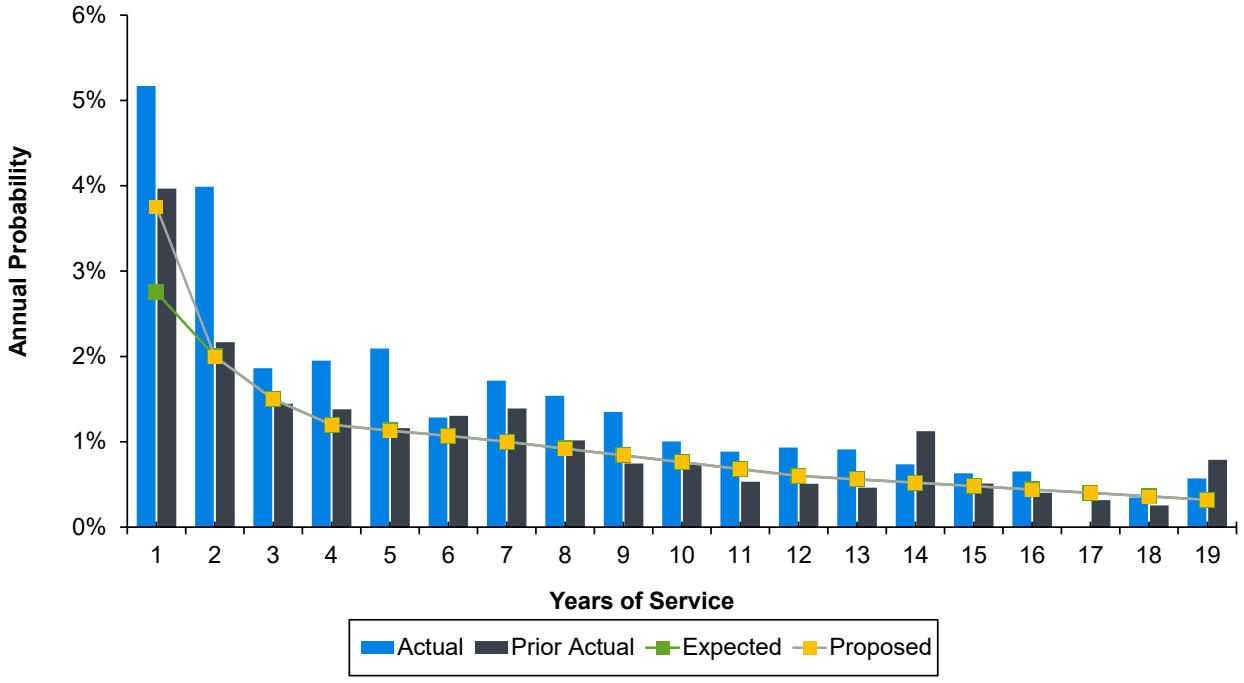


Exhibit 9-3
Termination Rates – Safety Members



10. Probability of Refund

As discussed in Section 9, the aggregate termination rates include both members who terminate and take a refund of their contributions and those who elect to keep their contributions with LACERA and receive a deferred vested benefit. The percentage of members who are expected take a refund of their contributions is the probability of refund assumption and is discussed in this section.

Results

The current assumptions project that a portion of vested members will take a refund of their contributions based on their years of service and classification.

For vested members, there were somewhat fewer refunds than the assumptions projected for General members and more than projected for Safety members, as shown in the following table.

Probability of Refund (at least 5 years of service, headcount weighted)

Class	Actual	Expected	Actual / Expected	Proposed	Actual / Proposed
General	469	535	88%	501	94%
Safety	58	39	148%	39	148%
Total	**527**	**574**	**92%**	**540**	**98%**

Exhibits 10-1 to 10-2 on the following page show the results of the study graphically. Note that the probability of refund for Safety members with 20 or more years of service only applies to Safety Plan C members, since members of Safety Plans A and B are eligible for service retirement after 20 years of service.

Recommendation

We recommend lowering the probability of refund for General members who have between 5 and 15 years of service. The experience for Safety members is the opposite of what was observed in the prior study, and we recommend no changes in the probability of refund for Safety members at the current time.

Exhibit 10-1
Probability of Refund – General Members

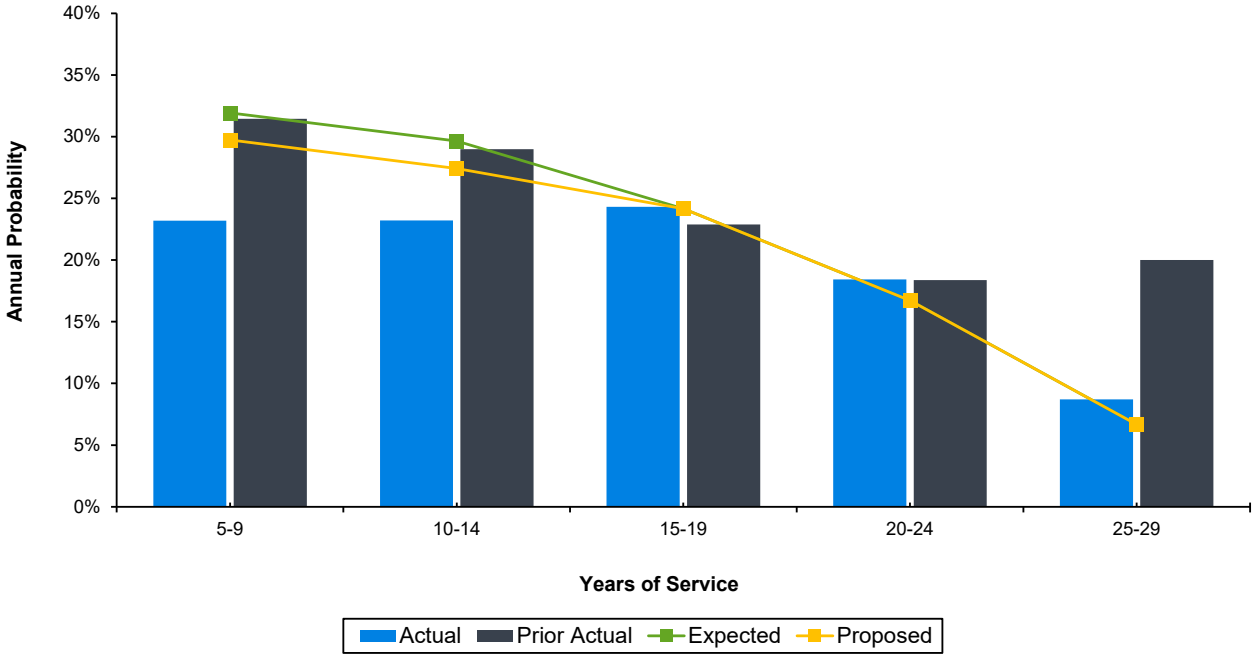
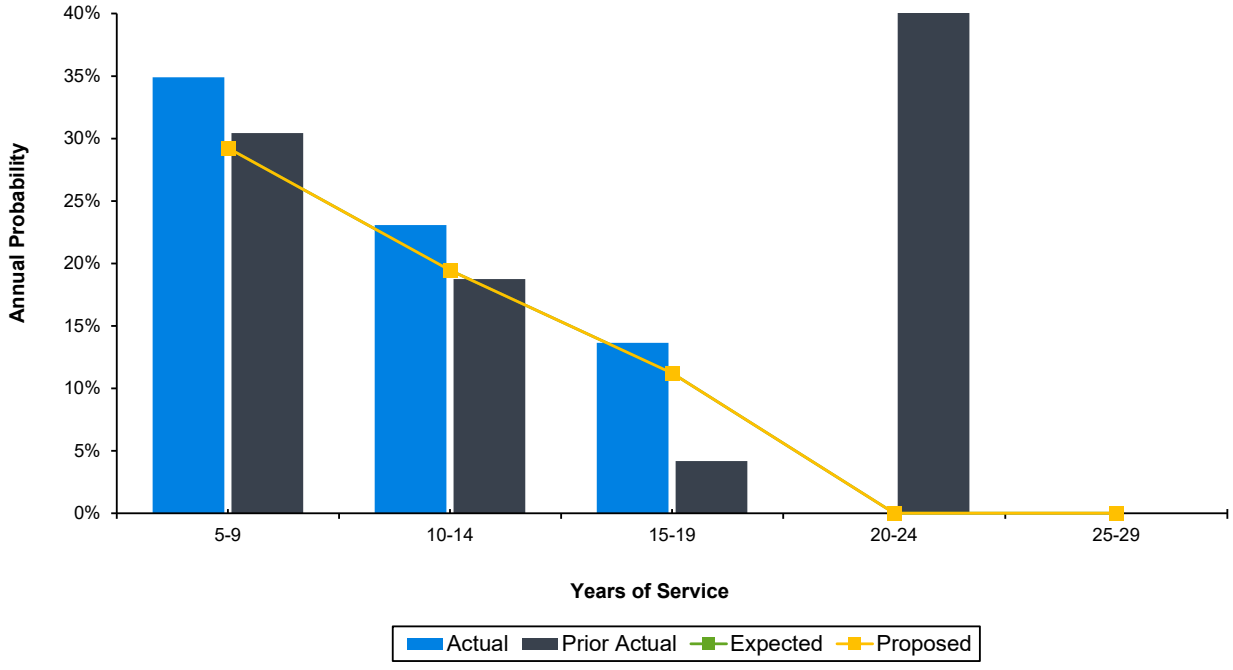


Exhibit 10-2
Probability of Refund – Safety Members



11. Retiree Mortality for Valuation Purposes

In this section we look at the results of the study of actual and expected death rates of retired members. We studied rates of mortality among healthy and disabled retired members.

Although there has been a recent deviation due to the pandemic, mortality has been improving in this country and is expected to continue to improve. We recommend continued use of generational mortality tables (see later discussion) to account for projected future improvements in mortality. Generational mortality is reflected by including a mortality improvement scale that projects annual decreases in mortality rates. Therefore, generational mortality explicitly assumes that members born more recently will live longer than the members born before them.

The Actuarial Standards of Practice require expected future mortality improvements to be considered in selecting the assumption. Using generational mortality tables achieves this.

Results

Overall, we found there were more deaths than the current rates predicted for healthy and disabled retired members. This is perhaps unsurprising given the COVID pandemic overlaps significantly with this study period. The ratio of active-to-expected deaths is also higher in this study than in the prior study period. The following table shows a comparison of the actual-to-expected deaths of retired members by gender, class, and type of retirement for the current study period, weighted by benefit amounts.

Retiree Mortality (weighted by benefit amounts)

Service Retirement

	Deaths			Actual to	Actual to
Group	Actual	Expected	Proposed	Expected	Proposed
General Male	9,422,483	8,704,306	8,719,998	108%	108%
General Female	7,735,952	7,416,652	7,407,782	104%	104%
Safety Male	2,515,046	2,293,922	2,283,950	110%	110%
Safety Female	140,336	137,850	135,280	102%	104%
Total Svc Ret	**19,813,817**	**18,552,730**	**18,547,010**	**107%**	**107%**

Disability Retirement

	Deaths			Actual to	Actual to
Group	Actual	Expected	Proposed	Expected	Proposed
General Male	723,259	678,264	676,270	107%	107%
General Female	731,231	634,900	631,663	115%	116%
Safety Male	3,276,596	3,004,383	2,979,974	109%	110%
Safety Female	183,066	160,019	157,498	114%	116%
Total Dis Ret	**4,914,152**	**4,477,566**	**4,445,405**	**110%**	**111%**

The values in the table are weighted by monthly benefit amount, so the first line of the table indicates that General male retirees with total monthly benefits of $9,422,483 died compared to the expected value of monthly benefits associated with General male retiree deaths of $8,704,306 based on the valuation assumptions.

Results are shown graphically on the following pages.

Mortality for Beneficiaries/Survivors

The previous analysis was focused on members who are currently receiving either service retirement or disability retirement benefits. An additional assumption must be made for beneficiaries of members who are currently receiving survivor benefits or may receive survivor benefits in the future. Analysis of this assumption is more difficult as the information on deaths of beneficiaries who are not in payment is generally not as well reported in most systems as members who are in payment. The information on beneficiaries currently receiving survivor benefits is more reliable; however, we do not believe it is appropriate to apply this experience to beneficiaries who are not in payment.

Studies have shown that: 1) beneficiaries have materially higher mortality rates after their spouse has died ("grieving widow effect"); and 2) married people live longer than single people .Since most beneficiaries who are not in payment are spouses of the members, we would expect on average they would live longer than the general retired population as they are married and retirees are a mix of married and single. After the member has died, the expectation is the survivor will have higher mortality (and a shorter life expectancy), which is consistent with LACERA experience. To approximate this lower-than-average beneficiary mortality prior to the retiree's death and higher-than-average beneficiary mortality following the retiree's death, we recommend continuing the assumption of the beneficiary mortality being equal to the assumption for a healthy General retiree of the same gender.

Generational Mortality Tables

Most actuarial valuations for public sector retirement systems use generational mortality tables, which explicitly reflect expected improvements in mortality. Generational mortality tables include a base table and a projection table. The projection table reflects the expected annual reduction in mortality rates at each age. Therefore, each year in the future, the mortality at a specific age is expected to decline slightly (and people born in succeeding years are expected to live slightly longer).

For example, if the mortality rate at age 75 is 2.00% for a member currently aged 75 and the projected improvement is 1.00%, the mortality rate at age 75 for a member currently aged 74 will be 1.98% [2.00% x (100.00% - 1.00%)]. Therefore, the life expectancy for a 75-year old in the next year will be greater than a 75-year old in the current year. This can result in significant differences in life expectancies when projecting improvements 30-plus years into the future.

One of the main benefits of generational mortality tables is that the valuation assumptions should effectively update each year to reflect improved mortality, and the mortality tables should need to be changed less frequently. During the 2016 investigation of experience study, LACERA adopted a generational mortality assumption.

Projection Scale for Mortality Improvement

There is a strong consensus in the actuarial community that future improvements in mortality should be reflected in the valuation assumptions. There is less consensus, however, about how much mortality improvement should be reflected. Beginning in 2014, the Society of Actuaries (SOA) began publishing a mortality improvement scale (MP-2014) that varies by age and birth year. This results in a complex matrix of rates that is projected forwards and backwards. Ultimately, in any mortality improvement table, the mortality improvement scale stops at a future year, and that year's rate is used for all later years. It is referred to as the "ultimate rate".

Our general recommendation is to use a mortality projection scale based on the ultimate portion of the mortality improvement scale. We believe this approach reasonably reflects the long-term expectation of mortality improvement with less complexity than using a complete matrix of improvement rates.

LACERA currently uses a mortality projection scale equal to 100% of the MP-2014 ultimate projection scale.

Although the SOA publishes an updated mortality improvement scale each year, the ultimate rate did not change until the release of MP-2020 in the fall of 2020. An updated projection scale (MP-2021) was issued last year with similar ultimate rates. This new scale relies heavily on Social Security experience for years 1958 through 2018, and assumes flat 1.35% annual improvements in mortality for individuals 62 and younger. Note that since this scale includes experience through 2018 there are no effects of pandemic mortality included, nor any adjustments to account for its impact. The improvement decreases gradually between the ages of 62 and 80, then more steeply for individuals aged 80 and older. Compared to MP-2014, the new scale projects bigger improvements in mortality for individuals younger than 83, and smaller improvements for individuals 83 and older. For example, the improvement under MP-2021 drops to 0.30% at age 100, compared to 0.64% when using MP-2014.

Recommendation

LACERA uses standard mortality tables adjusted to best fit the patterns of mortality among its retirees. The current mortality rates are based on the PubG-2010 and PubS-2010 Healthy Retiree and Disabled Retiree mortality tables and all assume generational mortality improvement based on 100% of the MP-2014 Ultimate projection scale.

We recommend no change to the standard mortality tables, nor scaling factors, currently in place.

We recommend an update to the ultimate projection scale included in the recently published MP-2021 mortality improvement scale.

The recommended mortality rates are therefore all based on the PubG-2010 and PubS-2010 Healthy Retiree and Disabled Retiree mortality tables and all assume generational mortality improvement based on 100% of the MP-2021 Ultimate projection scale, as follows:

			Mortality Tables	
Class	Type[1]	Sex	Current Table[2]	Proposed Table[3]
General	Healthy	Male	PubG-2010 (100%) Healthy Retiree Male	PubG-2010 (100%) Healthy Retiree Male
General	Healthy	Female	PubG-2010 (110%) Healthy Retiree Female	PubG-2010 (110%) Healthy Retiree Female
Safety	Healthy	Male	PubS-2010 (85%) Healthy Retiree Male	PubS-2010 (85%) Healthy Retiree Male
Safety	Healthy	Female	PubS-2010 (100%) Healthy Retiree Female	PubS-2010 (100%) Healthy Retiree Female
General	Disabled	Male	Avg of: PubG-2010 (100%) Healthy Retiree Male PubG-2010 (100%) Disabled Retiree Male	Avg of: PubG-2010 (100%) Healthy Retiree Male PubG-2010 (100%) Disabled Retiree Male
General	Disabled	Female	Avg of: PubG-2010 (100%) Healthy Retiree Female PubG-2010 (100%) Disabled Retiree Female	Avg of: PubG-2010 (100%) Healthy Retiree Female PubG-2010 (100%) Disabled Retiree Female
Safety	Disabled	Male	PubS-2010 (100%) Disabled Retiree Male	PubS-2010 (100%) Disabled Retiree Male
Safety	Disabled	Female	PubS-2010 (100%) Disabled Retiree Female	PubS-2010 (100%) Disabled Retiree Female

1. Beneficiaries are assumed to have the same mortality as a healthy General member of the same sex.
2. Generational Projections using 100% of the MP-2014 Ultimate projection scale.
3. Generational Projections using 100% of the MP-2021 Ultimate projection scale.

Exhibit 11-1
Healthy Mortality – Male General Members

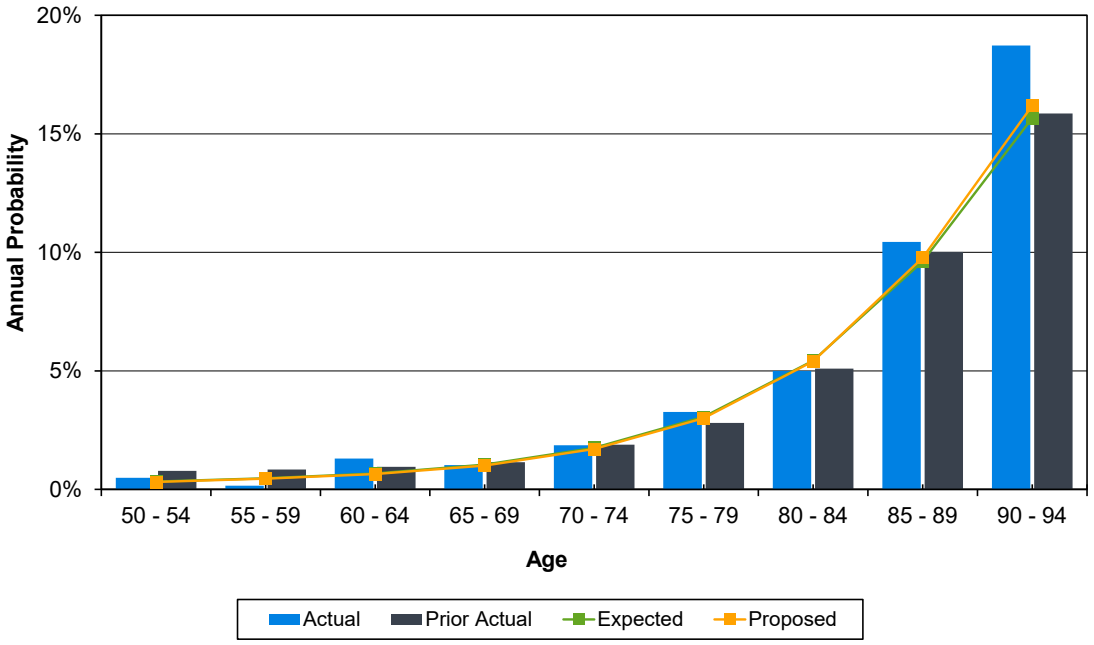


Exhibit 11-2
Healthy Mortality – Female General Members

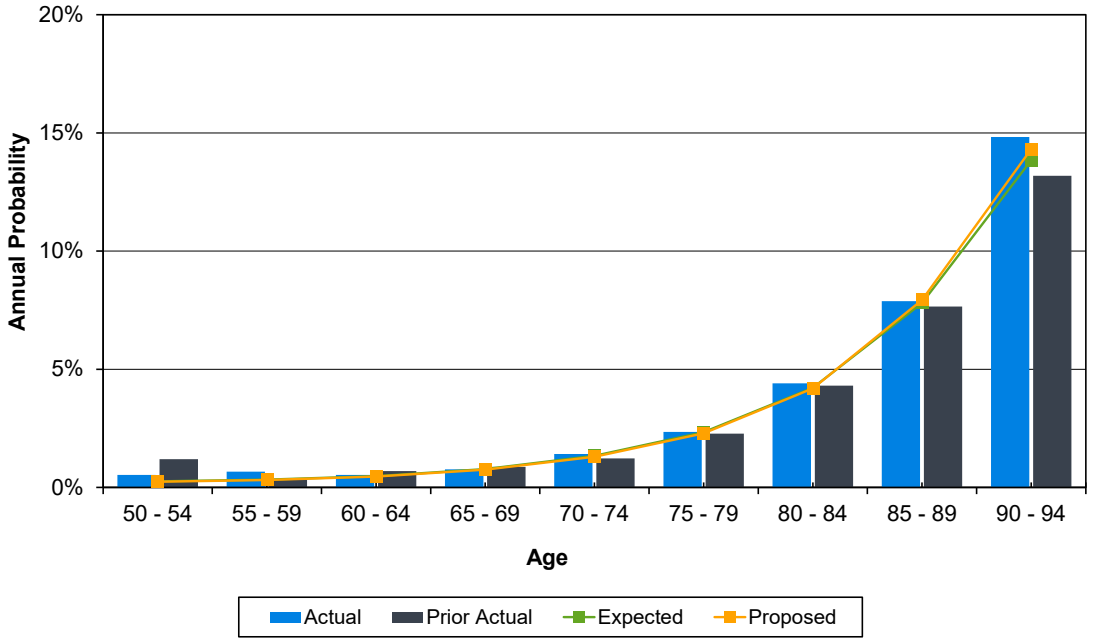


Exhibit 11-3
Healthy Mortality – Male Safety Members

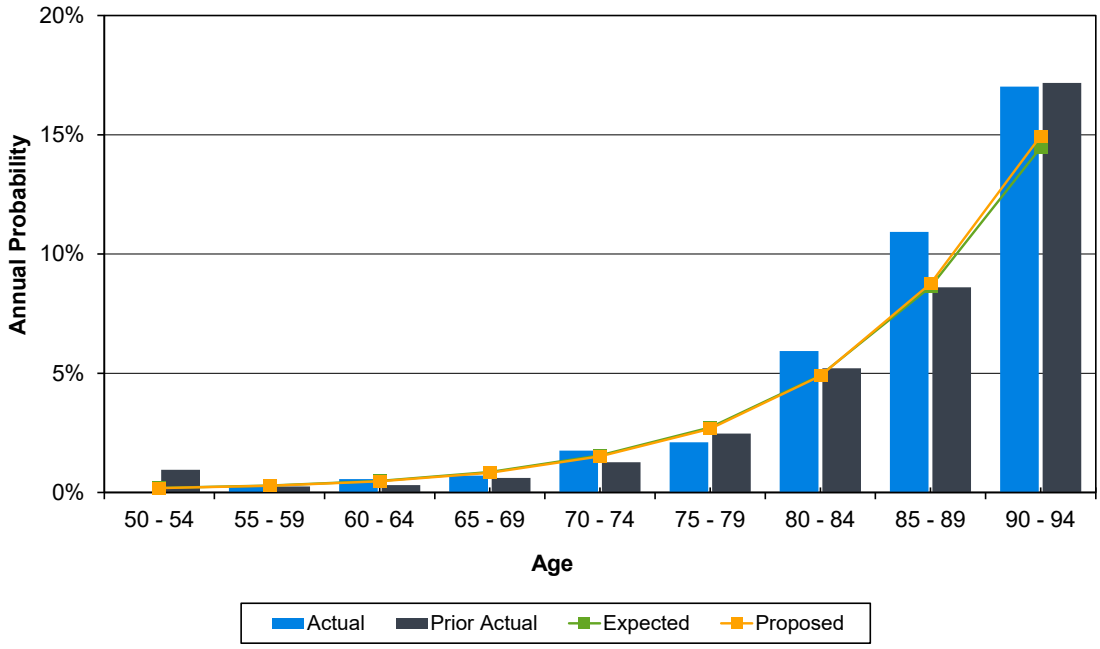


Exhibit 11-4
Healthy Mortality – Female Safety Members

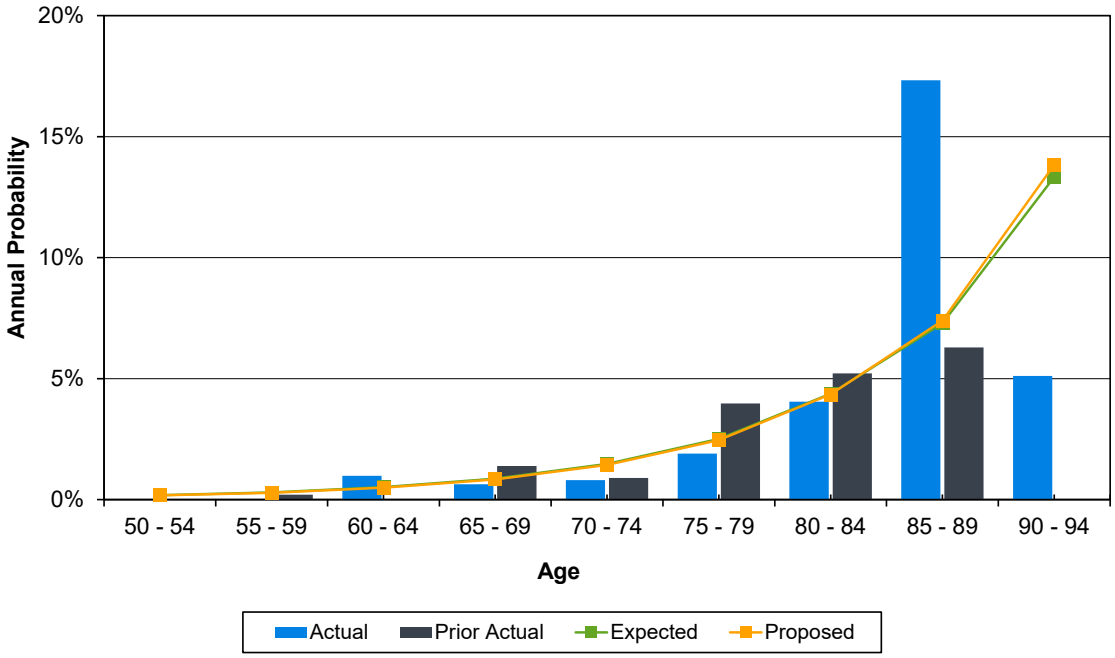


Exhibit 11-5
Disabled Mortality – Male General Members

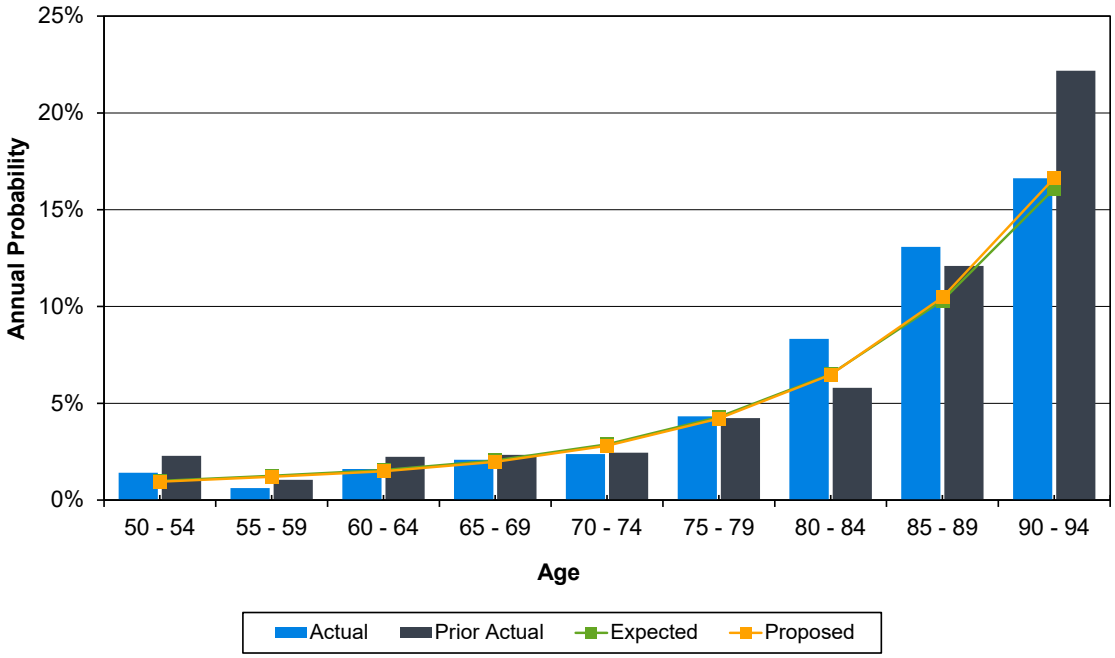


Exhibit 11-6
Disabled Mortality – Female General Members

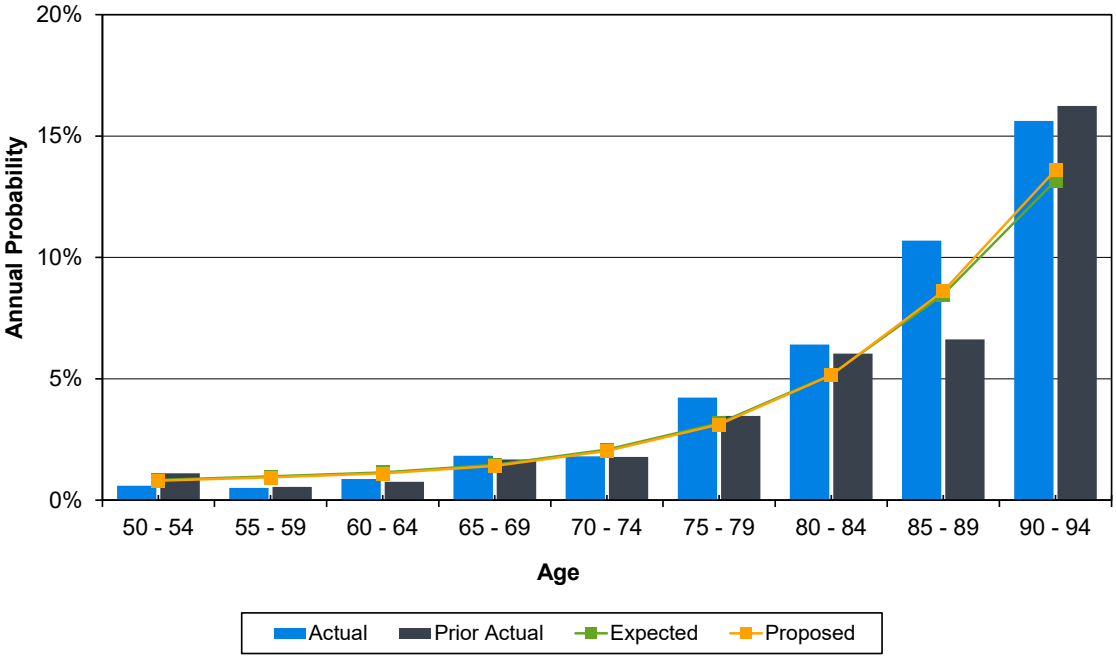


Exhibit 11-7
Disabled Mortality – Male Safety Members

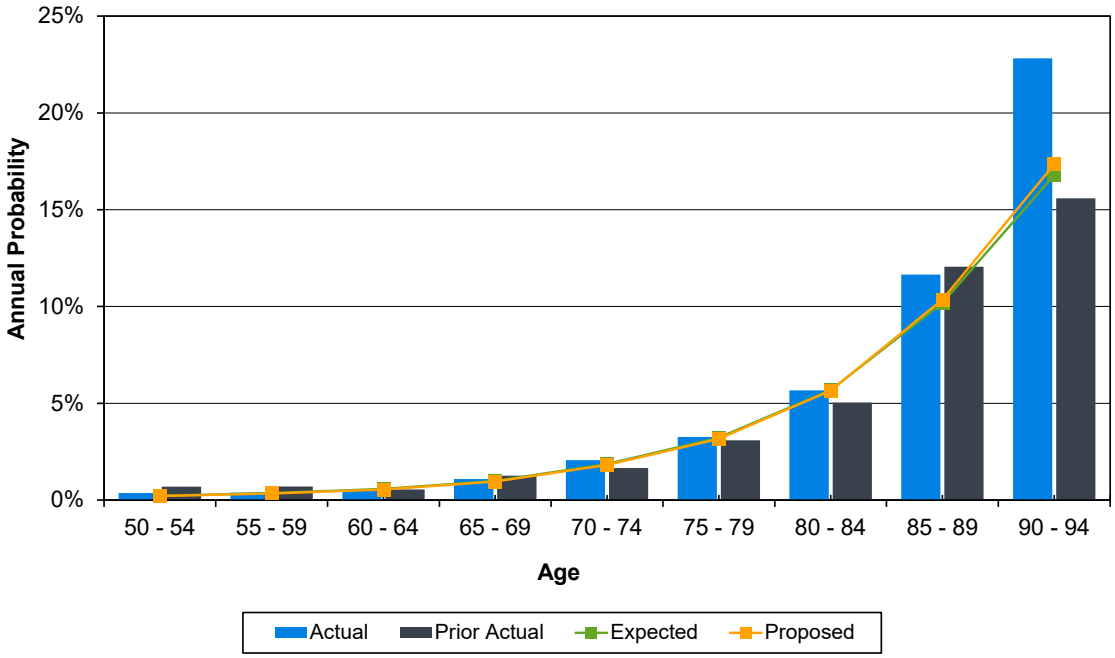
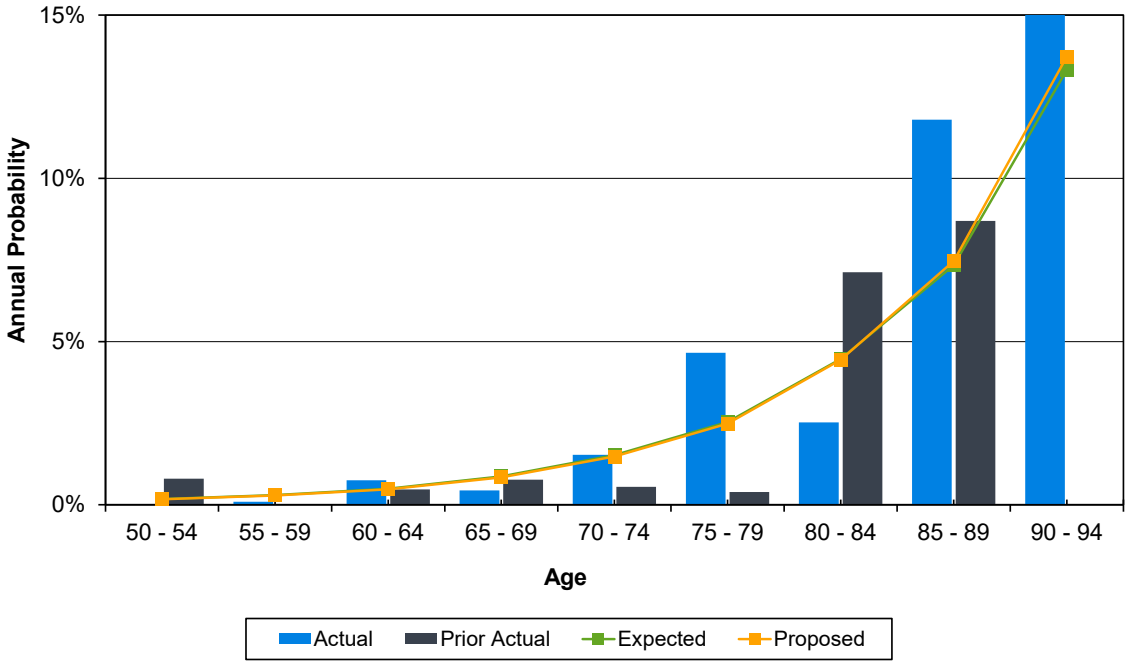


Exhibit 11-8
Disabled Mortality – Female Safety Members



12. Miscellaneous Assumptions

Probability of Eligible Survivor

All members are assumed to elect the unmodified retirement allowance. Surviving beneficiaries (spouses or qualified domestic partners of members) generally receive a 65% continuance of the member's benefit (100% continuance for service-connected disabilities and 55% for Plan E members). Thus, the probability a member has an eligible survivor impacts the value of the benefit.

Based on our analysis of retirements during the study period, we found that 76% of males and 45% of females received an unmodified (or unmodified plus) benefit with an eligible survivor. We are recommending lowerering the assumption for probability of retiring with an Eligible Survivor to 48% for female members, while keeping the assumption for male members unchanged at 77%.

	Probability of Retiring with an Eligible Survivor		
Retiree Gender	Current Assumption	Actual Experience	Recommended Assumption
Male	77%	76%	No change
Female	50%	45%	48%

Beneficiary Age

To determine the value of a member's retirement or death benefit, we must estimate the value of the portion payable to the surviving eligible beneficiary. Since the value of the survivor's benefit is dependent on their age, we must estimate the age. We studied the beneficiary age difference compared to the member based on retirements during the study period. Based on this analysis, we are recommending changing the assumption for beneficiary age of male retirees to be 3 years younger than the member, while keeping the assumption unchanged at 2 years older for female retirees.

	Beneficiary's Age Relative to Member		
Retiree Gender	Current Assumption	Actual Experience	Recommended Assumption
Male	4 years younger	3.1 years younger	3 years younger
Female	2 years older	1.8 years older	No change

Since the majority of eligible survivors are expected to be of the opposite gender, even with the inclusion of qualified domestic partners, we will continue to assume that the survivor's gender is the opposite of the member.

Retirement for Deferred Vested Members

The age when members who terminate (or have terminated) employment with a vested benefit are assumed to retire varies by plan. We have studied the actual retirement ages of deferred vested members during the study period, and we recommend no changes to current assumptions.

Assumption for Deferred Commencement

	Age at Commencement		
Plan	Current Assump.	Actual Results	Proposed Assump.
GA	62	N/A[1]	No Change
GB	62	N/A[1]	No Change
GC	62	N/A[1]	No Change
GD	59	59.2	No Change
GE	62	62.9	No Change
GG	57	N/A[1]	No Change
SA	55	N/A[1]	No Change
SB	50	50.7	No Change
SC	50	N/A[1]	No Change

1. Insufficient data for analysis.

Note that General Plans A, B and C and Safety Plan A have very few deferred vested members. For these plans, we consider this assumption to not be material. For General Plan G and Safety Plan C, there is very little experience for this assumption at this time.

Reciprocity

Members who terminate in the future (or have already terminated) with a deferred vested benefit may go to work for a reciprocal employer. This can result in an increase in the member's final compensation used in the calculation of their LACERA benefit. Currently, 16% reciprocity is assumed for General members, and 35% is assumed for Safety members. Based on recent experience, we are recommending increasing the reciprocity percentage by 1% for each group.

Retirements from Deferred Status (2019-2022)

Plan	Total	Reciprocal Status	% with Reciprocity	Current Assump.	Proposed Assump.
General	1,207	241	20%	16%	17%
Safety	88	32	36%	35%	36%
Total	1,295	273	21%		

Appendix A: Proposed Actuarial Procedures and Assumptions

This section of the experience study report reflects how the Appendix A of the June 30, 2022 actuarial valuation would appear if the Board of Investments adopts all of the recommended assumptions.

Appendix A Actuarial Procedures and Assumptions

The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of LACERA and of LACERA itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of LACERA's benefits.

Table A-1 summarizes the assumptions. The mortality probabilities are taken from the sources listed. Tables A-2 and A-3 show how members are expected to leave retired status due to death.

Table A-4 presents the probability of refund of contributions upon termination of employment while vested. Table A-5 presents the expected annual percentage increase in salaries.

Tables A-6 to A-13 were developed from the experience as measured by the 2022 Investigation of Experience Study. These are the probability that a member will leave the System for various reasons.

Note: Recommended changes from the prior methods and assumptions have been shaded in green.

Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age).

The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the Unfunded Actuarial Accrued Liability (UAAL).

For members who transferred between plans, entry age is based on original entry into the System.

For General Plan G and Safety Plan C, the normal cost rate is rounded up to the nearest 0.02%.

Amortization Method

The original UAAL as of June 30, 2009 is amortized as a level percentage of the projected salaries of present and future members of LACERA over a closed 30-year period. As of the June 30, 2019 valuation, all amortization layers with periods greater than 22 years as of July 1, 2020 were amortized over a 22-year period. Future changes in the UAAL due to actuarial gains and losses and assumption changes are amortized over new closed 20-year periods, beginning with the date the contribution is first expected to be made. This is referred to as “layered” amortization. For increases in the UAAL due to changes in benefit provisions, the increase is amortized over a 10-year period.

Records and Data

The data used in this valuation consists of financial information and the age, service, and income records for active and inactive members and their survivors. All of the data were supplied by LACERA and are accepted for valuation purposes without audit.

Replacement of Former Members

The ages and relative salaries at entry of future members are assumed to follow a new entrant distribution based on the pattern of current members. The normal cost rates for active members within an individual plan will remain fairly stable in future years unless there are changes in the governing law, the actuarial assumptions, or the pattern of the new entrants.

Growth in Membership

For benefit determination purposes, no growth in the membership of LACERA is assumed. For funding purposes, if amortization is required, the total payroll of covered members is assumed to grow due to the combined effects of future wage increases of current active members and the replacement of the current active members by new employees. No growth or decline in the total number of active members is assumed.

Payroll Growth

Total payroll is expected to grow at 3.25% per year.

Internal Revenue Code Section 415 Limit

The Internal Revenue Code (IRC) Section 415 maximum benefit limitation is not explicitly reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit calculation at retirement.

Internal Revenue Code Section 401(a)(17)

The Internal Revenue Code Section 401(a)(17) maximum compensation limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

Government Code Section 7522.10

The maximum compensation limit under Government Code Section 7522.10 is reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

Employer Contributions

The employer contribution rate is set by the Board of Investments based on actuarial valuations.

Member Contributions

The member contribution rates of contributory legacy plans (all plans except General Plans E and G and Safety Plan C) vary by entry age and are described in the law. Code references are shown in Appendix B of the valuation report. The methods and assumptions used are detailed later in this section.

The individual member rates by entry age, plan, and class are illustrated in Appendix D of the valuation report.

Valuation of Assets

The assets are valued using a five-year smoothed method based on the difference between the expected market value and the actual market value of the assets as of the valuation date. The market value excludes the STAR Reserve. The expected market value is the prior year's market value increased with the net increase in the cash flow of funds, all increased with interest during the past fiscal year at the expected investment return rate assumption. To the extent that there is a loss for the year and there are unrecognized gains from previous years, or to the extent that there is a gain for the year and there are unrecognized losses from previous years, the gain or loss for the year shall be used to offset unrecognized gains or losses from previous years in the order of oldest to most recent. Any remaining gain or loss for the year is recognized over a five-year period. The five-year smoothing valuation basis for all assets was adopted effective June 30, 2009, and the offsetting methodology and STAR Reserve treatment were adopted effective June 30, 2022.

Price Inflation (Local and National)

The price inflation assumption is used in the determination of assumptions for individual salary increases, overall wage growth, postretirement benefit increases, and PEPRA compensation limit increases. Both the local and national price inflation assumptions are 2.75% per year.

Investment Earnings and Expenses

The future investment earnings of the assets of LACERA are assumed to accrue at an annual rate of 7.00% compounded annually, net of both investment and administrative expenses. This rate was adopted June 30, 2019.

Postretirement Benefit Increases

Postretirement increases are assumed for the valuation in accordance with the benefits provided as described in Appendix B. These adjustments vary by plan and are assumed payable each year in the future but are limited to not exceed the expected local inflation of 2.75% per year, with the exception that any COLA accumulation banks for Plan A members are reflected in the valuation. The local inflation rate used for the postretirement benefit assumptions was adopted June 30, 2016.

Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 7.00% compounded semi-annually for an annualized rate of 7.12%. This rate was adopted effective June 30, 2019.

Future Salaries

The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table A-5. In addition to increases in salary due to promotions and longevity, this scale includes an assumed 3.25% per annum rate of increase in the general wage level of the membership. These rates were adopted June 30, 2019.

Increases are assumed to occur mid-year (i.e., January 1st) and only apply to base salary, excluding megaflex compensation. The mid-year timing reflects that salary increases occur throughout the year, or on average mid-year.

For plans with a one-year final average compensation period, actual average annual compensation is used. For Plan E, Plan G and Safety Plan C, the monthly rate as of June of the valuation year was annualized. Due to irregular compensation payments included as pensionable earnings, actual annual pay is preferred over annualizing a single monthly payment amount.

Social Security Wage Base

Plan E members have their benefits offset by an assumed Social Security Benefit. For valuation funding purposes, we need to project the Social Security Benefit. We assume the current Social Security provisions will continue and the annual Wage Base will increase at the rate of 3.25% per year. Note that statutory provisions describe exactly how to compute the offset for purposes of determining a member's offset amount at time of termination or retirement. This rate was adopted June 30, 2016.

Note also, that it is assumed all Plan E members born after 1950 have less than 10 years of Social Security-covered service and, therefore, do not have their benefit offset.

General Plan G and Safety Plan C members have their compensation limited to approximately 120% of the Social Security Wage Base. The limit for 2022 is $161,969 (after applying the 120% factor) and is projected to increase at the CPI rate of 2.75%. This rate of future increase was adopted effective June 30, 2016.

Retirement

Members in General Plans A-D may retire at age 50 with 10 years of service, or any age with 30 years of service, or age 70 regardless of the number of years of service. General Plan G members are eligible to retire at age 52 with 5 years of service, or age 70 regardless of the number of years of service. Non-contributory Plan E members may retire at age 55 with 10 years of service. Members of Safety Plans A and B may retire at age 50 with 10 years of service, or any age with 20 years of service. Safety Plan C members are eligible to retire at age 50 with 5 years of County service. Retirement probabilities vary by age and are shown by plan in Tables A-6 through A-13.

All General members who attain or have attained age 75 in active service and all Safety members who attain or have attained age 65 in active service are assumed to retire immediately (except for Safety Plan C members who have not yet attained 5 years of service).

Vested former members are assumed to retire at the later of their current age and the assumed retirement age specified as follows:

Assumption for Deferred Commencement

Plan	Age at Commencement
GA	62
GB	62
GC	62
GD	59
GE	62
GG	57
SA	55
SB	50
SC	50

The assumptions regarding termination of employment, early retirement, and unreduced service retirement are treated as a single set of decrements in regard to a particular member. For example, a General Plan D member hired at age 30 has a probability of withdrawing from LACERA due to death, disability or other termination of employment until age 50. After age 50, the member can withdraw due to death, disability, or retirement. Thus, in no year during the member's projected employment would the member be eligible for both a probability of other termination of employment and a probability of retirement.

The retirement probabilities were adopted June 30, 2022.

Disability

The probabilities of disability used in the valuation are also illustrated in Tables A-6 through A-13. These probabilities were adopted June 30, 2019.

Postretirement Mortality – Other Than Disabled Members

The same postretirement mortality probabilities are used in the valuation for members retired for service and beneficiaries. These probabilities are illustrated in Table A-2. Current beneficiary mortality is assumed to be the same as for healthy members of the same sex. Future beneficiaries are assumed to be of the opposite sex and have the same mortality as General members. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Note that these assumptions include a projection for expected future mortality improvement. The new projection scale was adopted June 30, 2022.

Males: General members: PubG-2010 Healthy Retiree Mortality Table for Males, with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males multiplied by 85%, with MP-2021 Ultimate Projection Scale.

Females: General members: PubG-2010 Healthy Retiree Mortality Table for Females multiplied by 110%, with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2021 Ultimate Projection Scale.

Postretirement Mortality – Disabled Members

For members retired for disability, the mortality probabilities used in the valuation are illustrated in Table A-3. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Note that these assumptions include a projection for expected future mortality improvement. The new projection scale was adopted June 30, 2022.

Males: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Males and PubG-2010 Disabled Retiree Mortality Table for Males, both projected with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males, with MP-2021 Ultimate Projection Scale.

Females: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Females and PubG-2010 Disabled Retiree Mortality Table for Females, both projected with MP-2021 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2021 Ultimate Projection Scale.

Mortality while in Active Status

For active members, the mortality probabilities used in the valuation are illustrated in Tables A-6 through A-13. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Class	Gender	Proposed Table
General	Male	PubG-2010 (120%) Employee Male[1]
General	Female	PubG-2010 (130%) Employee Female[1]
Safety	Male	PubS-2010 (100%) Employee Male[1]
Safety	Female	PubS-2010 (100%) Employee Female[1]

1. *Projected using the MP-2021 Ultimate projection scale.*

These assumptions include a projection for expected future mortality improvement, which was adopted June 30, 2022.

Note that Safety members have an additional service-connected mortality probability of 0.01% per year.

Other Employment Terminations

Tables A-6 to A-13 show, for all ages, the probabilities assumed in this valuation for future termination from active service other than for death, disability, or retirement. These probabilities do not apply to members eligible for service retirement. These probabilities were adopted June 30, 2022.

Terminating employees may withdraw their contributions immediately upon termination of employment and forfeit the right to further benefits, or they may leave their contributions with LACERA. Former contributing members whose contributions are on deposit may later elect to receive a refund, may return to work, or may remain inactive until becoming eligible to receive a retirement benefit under either LACERA or a reciprocal retirement system. All terminating members who are not eligible for vested benefits are assumed to withdraw their contributions immediately. It is assumed that all terminating members will not be rehired in the future.

Table A-4 gives the assumed probabilities that vested members will withdraw their contributions and elect a refund immediately upon termination and the probability that remaining members will elect a deferred vested benefit. All non-vested members are assumed to elect a refund and withdraw their contributions. These probabilities were adopted June 30, 2022.

Probability of Eligible Survivors

For members not currently in pay status, 77% of all males and 48% of all females are assumed to have eligible survivors (spouses or qualified domestic partners). Survivors are assumed to be three years younger than male members and two years older than female members. Survivors are assumed to be of the opposite gender as the member. There is no explicit assumption for children's benefits. We believe the survivor benefits based on this assumption are sufficient to cover children's benefits as they occur.

Valuation of Vested Former Members

The deferred retirement benefit is calculated based on the member's final compensation and service at termination. The compensation amount is projected until the assumed retirement age for members who are assumed to be employed by a reciprocal agency. For members who are missing compensation data, Final Compensation is estimated as the average amount for all members who terminated during the same year and had a valid compensation amount. The greater of the present value of the calculated benefit and the employee's current contribution balance is valued for future deferred vested members.

Reciprocal Employment

17% of General and 36% of Safety current and future vested former members are assumed to work for a reciprocal employer.

Current vested reciprocal members are assumed to receive annual salary increases of 4.25%. Future reciprocal vested members are assumed to receive the same salary increases they would have received if they had stayed in active employment with LACERA and retired at the assumed retirement age.

Valuation of Annuity Purchases

Over 30 years ago, LACERA purchased single life annuities from two insurance companies for some retired members (currently less than 1% of the retired population). The total liability for these members is calculated and then offset by the expected value of the benefit to be paid by the insurance companies.

For affected members, the insurance companies are responsible for:

1. Straight life annuity payments
2. Statutory COLAs

LACERA is responsible for:

1. Benefit payments payable to any beneficiary
2. STAR COLAs

Member Contribution Rate Assumptions

The following assumptions summarize the procedures used to compute member contribution rates based on entry age:

In general, the member rate is determined by the Present Value of the Future Benefit (PVFB) payable at retirement age, divided by the present value of all future salaries payable between age at entry and retirement age. For these purposes, per the CERL:

A. The Annuity factor used for General members is based on a 35% / 65% blend of the male and female valuation mortality tables and projection scale, with a static projection to 2044. For Safety members, it is based on an 85% / 15% blend of the male and female annuity factors determined using the same mortality tables as used for service-retired members.
B. The annuity factor used in determining the present value of future benefits (PVFB) at entry age is equal to the life only annuity factor at 7.00%.
C. The Final Compensation is based on the salary paid in the year prior to attaining the retirement age.
D. Example: For a General Plan C Member who enters at age 59 or earlier, the Final Compensation at retirement (age 60) will be the monthly average of the annual salaries during age 59.
E. Member Rates are assumed to increase with entry age. There are a few exceptions at the higher entry ages where the calculated rate is less than the previous entry age. In these cases the member contribution rate is adjusted so that it is no less than the value for the previous entry age.

Table A-1
Summary of Valuation Assumptions as of June 30, 2022

I. Economic assumptions

A.	Payroll / General wage increases	3.25%
B.	Investment earnings	7.00%
C.	Growth in membership	0.00%
D.	Postretirement benefit increases (varies by plan)	Plan COLA not greater than local price inflation assumption[1]
E.	National price inflation assumption	2.75%
F.	Local price inflation assumption	2.75%

II. Demographic assumptions

A.	Salary increases due to service	Table A-5
B.	Retirement	Tables A-6 to A-13
C.	Disability	Tables A-6 to A-13
D.	Mortality during active employment	Tables A-6 to A-13
E.	Mortality for active members after termination and service retired members[2]	Table A-2

Class	Gender	
General	Male	PubG-2010 (100%) Healthy Retiree Male
General	Female	PubG-2010 (110%) Healthy Retiree Female
Safety	Male	PubS-2010 (85%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

F. Mortality among disabled members[2] — Table A-3

Class	Gender	
General	Male	Avg of: PubG-2010 (100%) Healthy Retiree Male PubG-2010 (100%) Disabled Retiree Male
General	Female	Avg of: PubG-2010 (100%) Healthy Retiree Female PubG-2010 (100%) Disabled Retiree Female
Safety	Male	PubS-2010 (100%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

G. Mortality for beneficiaries[1] — Table A-2
Basis – Beneficiaries are assumed to have the same mortality as a General member of the opposite gender who has taken a service retirement.

H.	Other terminations of employment	Tables A-6 to A-13
I.	Refund of contributions on vested termination	Table A-4

1. To account for existing Plan A COLA accumulation balances, retirees and beneficiaries with a retirement date prior to April 1, 2022 are assumed to receive 3.00% annual COLAs.

2. All mortality probabilities are projected using the MP-2021 Ultimate projection scale.

Table A-2
Mortality for Members Retired for Service[1]

Age	Safety Male	Safety Female	General Male	General Female
20	0.0520%	0.0210%	0.0740%	0.0380%
25	0.0470%	0.0260%	0.0560%	0.0260%
30	0.0520%	0.0350%	0.0720%	0.0440%
35	0.0590%	0.0470%	0.0940%	0.0680%
40	0.0750%	0.0640%	0.1320%	0.1060%
45	0.1037%	0.0870%	0.1960%	0.1650%
50	0.1632%	0.1490%	0.2980%	0.2442%
55	0.2601%	0.2580%	0.4310%	0.3146%
60	0.4318%	0.4460%	0.6150%	0.4224%
65	0.7489%	0.7700%	0.9130%	0.6743%
70	1.3328%	1.3290%	1.5260%	1.1693%
75	2.4021%	2.2950%	2.6710%	2.0713%
80	4.3376%	3.9620%	4.7740%	3.6960%
85	7.7648%	6.8420%	8.5910%	6.8255%
90	13.4810%	11.8150%	14.6720%	12.6357%

Age	All Groups
60 & Less	1.350%
61	1.350%
62	1.350%
63	1.340%
64	1.320%
65	1.310%
70	1.240%
75	1.170%
80	1.100%
85	0.870%
90	0.630%
95	0.400%
100	0.300%
105	0.200%
110	0.100%
115	0.000%

1. Mortality probabilities are those applicable for the fiscal year beginning in 2010. Annual projected improvements are assumed in the following years under the schedule shown. For example, the annual mortality probability for an 85-year old Safety male in fiscal year beginning in 2022 is 6.9918% calculated as follows:

Age 85 probability in 2022 = Age 85 probability in 2010 with 12 years improvement

= 7.7648% x (100.0% - 0.87%) ^ 12 = 6.9918%

Table A-3
Mortality for Members Retired for Disability[1]

Age	Safety Male	Safety Female	General Male	General Female
20	0.0610%	0.0210%	0.2430%	0.1340%
25	0.0550%	0.0260%	0.1670%	0.0940%
30	0.0610%	0.0350%	0.2130%	0.1485%
35	0.0700%	0.0470%	0.2760%	0.2315%
40	0.0880%	0.0640%	0.3885%	0.3625%
45	0.1220%	0.0870%	0.6015%	0.5675%
50	0.1920%	0.1490%	0.9515%	0.8525%
55	0.3060%	0.2580%	1.2725%	1.0140%
60	0.5080%	0.4460%	1.5590%	1.1700%
65	0.8810%	0.7700%	1.9785%	1.4345%
70	1.5680%	1.3290%	2.7135%	1.9625%
75	2.8260%	2.2950%	3.9315%	2.9430%
80	5.1030%	3.9620%	6.0610%	4.6835%
85	9.1350%	6.8420%	9.7030%	7.7680%
90	15.8600%	11.8150%	15.4625%	12.5760%

1. Mortality probabilities are those applicable for the fiscal year beginning in 2010. Annual projected improvements are assumed in the following years under the schedule shown on the preceding page.

Table A-4
Immediate Refund of Contributions upon Termination of Employment
(Excludes Plan E)

Years of Service	General	Safety
0	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	30%	30%
6	30%	30%
7	30%	30%
8	29%	28%
9	28%	26%
10	28%	24%
11	28%	22%
12	28%	20%
13	27%	18%
14	26%	16%
15	26%	14%
16	25%	12%
17	24%	10%
18	22%	9%
19	21%	8%
20	19%	7%
21	18%	6%
22	16%	5%
23	14%	4%
24	12%	3%
25	10%	2%
26	8%	2%
27	6%	2%
28	4%	2%
29	2%	2%
30 & Up	0%	0%

Table A-5
Annual Increase in Salary[1]

Years of Service	General	Safety
<1	6.00%	9.00%
1	5.25%	8.50%
2	4.75%	7.50%
3	4.10%	5.75%
4	3.50%	4.25%
5	3.00%	3.00%
6	2.50%	2.50%
7	2.00%	2.10%
8	1.60%	1.70%
9	1.45%	1.45%
10	1.30%	1.30%
11	1.15%	1.20%
12	1.00%	1.10%
13	0.90%	1.00%
14	0.85%	0.90%
15	0.80%	0.90%
16	0.75%	0.90%
17	0.70%	0.90%
18	0.65%	0.90%
19	0.60%	2.25%
20	0.55%	0.90%
21	0.50%	0.90%
22	0.45%	0.90%
23	0.40%	0.90%
24	0.40%	3.00%
25	0.40%	0.90%
26	0.40%	0.90%
27	0.40%	0.90%
28	0.40%	0.90%
29	0.40%	3.00%
30 or More	0.40%	0.90%

1. The total expected increase in salary includes both merit (shown above) and the general wage increase assumption of 3.25% per annum increase. The total result is compounded rather than additive. For example, the total assumed increase for General members for service less than one year is 9.45%.

Appendix A Probabilities of Separation from Active Service Tables A-6 to A-13

A schedule of the probabilities of termination of employment due to the following causes can be found on the following pages:

Service Retirement:	Member retires after meeting age and service requirements for reasons other than disability.
Withdrawal:	Member terminates and elects a refund of member contributions, or a deferred vested retirement benefit.
Service Disability:	Member receives disability retirement; disability is service related.
Ordinary Disability:	Member receives disability retirement; disability is not service related.
Service Death:	Member dies before retirement; death is service related.
Ordinary Death:	Member dies before retirement; death is not service related.

Each of these represents the probability that a member will separate from service at each age due to the particular cause. For example, a probability of 0.0300 for a member's service retirement at age 50 means we assume that 30 out of 1,000 members who are age 50 will retire at that age.

Each table represents the detailed probabilities needed for each LACERA plan by gender:

Table	A-6: General Plan A, B & C – Males	A-10: General Plan E – Males
	A-7: General Plan A, B & C – Females	A-11: General Plan E – Females
	A-8: General Plan D & G – Males	A-12: Safety Plan A, B & C – Males
	A-9: General Plan D & G – Females	A-13: Safety Plan A, B & C – Females

Table A-6
Probability of Separation from Active Service for General Members
Plans A, B & C – Male

Age	Service Retirement	Other Terminations	Service Disability	Ordinary Disability	Service Death	Ordinary Death
18	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
19	0.00000	0.00500	0.00010	0.00010	N/A	0.00046
20	0.00000	0.00500	0.00010	0.00010	N/A	0.00044
21	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
22	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
23	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
24	0.00000	0.00500	0.00010	0.00010	N/A	0.00035
25	0.00000	0.00500	0.00010	0.00010	N/A	0.00034
26	0.00000	0.00500	0.00010	0.00010	N/A	0.00036
27	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
28	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
29	0.00000	0.00500	0.00010	0.00010	N/A	0.00041
30	0.00000	0.00500	0.00010	0.00020	N/A	0.00043
31	0.00000	0.00500	0.00010	0.00020	N/A	0.00046
32	0.00000	0.00500	0.00010	0.00020	N/A	0.00048
33	0.00000	0.00500	0.00016	0.00020	N/A	0.00050
34	0.00000	0.00500	0.00022	0.00020	N/A	0.00053
35	0.00000	0.00500	0.00028	0.00020	N/A	0.00056
36	0.00000	0.00500	0.00034	0.00020	N/A	0.00060
37	0.00000	0.00500	0.00040	0.00020	N/A	0.00064
38	0.00000	0.00500	0.00048	0.00020	N/A	0.00068
39	0.00000	0.00500	0.00056	0.00020	N/A	0.00073
40	0.03000	0.00500	0.00064	0.00020	N/A	0.00079
41	0.03000	0.00500	0.00072	0.00020	N/A	0.00085
42	0.03000	0.00500	0.00080	0.00020	N/A	0.00092
43	0.03000	0.00500	0.00084	0.00024	N/A	0.00100
44	0.03000	0.00500	0.00088	0.00028	N/A	0.00108
45	0.03000	0.00500	0.00092	0.00032	N/A	0.00118
46	0.03000	0.00500	0.00096	0.00036	N/A	0.00128
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00139
48	0.03000	0.00500	0.00104	0.00044	N/A	0.00152
49	0.03000	0.00500	0.00108	0.00048	N/A	0.00166
50	0.03000	0.00500	0.00112	0.00052	N/A	0.00179
51	0.03000	0.00500	0.00116	0.00056	N/A	0.00194
52	0.03000	0.00500	0.00120	0.00060	N/A	0.00210
53	0.03000	0.00500	0.00156	0.00064	N/A	0.00227
54	0.06000	0.00500	0.00192	0.00068	N/A	0.00244
55	0.10000	0.00500	0.00228	0.00072	N/A	0.00263
56	0.12000	0.00500	0.00264	0.00076	N/A	0.00283
57	0.17000	0.00500	0.00300	0.00080	N/A	0.00306
58	0.26000	0.00500	0.00330	0.00084	N/A	0.00330
59	0.26000	0.00500	0.00360	0.00088	N/A	0.00355
60	0.30000	0.00500	0.00390	0.00092	N/A	0.00383
61	0.30000	0.00500	0.00420	0.00096	N/A	0.00413
62	0.30000	0.00500	0.00450	0.00100	N/A	0.00445
63	0.30000	0.00500	0.00450	0.00104	N/A	0.00481
64	0.30000	0.00500	0.00450	0.00108	N/A	0.00520
65	0.30000	0.00500	0.00450	0.00112	N/A	0.00562
66	0.22000	0.00500	0.00450	0.00116	N/A	0.00607
67	0.22000	0.00500	0.00450	0.00120	N/A	0.00658
68	0.22000	0.00500	0.00450	0.00124	N/A	0.00713
69	0.22000	0.00500	0.00450	0.00128	N/A	0.00775
70	0.22000	0.00500	0.00450	0.00132	N/A	0.00844
71	0.22000	0.00500	0.00450	0.00136	N/A	0.00920
72	0.22000	0.00500	0.00450	0.00140	N/A	0.01004
73	0.22000	0.00500	0.00450	0.00144	N/A	0.01098
74	0.22000	0.00500	0.00450	0.00148	N/A	0.01201
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01315

Table A-7
Probability of Separation from Active Service for General Members
Plans A, B & C – Female

Age	Service Retirement	Other Terminations	Service Disability	Ordinary Disability	Service Death	Ordinary Death
18	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
19	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
20	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
21	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
22	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
23	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
24	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
25	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
26	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
27	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
28	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
29	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
30	0.00000	0.00500	0.00015	0.00010	N/A	0.00020
31	0.00000	0.00500	0.00015	0.00010	N/A	0.00021
32	0.00000	0.00500	0.00015	0.00010	N/A	0.00023
33	0.00000	0.00500	0.00020	0.00010	N/A	0.00025
34	0.00000	0.00500	0.00025	0.00010	N/A	0.00027
35	0.00000	0.00500	0.00030	0.00010	N/A	0.00030
36	0.00000	0.00500	0.00035	0.00010	N/A	0.00033
37	0.00000	0.00500	0.00040	0.00010	N/A	0.00036
38	0.00000	0.00500	0.00042	0.00014	N/A	0.00039
39	0.00000	0.00500	0.00044	0.00018	N/A	0.00043
40	0.03000	0.00500	0.00046	0.00022	N/A	0.00047
41	0.03000	0.00500	0.00048	0.00026	N/A	0.00052
42	0.03000	0.00500	0.00050	0.00030	N/A	0.00056
43	0.03000	0.00500	0.00060	0.00032	N/A	0.00061
44	0.03000	0.00500	0.00070	0.00034	N/A	0.00066
45	0.03000	0.00500	0.00080	0.00036	N/A	0.00073
46	0.03000	0.00500	0.00090	0.00038	N/A	0.00079
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00086
48	0.03000	0.00500	0.00110	0.00042	N/A	0.00092
49	0.03000	0.00500	0.00120	0.00044	N/A	0.00100
50	0.03000	0.00500	0.00130	0.00046	N/A	0.00108
51	0.03000	0.00500	0.00140	0.00048	N/A	0.00117
52	0.03000	0.00500	0.00150	0.00050	N/A	0.00126
53	0.03000	0.00500	0.00156	0.00052	N/A	0.00137
54	0.06000	0.00500	0.00162	0.00054	N/A	0.00147
55	0.10000	0.00500	0.00168	0.00056	N/A	0.00160
56	0.12000	0.00500	0.00174	0.00058	N/A	0.00173
57	0.17000	0.00500	0.00180	0.00060	N/A	0.00187
58	0.26000	0.00500	0.00194	0.00064	N/A	0.00203
59	0.26000	0.00500	0.00208	0.00068	N/A	0.00221
60	0.30000	0.00500	0.00222	0.00072	N/A	0.00242
61	0.30000	0.00500	0.00236	0.00076	N/A	0.00264
62	0.30000	0.00500	0.00250	0.00080	N/A	0.00289
63	0.30000	0.00500	0.00250	0.00084	N/A	0.00317
64	0.30000	0.00500	0.00250	0.00088	N/A	0.00350
65	0.30000	0.00500	0.00250	0.00092	N/A	0.00385
66	0.22000	0.00500	0.00250	0.00096	N/A	0.00425
67	0.22000	0.00500	0.00250	0.00100	N/A	0.00471
68	0.22000	0.00500	0.00250	0.00104	N/A	0.00520
69	0.22000	0.00500	0.00250	0.00108	N/A	0.00575
70	0.22000	0.00500	0.00250	0.00112	N/A	0.00636
71	0.22000	0.00500	0.00250	0.00116	N/A	0.00703
72	0.22000	0.00500	0.00250	0.00120	N/A	0.00777
73	0.22000	0.00500	0.00250	0.00124	N/A	0.00859
74	0.22000	0.00500	0.00250	0.00128	N/A	0.00950
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01050

Table A-8
Probability of Separation from Active Service for General Members
Plans D & G – Male

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plan D	Plan G							
18	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	0	0.08000	80%
19	0.00000	0.00000	0.00010	0.00010	N/A	0.00046	1	0.06500	80%
20	0.00000	0.00000	0.00010	0.00010	N/A	0.00044	2	0.05000	80%
21	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	3	0.04250	80%
22	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	4	0.03500	80%
23	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	5	0.03100	80%
24	0.00000	0.00000	0.00010	0.00010	N/A	0.00035	6	0.02900	80%
25	0.00000	0.00000	0.00010	0.00010	N/A	0.00034	7	0.02700	80%
26	0.00000	0.00000	0.00010	0.00010	N/A	0.00036	8	0.02500	80%
27	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	9	0.02000	80%
28	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	10	0.01700	80%
29	0.00000	0.00000	0.00010	0.00010	N/A	0.00041	11	0.01500	80%
30	0.00000	0.00000	0.00010	0.00020	N/A	0.00043	12	0.01350	80%
31	0.00000	0.00000	0.00010	0.00020	N/A	0.00046	13	0.01200	80%
32	0.00000	0.00000	0.00010	0.00020	N/A	0.00048	14	0.01100	80%
33	0.00000	0.00000	0.00016	0.00020	N/A	0.00050	15	0.01000	80%
34	0.00000	0.00000	0.00022	0.00020	N/A	0.00053	16	0.00950	80%
35	0.00000	0.00000	0.00028	0.00020	N/A	0.00056	17	0.00900	80%
36	0.00000	0.00000	0.00034	0.00020	N/A	0.00060	18	0.00850	80%
37	0.00000	0.00000	0.00040	0.00020	N/A	0.00064	19	0.00800	80%
38	0.00000	0.00000	0.00048	0.00020	N/A	0.00068	20	0.00750	90%
39	0.00000	0.00000	0.00056	0.00020	N/A	0.00073	21	0.00700	90%
40	0.01500	0.00000	0.00064	0.00020	N/A	0.00079	22	0.00650	90%
41	0.01500	0.00000	0.00072	0.00020	N/A	0.00085	23	0.00600	90%
42	0.01500	0.00000	0.00080	0.00020	N/A	0.00092	24	0.00550	90%
43	0.01500	0.00000	0.00084	0.00024	N/A	0.00100	25	0.00500	110%
44	0.01500	0.00000	0.00088	0.00028	N/A	0.00108	26	0.00450	110%
45	0.01500	0.00000	0.00092	0.00032	N/A	0.00118	27	0.00400	110%
46	0.01500	0.00000	0.00096	0.00036	N/A	0.00128	28	0.00400	110%
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00139	29	0.00400	110%
48	0.01500	0.00000	0.00104	0.00044	N/A	0.00152	30 & Above	0.00000	160%
49	0.01500	0.00000	0.00108	0.00048	N/A	0.00166			
50	0.01500	0.01200	0.00112	0.00052	N/A	0.00179			
51	0.01200	0.00960	0.00116	0.00056	N/A	0.00194			
52	0.01200	0.00960	0.00120	0.00060	N/A	0.00210			
53	0.01500	0.01200	0.00156	0.00064	N/A	0.00227			
54	0.02000	0.01600	0.00192	0.00068	N/A	0.00244			
55	0.03000	0.02400	0.00228	0.00072	N/A	0.00263			
56	0.03000	0.02400	0.00264	0.00076	N/A	0.00283			
57	0.03000	0.02400	0.00300	0.00080	N/A	0.00306			
58	0.04000	0.03200	0.00330	0.00084	N/A	0.00330			
59	0.05000	0.04000	0.00360	0.00088	N/A	0.00355			
60	0.07000	0.05600	0.00390	0.00092	N/A	0.00383			
61	0.07000	0.05600	0.00420	0.00096	N/A	0.00413			
62	0.10000	0.10000	0.00450	0.00100	N/A	0.00445			
63	0.12000	0.12000	0.00450	0.00104	N/A	0.00481			
64	0.17000	0.17000	0.00450	0.00108	N/A	0.00520			
65	0.23000	0.18400	0.00450	0.00112	N/A	0.00562			
66	0.19000	0.15200	0.00450	0.00116	N/A	0.00607			
67	0.19000	0.30000	0.00450	0.00120	N/A	0.00658			
68	0.19000	0.19000	0.00450	0.00124	N/A	0.00713			
69	0.19000	0.19000	0.00450	0.00128	N/A	0.00775			
70	0.24000	0.24000	0.00450	0.00132	N/A	0.00844			
71	0.19000	0.19000	0.00450	0.00136	N/A	0.00920			
72	0.19000	0.19000	0.00450	0.00140	N/A	0.01004			
73	0.19000	0.19000	0.00450	0.00144	N/A	0.01098			
74	0.19000	0.19000	0.00450	0.00148	N/A	0.01201			
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01315			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.

2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-9
Probability of Separation from Active Service for General Members
Plans D & G – Female

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plan D	Plan G							
18	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	0	0.08000	80%
19	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	1	0.06500	80%
20	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	2	0.05000	80%
21	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	3	0.04250	80%
22	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	4	0.03500	80%
23	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	5	0.03100	80%
24	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	6	0.02900	80%
25	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	7	0.02700	80%
26	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	8	0.02500	80%
27	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	9	0.02000	80%
28	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	10	0.01700	80%
29	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	11	0.01500	80%
30	0.00000	0.00000	0.00015	0.00010	N/A	0.00020	12	0.01350	80%
31	0.00000	0.00000	0.00015	0.00010	N/A	0.00021	13	0.01200	80%
32	0.00000	0.00000	0.00015	0.00010	N/A	0.00023	14	0.01100	80%
33	0.00000	0.00000	0.00020	0.00010	N/A	0.00025	15	0.01000	80%
34	0.00000	0.00000	0.00025	0.00010	N/A	0.00027	16	0.00950	80%
35	0.00000	0.00000	0.00030	0.00010	N/A	0.00030	17	0.00900	80%
36	0.00000	0.00000	0.00035	0.00010	N/A	0.00033	18	0.00850	80%
37	0.00000	0.00000	0.00040	0.00010	N/A	0.00036	19	0.00800	80%
38	0.00000	0.00000	0.00042	0.00014	N/A	0.00039	20	0.00750	90%
39	0.00000	0.00000	0.00044	0.00018	N/A	0.00043	21	0.00700	90%
40	0.01500	0.00000	0.00046	0.00022	N/A	0.00047	22	0.00650	90%
41	0.01500	0.00000	0.00048	0.00026	N/A	0.00052	23	0.00600	90%
42	0.01500	0.00000	0.00050	0.00030	N/A	0.00056	24	0.00550	90%
43	0.01500	0.00000	0.00060	0.00032	N/A	0.00061	25	0.00500	110%
44	0.01500	0.00000	0.00070	0.00034	N/A	0.00066	26	0.00450	110%
45	0.01500	0.00000	0.00080	0.00036	N/A	0.00073	27	0.00400	110%
46	0.01500	0.00000	0.00090	0.00038	N/A	0.00079	28	0.00400	110%
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00086	29	0.00400	110%
48	0.01500	0.00000	0.00110	0.00042	N/A	0.00092	30 & Above	0.00000	160%
49	0.01500	0.00000	0.00120	0.00044	N/A	0.00100			
50	0.01500	0.01200	0.00130	0.00046	N/A	0.00108			
51	0.01200	0.00960	0.00140	0.00048	N/A	0.00117			
52	0.01200	0.00960	0.00150	0.00050	N/A	0.00126			
53	0.01500	0.01200	0.00156	0.00052	N/A	0.00137			
54	0.02000	0.01600	0.00162	0.00054	N/A	0.00147			
55	0.03000	0.02400	0.00168	0.00056	N/A	0.00160			
56	0.03000	0.02400	0.00174	0.00058	N/A	0.00173			
57	0.03000	0.02400	0.00180	0.00060	N/A	0.00187			
58	0.04000	0.03200	0.00194	0.00064	N/A	0.00203			
59	0.05000	0.04000	0.00208	0.00068	N/A	0.00221			
60	0.07000	0.05600	0.00222	0.00072	N/A	0.00242			
61	0.07000	0.05600	0.00236	0.00076	N/A	0.00264			
62	0.10000	0.10000	0.00250	0.00080	N/A	0.00289			
63	0.12000	0.12000	0.00250	0.00084	N/A	0.00317			
64	0.17000	0.17000	0.00250	0.00088	N/A	0.00350			
65	0.23000	0.18400	0.00250	0.00092	N/A	0.00385			
66	0.19000	0.15200	0.00250	0.00096	N/A	0.00425			
67	0.19000	0.30000	0.00250	0.00100	N/A	0.00471			
68	0.19000	0.19000	0.00250	0.00104	N/A	0.00520			
69	0.19000	0.19000	0.00250	0.00108	N/A	0.00575			
70	0.24000	0.24000	0.00250	0.00112	N/A	0.00636			
71	0.19000	0.19000	0.00250	0.00116	N/A	0.00703			
72	0.19000	0.19000	0.00250	0.00120	N/A	0.00777			
73	0.19000	0.19000	0.00250	0.00124	N/A	0.00859			
74	0.19000	0.19000	0.00250	0.00128	N/A	0.00950			
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01050			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-10
Probability of Separation from Active Service for General Members
Plan E – Male

Age	Service Retirement[1]	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
18	0.00000	N/A	N/A	N/A	0.00043	0	0.08000	70%
19	0.00000	N/A	N/A	N/A	0.00046	1	0.06500	70%
20	0.00000	N/A	N/A	N/A	0.00044	2	0.05000	70%
21	0.00000	N/A	N/A	N/A	0.00043	3	0.04250	70%
22	0.00000	N/A	N/A	N/A	0.00040	4	0.03500	70%
23	0.00000	N/A	N/A	N/A	0.00037	5	0.03100	70%
24	0.00000	N/A	N/A	N/A	0.00035	6	0.02700	70%
25	0.00000	N/A	N/A	N/A	0.00034	7	0.02300	70%
26	0.00000	N/A	N/A	N/A	0.00036	8	0.02300	70%
27	0.00000	N/A	N/A	N/A	0.00037	9	0.02300	70%
28	0.00000	N/A	N/A	N/A	0.00040	10	0.02300	70%
29	0.00000	N/A	N/A	N/A	0.00041	11	0.01900	70%
30	0.00000	N/A	N/A	N/A	0.00043	12	0.01800	70%
31	0.00000	N/A	N/A	N/A	0.00046	13	0.01680	70%
32	0.00000	N/A	N/A	N/A	0.00048	14	0.01560	70%
33	0.00000	N/A	N/A	N/A	0.00050	15	0.01440	70%
34	0.00000	N/A	N/A	N/A	0.00053	16	0.01320	70%
35	0.00000	N/A	N/A	N/A	0.00056	17	0.01200	70%
36	0.00000	N/A	N/A	N/A	0.00060	18	0.01160	70%
37	0.00000	N/A	N/A	N/A	0.00064	19	0.01120	70%
38	0.00000	N/A	N/A	N/A	0.00068	20	0.01080	70%
39	0.00000	N/A	N/A	N/A	0.00073	21	0.01040	70%
40	0.00000	N/A	N/A	N/A	0.00079	22	0.01000	70%
41	0.00000	N/A	N/A	N/A	0.00085	23	0.01000	70%
42	0.00000	N/A	N/A	N/A	0.00092	24	0.01000	70%
43	0.00000	N/A	N/A	N/A	0.00100	25	0.01000	100%
44	0.00000	N/A	N/A	N/A	0.00108	26	0.01000	100%
45	0.00000	N/A	N/A	N/A	0.00118	27	0.01000	100%
46	0.00000	N/A	N/A	N/A	0.00128	28	0.01000	100%
47	0.00000	N/A	N/A	N/A	0.00139	29	0.01000	100%
48	0.00000	N/A	N/A	N/A	0.00152	30 & Above	0.01000	130%
49	0.00000	N/A	N/A	N/A	0.00166			
50	0.00000	N/A	N/A	N/A	0.00179			
51	0.00000	N/A	N/A	N/A	0.00194			
52	0.00000	N/A	N/A	N/A	0.00210			
53	0.00000	N/A	N/A	N/A	0.00227			
54	0.00000	N/A	N/A	N/A	0.00244			
55	0.02000	N/A	N/A	N/A	0.00263			
56	0.02000	N/A	N/A	N/A	0.00283			
57	0.02500	N/A	N/A	N/A	0.00306			
58	0.02500	N/A	N/A	N/A	0.00330			
59	0.03000	N/A	N/A	N/A	0.00355			
60	0.04000	N/A	N/A	N/A	0.00383			
61	0.06000	N/A	N/A	N/A	0.00413			
62	0.09000	N/A	N/A	N/A	0.00445			
63	0.09000	N/A	N/A	N/A	0.00481			
64	0.19000	N/A	N/A	N/A	0.00520			
65	0.27000	N/A	N/A	N/A	0.00562			
66	0.20000	N/A	N/A	N/A	0.00607			
67	0.20000	N/A	N/A	N/A	0.00658			
68	0.20000	N/A	N/A	N/A	0.00713			
69	0.20000	N/A	N/A	N/A	0.00775			
70	0.20000	N/A	N/A	N/A	0.00844			
71	0.20000	N/A	N/A	N/A	0.00920			
72	0.20000	N/A	N/A	N/A	0.01004			
73	0.20000	N/A	N/A	N/A	0.01098			
74	0.20000	N/A	N/A	N/A	0.01201			
75	1.00000	N/A	N/A	N/A	0.01315			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-11
Probability of Separation from Active Service for General Members
Plan E – Female

Age	Service Retirement[1]	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
18	0.00000	N/A	N/A	N/A	0.00017	0	0.08000	70%
19	0.00000	N/A	N/A	N/A	0.00017	1	0.06500	70%
20	0.00000	N/A	N/A	N/A	0.00017	2	0.05000	70%
21	0.00000	N/A	N/A	N/A	0.00016	3	0.04250	70%
22	0.00000	N/A	N/A	N/A	0.00014	4	0.03500	70%
23	0.00000	N/A	N/A	N/A	0.00013	5	0.03100	70%
24	0.00000	N/A	N/A	N/A	0.00012	6	0.02700	70%
25	0.00000	N/A	N/A	N/A	0.00012	7	0.02300	70%
26	0.00000	N/A	N/A	N/A	0.00013	8	0.02300	70%
27	0.00000	N/A	N/A	N/A	0.00014	9	0.02300	70%
28	0.00000	N/A	N/A	N/A	0.00016	10	0.02300	70%
29	0.00000	N/A	N/A	N/A	0.00017	11	0.01900	70%
30	0.00000	N/A	N/A	N/A	0.00020	12	0.01800	70%
31	0.00000	N/A	N/A	N/A	0.00021	13	0.01680	70%
32	0.00000	N/A	N/A	N/A	0.00023	14	0.01560	70%
33	0.00000	N/A	N/A	N/A	0.00025	15	0.01440	70%
34	0.00000	N/A	N/A	N/A	0.00027	16	0.01320	70%
35	0.00000	N/A	N/A	N/A	0.00030	17	0.01200	70%
36	0.00000	N/A	N/A	N/A	0.00033	18	0.01160	70%
37	0.00000	N/A	N/A	N/A	0.00036	19	0.01120	70%
38	0.00000	N/A	N/A	N/A	0.00039	20	0.01080	70%
39	0.00000	N/A	N/A	N/A	0.00043	21	0.01040	70%
40	0.00000	N/A	N/A	N/A	0.00047	22	0.01000	70%
41	0.00000	N/A	N/A	N/A	0.00052	23	0.01000	70%
42	0.00000	N/A	N/A	N/A	0.00056	24	0.01000	70%
43	0.00000	N/A	N/A	N/A	0.00061	25	0.01000	100%
44	0.00000	N/A	N/A	N/A	0.00066	26	0.01000	100%
45	0.00000	N/A	N/A	N/A	0.00073	27	0.01000	100%
46	0.00000	N/A	N/A	N/A	0.00079	28	0.01000	100%
47	0.00000	N/A	N/A	N/A	0.00086	29	0.01000	100%
48	0.00000	N/A	N/A	N/A	0.00092	30 & Above	0.01000	130%
49	0.00000	N/A	N/A	N/A	0.00100			
50	0.00000	N/A	N/A	N/A	0.00108			
51	0.00000	N/A	N/A	N/A	0.00117			
52	0.00000	N/A	N/A	N/A	0.00126			
53	0.00000	N/A	N/A	N/A	0.00137			
54	0.00000	N/A	N/A	N/A	0.00147			
55	0.02000	N/A	N/A	N/A	0.00160			
56	0.02000	N/A	N/A	N/A	0.00173			
57	0.02500	N/A	N/A	N/A	0.00187			
58	0.02500	N/A	N/A	N/A	0.00203			
59	0.03000	N/A	N/A	N/A	0.00221			
60	0.04000	N/A	N/A	N/A	0.00242			
61	0.06000	N/A	N/A	N/A	0.00264			
62	0.09000	N/A	N/A	N/A	0.00289			
63	0.09000	N/A	N/A	N/A	0.00317			
64	0.19000	N/A	N/A	N/A	0.00350			
65	0.27000	N/A	N/A	N/A	0.00385			
66	0.20000	N/A	N/A	N/A	0.00425			
67	0.20000	N/A	N/A	N/A	0.00471			
68	0.20000	N/A	N/A	N/A	0.00520			
69	0.20000	N/A	N/A	N/A	0.00575			
70	0.20000	N/A	N/A	N/A	0.00636			
71	0.20000	N/A	N/A	N/A	0.00703			
72	0.20000	N/A	N/A	N/A	0.00777			
73	0.20000	N/A	N/A	N/A	0.00859			
74	0.20000	N/A	N/A	N/A	0.00950			
75	1.00000	N/A	N/A	N/A	0.01050			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-12
Probability of Separation from Active Service for Safety Members
Plans A, B & C – Male

Age	Service Retirement[1] Plans A & B	Service Retirement[1] Plan C	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
18	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	0	0.05000	30%
19	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	1	0.03750	30%
20	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	2	0.02000	30%
21	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	3	0.01500	30%
22	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	4	0.01200	30%
23	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	5	0.01130	30%
24	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	6	0.01070	30%
25	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	7	0.01000	30%
26	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	8	0.00920	30%
27	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	9	0.00840	30%
28	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	10	0.00760	30%
29	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	11	0.00680	30%
30	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	12	0.00600	30%
31	0.00000	0.00000	0.00200	0.00000	0.00010	0.00042	13	0.00560	30%
32	0.00000	0.00000	0.00200	0.00000	0.00010	0.00043	14	0.00520	30%
33	0.00000	0.00000	0.00210	0.00000	0.00010	0.00044	15	0.00480	40%
34	0.00000	0.00000	0.00220	0.00000	0.00010	0.00045	16	0.00440	40%
35	0.00000	0.00000	0.00230	0.00000	0.00010	0.00047	17	0.00400	40%
36	0.00000	0.00000	0.00240	0.00000	0.00010	0.00049	18	0.00360	40%
37	0.00000	0.00000	0.00250	0.00000	0.00010	0.00050	19	0.00320	40%
38	0.00000	0.00000	0.00260	0.00000	0.00010	0.00053	20	0.00280	70%
39	0.00000	0.00000	0.00270	0.00000	0.00010	0.00056	21	0.00240	70%
40	0.00750	0.00000	0.00280	0.00000	0.00010	0.00059	22	0.00200	70%
41	0.00750	0.00000	0.00290	0.00000	0.00010	0.00062	23	0.00200	70%
42	0.00750	0.00000	0.00300	0.00000	0.00010	0.00067	24	0.00200	70%
43	0.00750	0.00000	0.00310	0.00000	0.00010	0.00071	25	0.00200	110%
44	0.00750	0.00000	0.00320	0.00000	0.00010	0.00076	26	0.00200	110%
45	0.00750	0.00000	0.00330	0.00000	0.00010	0.00082	27	0.00200	110%
46	0.00750	0.00000	0.00340	0.00000	0.00010	0.00088	28	0.00200	110%
47	0.00750	0.00000	0.00350	0.00000	0.00010	0.00095	29	0.00200	110%
48	0.00750	0.00000	0.00400	0.00000	0.00010	0.00102	30 & Above	0.00000	170%
49	0.00750	0.00000	0.00500	0.00000	0.00010	0.00111			
50	0.02000	0.02000	0.00750	0.00000	0.00010	0.00120			
51	0.02000	0.02000	0.00750	0.00000	0.00010	0.00129			
52	0.02000	0.02000	0.00750	0.00000	0.00010	0.00140			
53	0.03000	0.03000	0.02000	0.00000	0.00010	0.00151			
54	0.12000	0.08000	0.02000	0.00000	0.00010	0.00162			
55	0.22000	0.15000	0.07500	0.00000	0.00010	0.00175			
56	0.18000	0.15000	0.07500	0.00000	0.00010	0.00190			
57	0.14000	0.23000	0.10000	0.00000	0.00010	0.00205			
58	0.15000	0.15000	0.10000	0.00000	0.00010	0.00223			
59	0.22000	0.22000	0.10000	0.00000	0.00010	0.00243			
60	0.21000	0.21000	0.10000	0.00000	0.00010	0.00264			
61	0.20000	0.20000	0.05000	0.00000	0.00010	0.00288			
62	0.20000	0.20000	0.05000	0.00000	0.00010	0.00315			
63	0.20000	0.20000	0.05000	0.00000	0.00010	0.00344			
64	0.23000	0.23000	0.05000	0.00000	0.00010	0.00375			
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00410			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Table A-13
Probability of Separation from Active Service for Safety Members
Plans A, B & C – Female

Age	Service Retirement[1]		Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations	Retirement Rate Loading[2]
	Plans A & B	Plan C							
18	0.00000	0.00000	0.00300	0.00000	0.00010	0.00014	0	0.05000	30%
19	0.00000	0.00000	0.00300	0.00000	0.00010	0.00015	1	0.03750	30%
20	0.00000	0.00000	0.00300	0.00000	0.00010	0.00016	2	0.02000	30%
21	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	3	0.01500	30%
22	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	4	0.01200	30%
23	0.00000	0.00000	0.00300	0.00000	0.00010	0.00018	5	0.01130	30%
24	0.00000	0.00000	0.00300	0.00000	0.00010	0.00019	6	0.01070	30%
25	0.00000	0.00000	0.00300	0.00000	0.00010	0.00020	7	0.01000	30%
26	0.00000	0.00000	0.00300	0.00000	0.00010	0.00021	8	0.00920	30%
27	0.00000	0.00000	0.00300	0.00000	0.00010	0.00022	9	0.00840	30%
28	0.00000	0.00000	0.00340	0.00000	0.00010	0.00024	10	0.00760	30%
29	0.00000	0.00000	0.00380	0.00000	0.00010	0.00025	11	0.00680	30%
30	0.00000	0.00000	0.00420	0.00000	0.00010	0.00027	12	0.00600	30%
31	0.00000	0.00000	0.00460	0.00000	0.00010	0.00028	13	0.00560	30%
32	0.00000	0.00000	0.00500	0.00000	0.00010	0.00030	14	0.00520	30%
33	0.00000	0.00000	0.00560	0.00000	0.00010	0.00032	15	0.00480	40%
34	0.00000	0.00000	0.00620	0.00000	0.00010	0.00034	16	0.00440	40%
35	0.00000	0.00000	0.00680	0.00000	0.00010	0.00036	17	0.00400	40%
36	0.00000	0.00000	0.00740	0.00000	0.00010	0.00038	18	0.00360	40%
37	0.00000	0.00000	0.00800	0.00000	0.00010	0.00041	19	0.00320	40%
38	0.00000	0.00000	0.00840	0.00000	0.00010	0.00043	20	0.00280	70%
39	0.00000	0.00000	0.00880	0.00000	0.00010	0.00046	21	0.00240	70%
40	0.00750	0.00000	0.00920	0.00000	0.00010	0.00049	22	0.00200	70%
41	0.00750	0.00000	0.00960	0.00000	0.00010	0.00052	23	0.00200	70%
42	0.00750	0.00000	0.01000	0.00000	0.00010	0.00056	24	0.00200	70%
43	0.00750	0.00000	0.01040	0.00000	0.00010	0.00059	25	0.00200	110%
44	0.00750	0.00000	0.01080	0.00000	0.00010	0.00063	26	0.00200	110%
45	0.00750	0.00000	0.01120	0.00000	0.00010	0.00067	27	0.00200	110%
46	0.00750	0.00000	0.01160	0.00000	0.00010	0.00071	28	0.00200	110%
47	0.00750	0.00000	0.01200	0.00000	0.00010	0.00076	29	0.00200	110%
48	0.00750	0.00000	0.01300	0.00000	0.00010	0.00080	30 & Above	0.00000	170%
49	0.00750	0.00000	0.01500	0.00000	0.00010	0.00085			
50	0.02000	0.02000	0.01800	0.00000	0.00010	0.00091			
51	0.02000	0.02000	0.02000	0.00000	0.00010	0.00097			
52	0.02000	0.02000	0.02400	0.00000	0.00010	0.00103			
53	0.03000	0.03000	0.02800	0.00000	0.00010	0.00109			
54	0.12000	0.08000	0.03200	0.00000	0.00010	0.00116			
55	0.22000	0.15000	0.11000	0.00000	0.00010	0.00123			
56	0.18000	0.15000	0.06000	0.00000	0.00010	0.00131			
57	0.14000	0.23000	0.06000	0.00000	0.00010	0.00140			
58	0.15000	0.15000	0.06000	0.00000	0.00010	0.00148			
59	0.22000	0.22000	0.06000	0.00000	0.00010	0.00158			
60	0.21000	0.21000	0.06000	0.00000	0.00010	0.00168			
61	0.20000	0.20000	0.06000	0.00000	0.00010	0.00178			
62	0.20000	0.20000	0.06000	0.00000	0.00010	0.00190			
63	0.20000	0.20000	0.06000	0.00000	0.00010	0.00202			
64	0.23000	0.23000	0.06000	0.00000	0.00010	0.00215			
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00228			

1. Service retirement rates vary by years of service. The applicable retirement rate loading that varies by years of service is shown on this page in a separate column.
2. The retirement rate loading is applied to the service retirement rate at each member's applicable age and years of service.

Attachment III

Cavanaugh Macdonald's Actuarial Review of the 2022 Valuation Report

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

LOS ANGELES COUNTY
EMPLOYEES RETIREMENT ASSOCIATION

ACTUARIAL REVIEW REPORT FOR THE JUNE 30, 2022 ACTUARIAL VALUATION OF RETIREMENT BENEFITS

Prepared by Cavanaugh Macdonald Consulting
February 17, 2023

www.CavMacConsulting.com

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

February 17, 2023

Mr. Richard Bendall
Chief, Internal Audit
Los Angeles County Employees Retirement Association
300 North Lake Avenue, Suite 820
Pasadena, CA 91101

Dear Mr. Bendall:

Cavanaugh Macdonald Consulting, LLC (CMC) has performed an independent review of the June 30, 2022 actuarial valuation of retirement benefits for the Los Angeles County Employees Retirement Association (LACERA). As an independent reviewing, or auditing actuary, we have been asked to express an opinion regarding the reasonableness and accuracy of the valuation results, including a review of sample lives as well as a full independent replication of the key valuation results.

Our opinion on the valuation results is based on an independent replication of the June 30, 2022 actuarial valuation of LACERA and a review of detailed sample lives. We previously reviewed the 2022 Experience Study, prepared by Milliman. Our report, dated January 6, 2023, includes our opinion that the actuarial assumptions and methods recommended in the study were reasonable for purposes of performing the actuarial funding valuation. With respect to this review report, we would like to thank Milliman, LACERA's retained actuary, for their cooperation and assistance in providing the required information to us in a timely fashion. **We find the June 30, 2022 actuarial valuation results to be reasonable and accurate, based on the assumptions and methods used. The valuation was performed by qualified actuaries and was performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.** This report documents the detailed results of our review.

Additional Information and Disclosures

This report has been prepared for LACERA and its stakeholders by CMC and is intended to assist LACERA as it validates the reasonability of the liabilities, costs, and other calculations for retirement benefits, determined as of June 30, 2022. Additionally, the findings, conclusions, and recommendations presented in this report are specific to LACERA, LACERA's retirement benefits, and the work produced by Milliman. CMC may produce different findings or arrive at different conclusions in other situations or even in cases involving other similar retirement benefit plans. As such, it is important to keep in mind that the use of this information for purposes other than those expressed here may not be appropriate.

In preparing this review, we have relied on the following information provided by LACERA and/or Milliman:

- Milliman's valuation report titled, *Los Angeles County Employees Retirement Association June 30, 2022 Actuarial Valuation of Retirement Benefits* (2022 LACERA Actuarial Valuation);
- Raw retirement plan actuarial valuation census data as of June 30, 2022, provided by Milliman on LACERA's behalf;
- Milliman's processed retirement plan actuarial valuation census data as of June 30, 2022;
- Detailed sample lives prepared by Milliman; and
- Complete tables of actuarial assumptions used in the valuation, provided by Milliman.

We also considered our previous actuarial review report dated March 2, 2020 titled, *Los Angeles County Employees Retirement Association Actuarial Review of the June 30, 2019 Actuarial Valuation of Retirement Benefits*.

While we cannot verify the accuracy of all of this information, the supplied information was reviewed for reasonableness and consistency, and we have no reason to doubt the substantial accuracy or completeness of the information. We believe that it is sufficiently reliable for the purpose of conducting this review. The results and conclusions contained in this report depend on the integrity of this information, and if any of the supplied information or analyses change, our results and conclusions may be different, and this report may need to be revised.

The undersigned are familiar with the funding aspects of public retirement plan valuations and meet the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained in this report. In order to prepare the results in this report, we have utilized appropriate actuarial models that were developed for this purpose. These models use assumptions about future contingent events along with recognized actuarial approaches to develop the needed results. All sections of this report, including any appendices and attachments, are considered an integral part of the actuarial opinions.

CMC does not provide legal, investment, or accounting advice. Thus, the information in this report is not intended to supersede or supplant the advice and interpretations of LACERA or its external consultants.

Sincerely,

Patrice Beckham

Patrice Beckham, FSA, EA, MAAA, FCA
Principal and Consulting Actuary

Brent A. Banister

Brent A. Banister, Ph.D., FSA, EA, MAAA, FCA
Chief Actuary

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1. EXECUTIVE SUMMARY

As an independent reviewing actuary, Cavanaugh Macdonald Consulting, LLC (CMC) has been tasked to provide a general overview and express an opinion of the reasonableness and soundness of the actuarial work performed by the retained actuary, Milliman, for the Los Angeles County Employees Retirement Association (LACERA). The specific work product to be reviewed was the June 30, 2022 Actuarial Valuation of Retirement Benefits. The specific items included in the actuarial review were:

(1) Evaluation of the census data used in the performance of the valuation, including the degree to which the data is sufficient and appropriate for the purpose of an actuarial valuation, as well as the appropriateness of any assumptions used in creating the member data file;
(2) Independent parallel valuation as of June 30, 2022 using the actuarial assumptions, methodologies and funding methods used by the retained actuary in their performance of the June 30, 2022 actuarial valuation;
(3) Comparison of our parallel valuation results to the major valuation results in the June 30, 2022 valuation report prepared by Milliman and a reconciliation of any material discrepancies in the findings, assumptions, methodologies, or other calculations found in the retained actuary's work.
(4) A detailed review of selected sample lives to potentially detect issues that a comparison of total results might miss.
(5) Review of the June 30, 2022 actuarial valuation report for compliance with Actuarial Standards of Practice as well as for completeness, clarity, and calculation accuracy.

Our findings are based on actuarial reports, member census data, and supplemental information provided by both LACERA and Milliman.

We believe it is important to understand that this review process is an independent, yet collaborative effort. We strive to replicate the calculations as independently as possible. Our goal, however, is not to see if we can find errors so much as it is to make sure that Milliman's presentation to LACERA is as accurate and useful as possible. In carrying this out, we provide suggestions, comments, and occasional corrections to Milliman that they often reflect in their report.

In the following discussion, we have summarized the key points from the full report.

Data Analysis

Underlying the results of any actuarial valuation is the census or membership data, including demographic details of each member entitled to a benefit payment in the future. If the data are not accurate, then results drawn from the data may not be accurate, either. We confirmed that the census data provided to the retained actuary by LACERA contains the necessary elements to perform an actuarial valuation, although we did not audit the data itself. The second part of this step was to ensure that Milliman used the data appropriately.

We requested the original member census data provided to Millman for the 2022 valuation by LACERA. We also requested member data, as reconciled for the 2022 valuation by Milliman,

along with complete descriptions of assumptions, methods and valuation procedures. Our comparison of the census data used by Milliman for the June 30, 2022 actuarial valuation with the original data produced by LACERA indicated that Milliman's data is substantially consistent with the LACERA data. **We find that the data is consistent, complete, and appropriate for the purpose for which it is being used.**

Parallel Valuation Results

The key findings and recommendations resulting from our review of Milliman's June 30, 2022 actuarial valuation are discussed below. We matched well in aggregate and reasonably well on the various component pieces. It is important to understand that we do not expect to match Milliman's results exactly because we are using independent approaches to valuing the liabilities.

There are three key metrics in the actuarial valuation:

- Present Value of Benefits (PVB),
- Actuarial Accrued Liability (AAL),
- Normal Cost (NC).

The PVB is a measure of all benefits expected to be ultimately paid for all current members of the Plan in the future. The AAL reflects the portion of the PVB attributable to service already performed as of the valuation date. The Normal Cost is the portion of the PVB allocated to the current plan year. Of the three measures, we expect to match the PVB the closest, typically within 1% to 3%, while the AAL is often not quite as close, and the Normal Cost often reflects the greatest difference, with variance of 3% to 6% at times. This wider range is a consequence of the actuarial mathematics involved in which small variants in approach have a larger impact on the results.

In Section 3 of this report, the detailed results of our independent parallel valuation of the LACERA liabilities are compared with the June 30, 2022 valuation results prepared by Milliman. We were able to match all key measurements within a reasonable range. **We find the calculation results in the June 30, 2022 valuation to be reasonable and appropriate for their intended purposes.**

Overall, our parallel valuation results were very close to Milliman's, particularly for the present value of future benefits which is the most important metric from a funding perspective. The following exhibit illustrates the ratio of Cavanaugh Macdonald's results to Milliman's for all three of the key valuation metrics. A ratio near 100% indicates a very close match. For some of the older plans, there are relatively few active members and differences in approach can have a larger impact on the overall numbers so the ratios may be further from 100% for those groups, particularly for the normal cost.

Plan	Ratio of CMC Results to Milliman's		
	Present Value of Benefits	Actuarial Accrued Liability	Normal Cost
General – A	100%	100%	97%
General – B	100%	100%	97%
General – C	100%	100%	100%
General – D	99%	99%	99%
General – E	100%	100%	102%
General – G	98%	97%	97%
Safety – A	100%	100%	N/A
Safety – B	99%	99%	98%
Safety – C	98%	95%	97%
All Plans	99%	99%	99%

Based on our experience performing actuarial reviews and our professional judgment, Cavanaugh Macdonald believes all of the variances shown in the table above are within an acceptable range and the results confirm the reliability of the June 30, 2022 valuation results prepared by Milliman. While we matched closely in our replication work three years ago, additional effort and resources were expended this time to review certain aspects of the valuation in greater depth and to improve our confidence in our replication work. This additional effort, independent of questions asked of Milliman, resulted in an improvement of the match on some of the ancillary benefits.

As indicated in our *Actuarial Review of the 2022 Experience Investigation Report*, dated January 6, 2023, we found the actuarial assumptions and methods recommended by Milliman to be reasonable and in accordance with applicable Actuarial Standards of Practice. The assumptions used in this valuation, including a 7.0% investment return assumption, are those that were approved by LACERA's Board of Investments at their December 2022 meeting. We verified that the newly adopted set of actuarial assumptions was used to produce the June 30, 2022 valuation results.

Because of the change to the actuarial assumptions, the employee contribution rates for non-PEPRA Plans, including both Normal Member Contribution Rates and Normal Plus Cost-of-Living Member Contribution Rates, were re-determined in the June 30, 2022 valuation report. Based on the methodology described in the report, we verified that the contribution rates shown are reasonable.

As part of this review, Cavanaugh Macdonald also reviewed our prior actuarial review report, prepared three years ago, including specific recommendations that were made for future valuations. As would be expected in an on-going review process as currently exists for LACERA, the list of recommendations usually becomes shorter because recommendations are implemented, or they are discussed and determined not to be useful.

Review of Selected Individuals

As part of our review, we examined results for 26 individual members, including actives, deferred vested, and in-pay members. By focusing on a limited number of individuals who we selected based on specific criteria, it is often possible to detect differences that are not apparent in the overall replication results. In this case, however, we found that the liability measures reported by Milliman for each of the individual sample lives were consistent with our calculations, further confirming our findings that the valuation results are accurate and reliable.

Review of Valuation Report

As part of our review of the valuation report, we verified the key calculations shown in the exhibits. We also verified the reasonableness of the member contribution rates that are provided in the report. We did not observe any significant issues.

We reviewed the June 30, 2022 Actuarial Valuation Report produced by Milliman in detail. We confirmed that the report contains the basic model disclosures recommended by the California Actuarial Advisory Panel (CAAP). We also reviewed the valuation report for compliance with Actuarial Standards of Practice, including *ASOP 56, Modeling*, a new standard with an effective date since the last review of the 2019 valuation report. **We found the valuation report to be well written, comprehensive in content, and in compliance with the ASOPs.** We offer a few comments and suggestions for improvement, but all are minor.

Conclusion

It is our belief that an actuarial review should not focus on finding trivial differences between actuarial processes, procedures, philosophies, or styles utilized by two different actuaries, but rather to verify there are no material errors, and to identify potential improvements to the process and procedures utilized by LACERA's retained actuary. Actuarial work draws heavily on professional judgment, so there is a subjective component that must be considered alongside the objective component of matching numerical results. In performing this review, we attempt to limit discussions concerning stylistic preferences and focus more on the significant philosophical approaches, the accuracy of calculations, the completeness and reliability of reporting, and the compliance with generally acceptable actuarial practices and standards of practice in all of the work reviewed.

Because of the complexity of actuarial work, we would not expect to match Milliman's valuation results exactly, nor would we necessarily expect our professional opinions regarding the results to be the same as Milliman's. While we offer some different viewpoints or ideas, we believe that Milliman's work provides an appropriate assessment of the status of retirement benefits for the purpose of determining contribution rates.

***Finding of the Review*: We find the actuarial calculations in the June 30, 2022 actuarial valuation to be reasonable, based on the actuarial assumptions and methods used. The valuation was performed by qualified actuaries and was performed in accordance with the**

principles and practices prescribed by the Actuarial Standards Board. Furthermore, the valuation report complies with applicable Actuarial Standards of Practice and the basic model disclosures recommended by the California Actuarial Advisory Panel.

The remainder of this report provides the basis for our findings for each of the requested tasks, including our recommendations.

2. DATA REVIEW

Milliman supplied CMC with the member data used for the June 30, 2022 actuarial valuation. This included both the raw data prepared by LACERA and the processed data used by Milliman for its actuarial software. We compared the records and are comfortable with the data processing being performed by Milliman.

There is minimal data scrubbing performed by Milliman, so we were generally able to confirm that the processed records used by Milliman were consistent with the data provided by LACERA. We further tested that the manner in which records were selected for inclusion or exclusion in the valuation or assignment of valuation status was appropriate.

We tested the member counts by status and the totals of selected key fields to be sure they were reasonably close. The following tables contain some additional detail summarizing our review. In most cases, the matching is quite close, considering rounding issues. For the General G and Safety C plans, our compensation numbers do not quite match Milliman's, although we do match their input numbers. We have determined that this is due to some adjustments that were made by Milliman for new hires. This has no meaningful impact on the total results since these individuals have virtually no actuarial accrued liability.

We believe that the data provided by LACERA is sufficient for Milliman to reasonably perform its work. We did not audit the data, but simply determined whether Milliman was using the data appropriately and that it was consistent with the raw data provided by LACERA. ***Overall, we are comfortable that the data Milliman uses to perform its valuation is complete and appropriate for the purposes of an actuarial funding valuation, as well as consistent with the data supplied by LACERA.***

ANALYSIS OF ACTIVE DATA

		Number	Annual Salary	Average Age	Average Monthly Salary	Average Service
General Members						
Plan A	LACERA Data	56	$6,620,400	73.3	$9,852	43.0
	Milliman Data	56	$6,620,400	73.3	$9,852	43.0
	% Difference	0.00%	0.00%	0.00%	0.00%	0.00%
Plan B	LACERA Data	15	$1,834,968	69.1	$10,194	37.5
	Milliman Data	15	$1,834,968	69.2	$10,194	37.5
	% Difference	0.00%	0.00%	0.14%	0.00%	0.00%
Plan C	LACERA Data	17	$1,924,044	70.1	$9,432	42.4
	Milliman Data	17	$1,924,044	70.1	$9,431	42.4
	% Difference	0.00%	0.00%	0.00%	-0.01%	0.00%
Plan D	LACERA Data	35,763	$3,569,510,784	51.9	$8,318	20.5
	Milliman Data	35,760	$3,570,269,076	51.9	$8,320	20.5
	% Difference	-0.01%	0.02%	0.00%	0.02%	0.00%
Plan E	LACERA Data	13,987	$1,204,268,664	56.1	$7,175	24.3
	Milliman Data	13,984	$1,203,660,576	56.0	$7,173	24.3
	% Difference	-0.02%	-0.05%	-0.18%	-0.03%	0.00%
Plan G	LACERA Data	33,863	$2,539,242,383	39.6	$6,249	4.6
	Milliman Data	33,857	$2,550,530,520	39.6	$6,278	4.6
	% Difference	-0.02%	0.44%	0.00%	0.46%	0.00%
Total	LACERA Data	83,701	$7,323,401,243	47.6	$7,291	14.7
	Milliman Data	83,689	$7,334,839,584	47.6	$7,304	14.7
	% Difference	-0.01%	0.16%	0.00%	0.18%	0.00%
Safety Members						
Plan A	LACERA Data	1	$178,488	64.7	$14,874	27.3
	Milliman Data	1	$178,488	65.0	$14,874	27.3
	% Difference	0.00%	0.00%	0.46%	0.00%	0.00%
Plan B	LACERA Data	8,093	$1,139,132,412	46.9	$11,730	20.0
	Milliman Data	8,092	$1,139,012,580	46.9	$11,730	20.1
	% Difference	-0.01%	-0.01%	0.00%	0.00%	0.50%
Plan C	LACERA Data	4,757	$485,878,066	32.6	$8,512	4.4
	Milliman Data	4,757	$487,718,088	32.7	$8,544	4.4
	% Difference	0.00%	0.38%	0.31%	0.38%	0.00%
Total	LACERA Data	12,851	$1,625,188,966	41.6	$10,539	14.2
	Milliman Data	12,850	$1,626,909,156	41.6	$10,551	14.3
	% Difference	-0.01%	0.11%	0.00%	0.11%	0.70%
Total	LACERA Data	96,552	$8,948,590,209	46.8	$7,723	14.6
	Milliman Data	96,539	$8,961,748,740	46.8	$7,736	14.7
	% Difference	-0.01%	0.15%	0.00%	0.17%	0.68%

ANALYSIS OF VESTED FORMER MEMBER DATA

		Number	Average Age
General Members			
Plan A	LACERA Data	47	74.9
	Milliman Data	47	74.9
	% Difference	0.00%	0.00%
Plan B	LACERA Data	8	72.9
	Milliman Data	8	72.9
	% Difference	0.00%	0.00%
Plan C	LACERA Data	13	68.3
	Milliman Data	13	68.3
	% Difference	0.00%	0.00%
Plan D	LACERA Data	7,872	50.0
	Milliman Data	7,944	50.1
	% Difference	0.91%	0.20%
Plan E	LACERA Data	3,076	57.3
	Milliman Data	3,001	57.5
	% Difference	-2.44%	0.35%
Plan G	LACERA Data	6,745	38.2
	Milliman Data	6,745	38.2
	% Difference	0.00%	0.00%
Total	LACERA Data	17,761	46.9
	Milliman Data	17,758	46.9
	% Difference	-0.02%	0.00%
Safety Members			
Plan A	LACERA Data	4	69.8
	Milliman Data	4	70.0
	% Difference	0.00%	0.29%
Plan B	LACERA Data	795	45.5
	Milliman Data	798	45.6
	% Difference	0.38%	0.22%
Plan C	LACERA Data	487	32.3
	Milliman Data	487	32.2
	% Difference	0.00%	-0.31%
Total	LACERA Data	1,286	40.6
	Milliman Data	1,289	40.6
	% Difference	0.23%	0.00%
Total	LACERA Data	19,047	46.5
	Milliman Data	19,047	46.5
	% Difference	0.00%	0.00%

Note: Inactive vested counts from the LACERA data are not adjusted for suspended active records.

ANALYSIS OF IN-PAY MEMBER DATA

		Number	Annual Allowances	Average Age	Average Monthly Benefit
General Members					
Plan A	LACERA Data	18,063	$1,126,181,843	81.0	$5,196
	Milliman Data	18,057	$1,126,123,848	81.0	$5,197
	% Difference	-0.03%	-0.01%	0.00%	0.02%
Plan B	LACERA Data	712	$43,623,686	76.0	$5,106
	Milliman Data	711	$43,557,760	76.0	$5,105
	% Difference	-0.14%	-0.15%	0.00%	-0.02%
Plan C	LACERA Data	485	$25,684,941	75.4	$4,413
	Milliman Data	485	$25,684,941	75.4	$4,413
	% Difference	0.00%	0.00%	0.00%	0.00%
Plan D	LACERA Data	21,776	$1,007,149,623	69.2	$3,854
	Milliman Data	21,775	$1,007,385,686	69.1	$3,855
	% Difference	0.00%	0.02%	-0.14%	0.03%
Plan E	LACERA Data	16,379	$509,647,231	72.8	$2,593
	Milliman Data	16,377	$509,616,133	72.8	$2,593
	% Difference	-0.01%	-0.01%	0.00%	0.00%
Plan G	LACERA Data	201	$3,150,756	64.6	$1,306
	Milliman Data	201	$3,165,769	64.7	$1,313
	% Difference	0.00%	0.48%	0.15%	0.54%
Total	LACERA Data	57,616	$2,715,438,080	74.0	$3,927
	Milliman Data	57,606	$2,715,534,137	74.0	$3,928
	% Difference	-0.02%	0.00%	0.00%	0.03%
Safety Members					
Plan A	LACERA Data	6,154	$628,121,669	78.6	$8,506
	Milliman Data	6,152	$627,902,061	78.6	$8,505
	% Difference	-0.03%	-0.03%	0.00%	-0.01%
Plan B	LACERA Data	7,796	$805,726,794	61.2	$8,613
	Milliman Data	7,792	$805,477,688	61.2	$8,614
	% Difference	-0.05%	-0.03%	0.00%	0.01%
Plan C	LACERA Data	21	$1,101,733	51.2	$4,372
	Milliman Data	21	$1,101,733	51.3	$4,372
	% Difference	0.00%	0.00%	0.20%	0.00%
Total	LACERA Data	13,971	$1,434,950,196	68.9	$8,559
	Milliman Data	13,965	$1,434,481,482	68.9	$8,560
	% Difference	-0.04%	-0.03%	0.00%	0.01%
Total	LACERA Data	71,587	$4,150,388,276	73.0	$4,831
	Milliman Data	71,571	$4,150,015,619	73.0	$4,832
	% Difference	-0.02%	-0.01%	0.00%	0.02%

ANALYSIS OF IN-PAY MEMBER DATA – HEALTHY RETIREES

		Number	Annual Benefits (in thousands)	Average Monthly Benefit
General Members				
Plan A	LACERA Data	12,713	$903,205	$5,920
	Milliman Data	12,712	$903,205	$5,921
	% Difference	-0.01%	0.00%	0.02%
Plan B	LACERA Data	590	$38,747	$5,473
	Milliman Data	590	$38,747	$5,473
	% Difference	0.00%	0.00%	0.00%
Plan C	LACERA Data	371	$22,016	$4,945
	Milliman Data	371	$22,016	$4,945
	% Difference	0.00%	0.00%	0.00%
Plan D	LACERA Data	17,607	$871,671	$4,126
	Milliman Data	17,606	$872,120	$4,128
	% Difference	-0.01%	0.05%	0.05%
Plan E	LACERA Data	14,862	$485,306	$2,721
	Milliman Data	14,860	$485,306	$2,722
	% Difference	-0.01%	0.00%	0.04%
Plan G	LACERA Data	167	$2,357	$1,176
	Milliman Data	167	$2,372	$1,183
	% Difference	0.00%	0.64%	0.60%
Safety Members				
Plan A	LACERA Data	1,931	$228,292	$9,852
	Milliman Data	1,931	$228,295	$9,852
	% Difference	0.00%	0.00%	0.00%
Plan B	LACERA Data	3,226	$354,558	$9,159
	Milliman Data	3,223	$354,562	$9,167
	% Difference	-0.09%	0.00%	0.09%
Plan C	LACERA Data	11	$697	$5,277
	Milliman Data	11	$697	$5,277
	% Difference	0.00%	0.00%	0.00%
Total	LACERA Data	51,478	$2,906,849	$4,706
	Milliman Data	51,471	$2,907,320	$4,707
	% Difference	-0.01%	0.02%	0.02%

ANALYSIS OF IN-PAY MEMBER DATA – DISABLED RETIREES

		Number	Annual Benefits (in thousands)	Average Monthly Benefit
General Members				
Plan A	LACERA Data	1,213	$54,671	$3,756
	Milliman Data	1,213	$54,671	$3,756
	% Difference	0.00%	0.00%	0.00%
Plan B	LACERA Data	52	$2,026	$3,247
	Milliman Data	52	$2,026	$3,247
	% Difference	0.00%	0.00%	0.00%
Plan C	LACERA Data	49	$1,765	$3,002
	Milliman Data	49	$1,765	$3,002
	% Difference	0.00%	0.00%	0.00%
Plan D	LACERA Data	2,339	$88,470	$3,152
	Milliman Data	2,339	$88,479	$3,152
	% Difference	0.00%	0.01%	0.00%
Plan E	LACERA Data	N/A	N/A	N/A
	Milliman Data	N/A	N/A	N/A
	% Difference	N/A	N/A	N/A
Plan G	LACERA Data	20	$590	$2,458
	Milliman Data	20	$590	$2,458
	% Difference	0.00%	0.00%	0.00%
Safety Members				
Plan A	LACERA Data	2,583	$273,304	$8,817
	Milliman Data	2,583	$273,304	$8,817
	% Difference	0.00%	0.00%	0.00%
Plan B	LACERA Data	4,186	$424,407	$8,449
	Milliman Data	4,185	$424,411	$8,451
	% Difference	-0.02%	0.00%	0.02%
Plan C	LACERA Data	8	$333	$3,473
	Milliman Data	8	$333	$3,473
	% Difference	0.00%	0.00%	0.00%
Total	LACERA Data	10,450	$845,566	$6,743
	Milliman Data	10,449	$845,579	$6,744
	% Difference	-0.01%	0.00%	0.01%

ANALYSIS OF IN-PAY MEMBER DATA – BENEFICIARIES

		Number	Annual Benefits (in thousands)	Average Monthly Benefit
General Members				
Plan A	LACERA Data	4,137	$168,306	$3,390
	Milliman Data	4,132	$168,248	$3,393
	% Difference	-0.12%	-0.03%	0.09%
Plan B	LACERA Data	70	$2,851	$3,394
	Milliman Data	69	$2,785	$3,363
	% Difference	-1.43%	-2.31%	-0.91%
Plan C	LACERA Data	65	$1,903	$2,440
	Milliman Data	65	$1,903	$2,440
	% Difference	0.00%	0.00%	0.00%
Plan D	LACERA Data	1,830	$47,008	$2,141
	Milliman Data	1,830	$46,787	$2,131
	% Difference	0.00%	-0.47%	-0.47%
Plan E	LACERA Data	1,517	$24,341	$1,337
	Milliman Data	1,517	$24,310	$1,335
	% Difference	0.00%	-0.13%	-0.15%
Plan G	LACERA Data	14	$204	$1,212
	Milliman Data	14	$204	$1,214
	% Difference	0.00%	0.00%	0.17%
Safety Members				
Plan A	LACERA Data	1,640	$126,526	$6,429
	Milliman Data	1,638	$126,303	$6,426
	% Difference	-0.12%	-0.18%	-0.05%
Plan B	LACERA Data	384	$26,763	$5,808
	Milliman Data	384	$26,505	$5,752
	% Difference	0.00%	-0.96%	-0.96%
Plan C	LACERA Data	2	$72	$2,990
	Milliman Data	2	$72	$2,990
	% Difference	0.00%	0.00%	0.00%
Total	LACERA Data	9,659	$397,974	$3,434
	Milliman Data	9,651	$397,117	$3,429
	% Difference	-0.08%	-0.22%	-0.15%

3. ACTUARIAL VALUATION RESULTS REVIEW

This section of our review discusses the reasonableness and accuracy of the liabilities and contribution rates developed in Milliman's June 30, 2022 actuarial valuation of LACERA. We independently programmed the various types of benefits provided to members by LACERA using standard actuarial approaches.

The retirement benefits offered by LACERA are generally more complex than many other systems, partly because of the number of groups and benefit tiers covering the members. Different actuaries could reasonably use different approaches to modeling the liabilities of the different Plans. In order to be able to meaningfully compare our results to Milliman's results and to perform a useful sample life review, we selected certain approaches to mimic those used by Milliman. However, we made an effort to minimize direct discussions on methodology and programming in order to maintain our independence. While Milliman was responsive to our questions, they were also careful not to provide any information that would have provided inappropriate insight into their processes. As a result, we believe that the results we obtained are a meaningful test of the reliability of the work performed by Milliman.

As the following summary shows, our independent valuation results matched those of Milliman well overall and by the various Plans. As with any replication analysis, we do not expect to match results exactly because we know we are using independent approaches to modeling the liabilities. In particular, ancillary benefits such as active death and disability benefits are generally harder to match without coordinated effort, which loses a degree of the independence that is desired in an actuarial review. These ancillary benefits, however, are typically of less significance from a liability and cost perspective.

Results in the following tables are shown for the Present Value of Benefits (PVB), the Actuarial Accrued Liability (AAL), and the Normal Cost. The PVB is a measure of the value of all benefits expected to be ultimately paid for all current members of the system. The AAL reflects the portion of the PVB attributable to service already performed, and is the measure typically used for funding and accounting purposes. The Normal Cost is the portion of the PVB allocated to the current plan year. Of the three measures, we typically expect to match the PVB the closest, typically within 1% to 3%, while the AAL is often not quite as close, and the Normal Cost often varies by 3% to 6%. **Based on the results shown in the following tables, we are satisfied that the June 30, 2022 results presented in Milliman's valuation report provide a fair representation of LACERA's current funded status and the contribution rates needed to fund the Plan.**

General												
	Plan A		Plan B		Plan C		Plan D		Plan E		Plan G	
	Milliman	CMC	Milliman	CMC	Milliman	CMC	Milliman	CMC	Milliman	CMC	Milliman	CMC
Present Value of Future Benefits (PVB):												
Actives	$69	$67	$18	$18	$21	$20	$24,514	$24,184	$6,593	$6,579	$8,599	$8,408
Inactive Vesteds	4	4	1	1	0	0	737	728	462	455	109	108
Retirees	10,327	10,286	466	464	291	291	12,592	12,646	5,314	5,315	42	42
Total	$10,400	$10,357	$485	$483	$312	$311	$37,843	$37,558	$12,369	$12,349	$8,750	$8,558
Actuarial Accrued Liability	$10,398	$10,355	$484	$482	$312	$311	$32,137	$31,811	$11,375	$11,320	$2,427	$2,356
Normal Cost Rate	21.75%	21.12%	21.01%	20.41%	15.02%	15.04%	17.64%	17.46%	11.02%	11.19%	18.48%	17.99%
Ratio (CMC/Milliman)												
PVB:												
Actives		97%		100%		95%		99%		100%		98%
Inactive Vesteds		100%		100%		N/A		99%		98%		99%
Retirees		100%		100%		100%		100%		100%		100%
Total		100%		100%		100%		99%		100%		98%
Actuarial Accrued Liability		100%		100%		100%		99%		100%		97%
Normal Cost Rate		97%		97%		100%		99%		102%		97%

Note: Dollars in millions.

	Safety							
	Plan A		Plan B		Plan C		Total	
	Milliman	CMC	Milliman	CMC	Milliman	CMC	Milliman	CMC
Present Value of Future Benefits (PVB):								
Actives	$2	$2	$12,122	$11,940	$2,968	$2,911	$54,906	$54,129
Inactive Vesteds	0	0	152	149	11	11	1,476	1,456
Retirees	6,722	6,720	12,390	12,378	17	17	48,161	48,159
Total	$6,724	$6,722	$24,664	$24,467	$2,996	$2,939	$104,543	$103,744
Actuarial Accrued Liability	$6,724	$6,722	$21,848	$21,648	$615	$584	$86,320	$85,589
Normal Cost Rate	38.50%	N/A	30.14%	29.56%	29.52%	28.78%	19.33%	19.07%
Ratio (CMC/Milliman)								
PVB:								
Actives		100%		98%		98%		99%
Inactive Vesteds		N/A		98%		100%		99%
Retirees		100%		100%		100%		100%
Total		100%		99%		98%		99%
Actuarial Accrued Liability		100%		99%		95%		99%
Normal Cost Rate		N/A		98%		97%		99%

Note: Dollars in millions.

Milliman's normal cost rate for Safety Plan A is based on the prior year's results for the 1 remaining active member in the group, so we were unable to replicate this rate, although we find it reasonable.

4. SAMPLE LIFE REVIEW

In addition to the replication of results discussed in Section 3, we were also asked by LACERA to perform a review of sample lives. These samples included 15 active (or suspended active) members, 4 deferred (or contingent deferred) vested members, and 7 in-pay members (including healthy retirees, disabled retirees, and beneficiaries). These records were selected to provide a reliable sampling of plans, payment options, age, sex, and service levels of the Plans. Certain records were specifically selected to allow an in-depth review of unusual provisions. We were provided with detail of the present value of benefits for all of the sample lives, as well as the actuarial accrued liability, normal cost, and present value of future salary for the active members. Furthermore, for active members, the aggregate amounts were further broken down by decrement (termination, death, disability, and retirement) to allow for more detailed analysis.

In our review of these individual records, we did not observe any issues of concern. For the majority of individuals, we matched the present value of future benefits within 2%, which is exceptionally close. A few individuals varied by more, but this is to be expected given the complexities of actuarial valuation software.

Overall, we observed:

- PVB – We matched Milliman in total within 1.2%.
- Actuarial Liability – We matched Milliman in total within 1.3%.
- Normal cost – We matched Milliman in total within 1.5%.
- Present value of future salary – We matched Milliman in total within 1.8%.

This consistency among a small number of records helps support the pattern observed in the aggregate and further demonstrates that Milliman's calculation of LACERA's liabilities is reasonable.

4. SAMPLE LIFE REVIEW

	Present Value of Future Benefits		
	Milliman	CMC	Ratio
Active 1	260,226	271,971	105%
Active 2	703,014	693,356	99%
Active 3	2,122,944	2,084,400	98%
Active 4	183,075	183,476	100%
Active 5	649,151	639,472	99%
Active 6	322,276	307,990	96%
Active 7	161,891	162,031	100%
Active 8	328,820	316,950	96%
Active 9	859,907	850,119	99%
Active 10	2,318,043	2,280,219	98%
Active 11	662,538	650,499	98%
Active 12	48,122	48,120	100%
Active 13	247,672	246,890	100%
Active 14	79,759	94,458	118%
Active 15	257,045	246,730	96%
Deferred Vested 1	195,145	193,299	99%
Deferred Vested 2	68,186	67,182	99%
Deferred Vested 3	163,804	162,145	99%
Deferred Vested 4	24,969	24,616	99%
In-Pay 1	2,514,151	2,514,953	100%
In-Pay 2	344,868	345,014	100%
In-Pay 3	887,628	889,907	100%
In-Pay 4	654,955	655,491	100%
In-Pay 5	2,390,062	2,301,422	96%
In-Pay 6	696,914	697,764	100%
In-Pay 7	1,463,370	1,464,026	100%

CONTENT OF THE ACTUARIAL REPORTS

The Actuarial Standard Board has issued a number of Actuarial Standards of Practice (ASOP) which provide guidance on measuring retirement benefit obligations and communicating the results (ASOP Nos. 1, 4, 23, 27, 35, 41, 44, 51, and 56). The guidance in those standards includes specific elements to be included in actuarial communications regarding retirement benefits, either directly or by reference to other documents. Some elements would not be pertinent in all communications, but since an actuarial valuation report is the most complete picture of the actuarial status of the plan, all of the elements listed in the ASOPs should be covered in the report, even if only briefly.

We reviewed the June 30, 2022 actuarial valuation report to confirm that it provides sufficient information for another actuary to understand the valuation process and to assess the reasonableness of the results, as required under Actuarial Standards of Practice. We also reviewed the report for compliance with Actuarial Standards of Practice, including *ASOP 56, Modeling,* a new standard with an effective date since the last review of the 2019 valuation report.

We also compared the contents of the valuation report to over 30 specific items identified for pension actuarial work in the various ASOPs listed above. ***In our review of the June 30 2022 valuation report, we found it to be in compliance with the applicable ASOPs***.

The California Actuarial Advisory Panel (CAAP) has published a document entitled *"Model Disclosure Elements for Actuarial Valuation Reports on Public Retirement Systems in California*". The disclosure elements are organized as basic disclosures generally suitable for the regular actuarial valuation report and enhanced disclosures that may be appropriate for inclusion in either the regular actuarial valuation report or in other reports specific to a certain purpose. We reviewed the June 30, 2022 Actuarial Valuation Report produced by Milliman and confirmed that the report contains all of the basic model disclosures recommended by the California Actuarial Advisory Panel. It also includes many of the enhanced disclosure items set out in the CAAP document.

The valuation report is generally well written and organized. We have just a few suggestions for Milliman's consideration. These points are raised for discussion purposes only. Final decisions should be based on LACERA's needs after discussion with their retained actuary. We note that Milliman has made changes in response to our suggestions, either in our prior 2019 Review or in informal discussion during the preparation of their 2022 valuation report.

- Include an exhibit that shows the projection of the unfunded actuarial accrued liability to June 30, 2023. Milliman describes the process and provides the projected amount in a footnote, but we would suggest considering a short exhibit that would provide the detailed calculation. We generally include such an exhibit in our reports and have found it to be helpful to let the readers understand the concept as well as to demonstrate the accuracy of the calculation.

- Although not required by Actuarial Standards of Practice or the California Actuarial Advisory Panel, we would suggest projections of funded status and employer contribution

rates under one or two alternate future investment return scenarios be included. We have found projections of scenarios such as one year of a negative return or a five-year period of below-average returns can be useful in helping interested parties better understand the potential funding risks related to actual versus expected investment returns. While Milliman's Risk Assessment report provides some of this information, we believe that the inclusion in the valuation report with the most current information might communicate the message to more readers.

None of these suggestions are critical in nature and certain suggestions may not be deemed to be an improvement by LACERA. To the extent the recommended changes are determined to be appropriate and beneficial, they could be implemented in the next valuation report.

Attachment IV

Cavanaugh Macdonald's Actuarial Review of the 2022 Experience Study Report

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

ACTUARIAL REVIEW REPORT ON THE

2022 INVESTIGATION OF EXPERIENCE FOR THE LOS ANGELES COUNTY EMPLOYEES RETIREMENT ASSOCIATION

Prepared by Cavanaugh Macdonald Consulting, LLC

January 6, 2023

www.CavMacConsulting.com

Cavanaugh Macdonald
CONSULTING, LLC
The experience and dedication you deserve

January 6, 2023

Mr. Richard Bendall
Chief Audit Executive
Los Angeles County Employees Retirement Association
300 North Lake Avenue, Suite 840
Pasadena, California 91101

Dear Mr. Bendall:

Cavanaugh Macdonald Consulting, LLC has performed an independent review of the 2022 Investigation of Experience for Retirement Benefit Assumptions, prepared for the Los Angeles County Employees Retirement Association (LACERA). As an independent reviewing or auditing actuary, we have verified the numerical results and provided our professional opinion on the reasonableness and appropriateness of the actuarial assumptions and methods recommended in the report. We have also offered our comments on possible ways to improve the process in future experience investigations.

The retained actuary for LACERA is Milliman, Inc. and we would like to thank them for their cooperation and assistance in providing the required information to us. **We find the proposed actuarial assumptions and methods to be reasonable. The Investigation of Experience was performed by qualified actuaries and was performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.** This report documents the detailed results of our review.

If you need anything else, please let us know. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report.

Sincerely,

Brent A. Banister, Ph.D., FSA, EA, MAAA, FCA
Chief Actuary

Patrice A. Beckham, FSA, FCA, MAAA, EA
Principal and Consulting Actuary

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1. EXECUTIVE SUMMARY

LACERA engaged Cavanaugh Macdonald Consulting, LLC (CMC) to prepare an independent review of the 2022 Investigation of Experience for the Retirement Benefits Assumptions Report prepared by LACERA's retained actuary, Milliman, Inc. The scope of the actuarial review requested by LACERA includes:

- independent verification of the results in the Study,
- evaluation of any recommendations in the Report,
- preparation of a report containing CMC's findings and conclusions from the actuarial review, and
- presentation of any findings to the Board of Investments.

The process of setting actuarial assumptions brings together a blend of both numerical analysis and professional judgment. An experience study is not simply a mathematical exercise, but also draws on the experience and insight of the professionals conducting the study to interpret those results and develop assumptions that will appropriately model future experience. While our review included confirming certain data tabulations supporting the results in Milliman's report, we wish to stress that we also examined the bigger picture to determine if an assumption, or recommended change, is appropriate. We considered whether there are other ways to develop an assumption, whether an assumption may be simplified, and whether or not the assumption reflects trends that we have observed in other similar plans. The fact that we might prefer an alternate approach does not automatically mean that Milliman's approach is not reasonable. Rather, we offer some of these thoughts as a consideration for future studies, fully aware that there are multiple ways in which to appropriately model a dynamic retirement program like LACERA.

Overall, we find Milliman's work to be accurate and complete, and we have not identified any material findings.

We summarize our findings for each major review task as follows:

1. **Review of Data Used in the 2022 Experience Study**
   The actuarial review of the 2022 Investigation of Experience for Retirement Benefit Assumptions Report is based on the experience study data provided to us by Milliman. We requested and received from Milliman the full valuation (processed) data files for the 2019, 2020, 2021, and 2022 valuations. These files allowed us to replicate certain portions of Milliman's analysis with regards to the observed experience for the demographic assumptions. In our opinion, the data used is sufficient for the purposes of the experience study, appears consistent with previous Retirement Plan valuations and, therefore, appropriately reflects the active and inactive membership of LACERA during the three-year study period ending on June 30, 2022.

2. **Review the Proposed Economic and Demographic Assumptions Contained in the 2022 Investigation of Experience for Retirement Benefits Assumptions Report**
   We find the work prepared by Milliman—reviewed within the scope of this assignment—to be based on reasonable processes, to be technically sound, and to be fairly presented. Milliman's work related to LACERA's experience, selecting assumptions, and presenting the

associated results is based on generally accepted actuarial practices and principles. Relevant details for each assumption reviewed are provided in Section 3 of our Report.

3. **Present Any Recommendations to the Board of Investments Regarding the Work Completed by Milliman**
   We believe that the actuarial assumptions recommended by Milliman are reasonable and appropriate for use in the upcoming actuarial valuation for LACERA. We have no findings of material discrepancies with generally accepted actuarial principles or professional standards. In Section 4, we provide some minor considerations and suggestions for future studies.

Because this study period largely overlaps the period during which the world was experiencing the COVID pandemic, Milliman decided not to make changes in assumptions based solely on the most recent three years of experience. In our opinion, this was an appropriate decision and one followed by many actuaries working for public plans.

Milliman proposes changes to several demographic assumptions in its experience study report. We would classify many of these recommendations as typical on-going and fine-tuning changes. We believe that all of the proposed changes are reasonable and appropriate.

In our review of the 2019 Investigation of Experience for Retirement Benefits Assumptions, we made some recommendations for Milliman's consideration, including making a specific assumption for inflation in the Los Angeles area and performing some analysis on the real rate of return. We note that both of these items are discussed more completely in this 2022 Investigation.

Conclusions

Because of the complexity of actuarial work and the impact of professional judgment on the selection of assumptions, we would not expect our opinions to be the same as those of Milliman. We do expect, however, that there would be sufficient explanation of their choices and decisions in the report to allow us to acknowledge the recommendations they propose are reasonable based upon the relevant factors. In our opinion, the assumptions and methods proposed by Milliman are reflective of sound professional judgment and are appropriate for the systematic funding of the pension obligations of LACERA.

We have determined that the actuarial methods, assumptions, processes, and the report are consistent with the applicable Actuarial Standards of Practice. Throughout this report, we have noted a few minor items for consideration that we believe may present opportunities for improvement, but none that we believe would have a material impact on the proposed assumptions.

The remainder of this report provides the basis for our findings and evaluation of the recommendations that appears in the 2022 Investigation of Experience for Retirement Benefits Assumptions Report and our conclusions.

1. EXECUTIVE SUMMARY

We would like to thank LACERA's staff for their responsiveness in providing the information that we requested during the course of our review. Additionally, we would also like to thank Milliman for their cooperation and assistance in providing the requested information and answering our questions.

2. ACTUARIAL ASSUMPTIONS

BACKGROUND ON ACTUARIAL ASSUMPTIONS

The actuarial assumptions form the basis of any actuarial valuation or cost study. Since it is not possible to know in advance how each member's career will evolve in terms of salary growth, future service and cause of termination, the actuary must develop assumptions in an attempt to estimate future patterns. These assumptions enable the actuary to estimate the amount of benefits earned and to reasonably anticipate when and how long these benefits will be paid. Similarly, the actuary must make an assumption about future investment earnings of the trust fund. In developing the assumptions, the actuary examines the past experience, but more heavily considers future expectations to make the best estimate of the anticipated experience under the plan.

There are two general types of actuarial assumptions:

- Economic assumptions – these include the investment return assumption (expected return on plan assets), assumed rates of salary increase, price inflation, wage inflation, and increases in total covered payroll. The selection of economic assumptions should conform to ASOP No. 27 *"Selection of Economic Assumptions for Measuring Pension Obligations".*

- Demographic assumptions – these include the assumed rates of retirement, mortality, termination, and disability. The selection of demographic assumptions should conform to ASOP No. 35 *"Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations".*

The discussion on the actuarial assumptions on the following pages is based on the data and recommendations found in Milliman's 2022 Investigation of Experience for Retirement Benefit Assumptions.

2. ACTUARIAL ASSUMPTIONS

ECONOMIC ASSUMPTIONS

Actuarial Standards of Practice (ASOPs) are issued by the Actuarial Standards Board to provide guidance to actuaries with respect to certain aspects of performing their work. As mentioned earlier, ASOP 27 is the actuarial standard that addresses the selection of or recommendations regarding economic assumptions for measuring pension obligations (liabilities) under defined benefit plans. There are two particular items from ASOP 27 that we believe are relevant to the discussion: 1) For a given assumption, there is a range of possible choices, and 2) An assumption may be made with a degree of conservatism, when appropriate and disclosed.

Milliman did not recommend any changes to the current set of economic assumptions which are shown in the following table:

Current Assumptions	
Price inflation	2.75%
Real wage growth	0.50%
Total wage growth	3.25%
Payroll Growth	3.25%
Price inflation	2.75%
Real rate of return	4.25%
Investment return	7.00%
Cost-of-Living Adjustment	
Plan A	2.75%
All others	2.00%

Each assumption is briefly discussed in the following narrative.

Price Inflation: Price inflation indirectly impacts the rates of future salary increase, the payroll growth assumption, and the investment return assumption, so the underlying price inflation component in each must be consistent in accordance with the guidance provided in ASOP 27. In addition, because the retirees receive a cost-of-living adjustment (COLA) linked to changes in the CPI-U, the inflation assumption also impacts the COLA assumption.

Inflation has varied significantly over time, with some notably high periods in the 1970's influencing the long-term average. Until recent periods, inflation was below the long-term average for many years. Over the last year or two, there has been a significant upward spike in inflation, but the financial markets' pricing of inflation (comparing Treasuries and TIPS) suggests that the markets expect inflation to subside in a relatively short period of time and then remain relatively low, around 2% to 3% for the next 30 years.

While the market pricing argument suggests long-term lower inflation, we note that inflation is not random. It can be significantly affected by monetary and fiscal policy, and those policies may change dramatically and rapidly. Consequently, there are also some strong arguments for assuming that inflation could be higher than it has been over the last 20 years for a sustained period.

In their report, Milliman provides supporting documentation for their recommendation to leave inflation unchanged. Until recently, there had been a trend among public retirement systems to lower this assumption, with most selecting an assumption in the range of 2.25% to 2.50%. LACERA bases their COLA on the Los Angeles area CPI, which has tended to be higher than the national CPI over the recent past. Wages are also likely to be affected by the local (Los Angeles) economy. Milliman proposes assuming a 2.75% assumption for both, which we find reasonable, especially while the current economic environment is in flux.

General Wage Growth: The general wage growth or wage inflation assumption consists of price inflation and a real wage growth component (also called productivity). These increases are affected by a variety of factors including price inflation, the policies and financial state of the employer, and the nature and extent of competition for employees in the relevant labor markets. Over time, however, the impact of wage increases in the broader economy will also have a strong influence as workers and competing employers respond to market forces.

Milliman considers several relevant sources in their analysis of this assumption including:

(1) the National Average Wage Index (published by the Social Security Administration),
(2) the assumption used by the Social Security Administration in their 75-year projections, and
(3) actual LACERA data.

Based on these sources, Milliman recommends retaining the current 0.50% real wage growth assumption. While we find this assumption reasonable, we would note that over the last 30 years – following the high inflation period of the 70's and early 80's – the real wage growth in the general economy has been higher than the 50-year average of 0.50% that Milliman cites. We also realize that the National Average Wage Index has limitations in that it does not perfectly track wage inflation directly (although it is a reasonable proxy) and because it is a reflection of the entire U.S. Social Security covered population which may have different pay increase patterns from those of LACERA employees.

Public-sector employees have also lagged the salary increases across the broader economy in more recent years, at least when the costs of benefits are excluded. Another source to consider is the State and Local Government Workers Employment Cost Index, produced by the Bureau of Labor Statistics. It provides evidence that real "across the board" salary increases have averaged about 0.2% annually during the last 10 to 20 years. Total compensation (with benefits) have increased at a real rate of about 0.8% over that same period. Whether these trends will continue or there will be a correction is an open question.

In Milliman's analysis of merit salary increases, there is a persistent merit increase for general members of around 0.40% for service after 30 years. Typically, there is very little, if any, true

merit increase after 30 years. One could argue that this increase is more appropriately classified as part of the general wage increase rather than merit, although Milliman believes it truly is part of the merit salary increase arising from promotions. Since the total of the general wage growth and merit is the same regardless how of this persistent merit is classified, there is no effect on the liability measures either way.

Milliman also uses the general wage growth assumption as the basis for their recommended payroll increase assumption. The payroll growth assumption is used in the amortization of the Unfunded Actuarial Accrued Liability (UAAL) and is appropriate for developing costs that are intended to be reasonably stable as a percentage of covered payroll. Using the general wage inflation to estimate future payroll growth has been a common practice amongst public plan practitioners for many years, but we would point out that some retirement systems are choosing to amortize the UAAL with an assumed payroll growth that is somewhat lower than the wage inflation assumption or even setting the assumption equal to the expected growth in the revenue of the sponsoring organization.

One consideration in setting a lower assumption has been that as older employees retire, new employees are being hired with lower salaries. In theory, there are internal promotions to fill the vacated positions, but this expected payroll growth has not always been realized, especially given the high proportion of baby boomers still in the work force. Because the youngest baby boomers are nearing 60-years old, this potential impact may be around for just a few more years, although LACERA's experience may vary from that of other public plans. We are not opposed to Milliman's choice of using the wage inflation assumption as the payroll increase assumption, but we could also be comfortable with an assumption that was between price inflation and wage inflation which would provide a margin of conservatism for adverse deviations. Note the 3.25% payroll growth for amortization could be thought of as having some conservatism if the persistent merit described above were treated as part of wage growth.

Investment Return Assumption: In our opinion, the investment return assumption should represent the long-term compound rate of return expected on the plan assets, considering the asset allocation, the real rate of return on each asset class, and the underlying inflation rate, all net of investment (and possibly administrative) expenses paid from the Trust.

The long term relationship between price inflation and investment return has long been recognized by economists. The basic principle is that the investor demands a more or less level "real return" – the excess of actual investment return over price inflation. If inflation rates are expected to be high, investment return rates are also expected to be high, while low inflation rates will result in lower expected investment returns, at least in the long run.

The period considered for pension funding represents a very long time horizon (30 to 50 years or more). In reviewing this assumption, the actuary should consider asset allocation policy, historical returns, and expectations of future returns. Frequently, asset advisors focus on no more than the next 5 to 10 years since they are most concerned with how to invest the funds currently to maximize returns. The longer term is less relevant to them, but it is, of course, paramount to actuaries who

are projecting benefits to be paid for the next 50 to 100 years. This difference in perspective can significantly influence how investment advisors and actuaries derive an investment return assumption.

Our preferred approach to setting the investment return assumption is called the "building block" approach. This approach develops a "real" return, or the return net of inflation, and then adds it to the inflation assumption. One advantage of this approach is that it assures that the total or "nominal" return is consistent with the inflation assumption, since it is determined as the sum of the price inflation assumption and the real rate of return. A second advantage is that it is helpful when comparing various sources of expected returns by eliminating any differences related to price inflation expectations as a source of variation in the nominal return assumptions. While we find this approach helpful, we also acknowledge that there are other reasonable approaches that may be used and are compliant with actuarial standards of practice. Milliman notes that they consider this approach in their analysis.

In Milliman's analysis of the expected return, they considered three sets of capital market assumptions regarding future expected returns. They also considered the general trend observed with respect to the investment return assumptions used by other large public systems, but primarily relied on the expected future return arising from these capital market assumptions. We believe their approach is appropriate as the asset allocations and risk perspective of each board influences the investment return used by the system, so the median return assumption would not necessarily be an appropriate basis to use in setting LACERA's assumption. The three sources of capital market assumptions are:

(1) Meketa, LACERA's investment advisor,
(2) Milliman's internal investment experts, and
(3) the 2022 Horizon Actuarial Services Survey which reviews the assumptions of about 40 investment consulting firms (including Meketa) who work with defined benefit plans, providing a median return for each common asset class.

As was noted earlier, most investment advisors focus on a shorter timeframe than actuaries because they are using the assumptions for a different purpose. For instance, the 2022 Horizon Survey included 40 advisors with capital market assumptions for the next 10-year period, but only 24 advisors provided assumptions for periods of 20 years or more. Milliman's discussion states they have given consideration to both the 10-year and 20-year time horizons, which we believe to be appropriate. As Milliman notes, LACERA is a mature retirement plan. One consequence is that annual benefit payments exceed annual contributions, so the difference must be made up from investment income. For LACERA, this shortfall is currently about 2% of the total trust fund, an amount that could likely be covered by income cash flows such as interest payments and stock dividends, rather than by selling assets. However, this net negative outflow means that the expected lower returns over the next ten years (when lower returns are forecast) will diminish the corpus of the trust over this period so a comparatively lower trust fund balance will exist when the higher returns are earned. This will limit the ability of the higher returns on the LACERA trust fund in the long term to offset the impact of the lower returns in the next ten years, so we agree that it is appropriate to consider both the short and long horizons, as Milliman has done.

Milliman also discusses how the return expectations from their internal consultants and from Meketa for both the 10- and 20- year time horizons have increased substantially between January of 2022 and the middle of the year. This dramatic change in the long-term assumptions of investment consultants is something we have observed as well. These changes are largely driven by the significant increase in interest rates through the first half of the year (leading to a decline in bond market valuations) coupled with a decline in equity valuations. The expectation of market recovery is significant enough to increase the expected 10-year returns by 1% to 1.5% per year. The impact on the 20-year expectation is smaller, because the expectations for the period from 10 to 20 years is largely unaffected.

In light of all of these factors, Milliman recommends leaving the investment return assumption unchanged at 7.00%. Based on the most recent assumptions from investment consultants, they believe there is more than a 50% chance of achieving this return in a given year, meaning the assumption is slightly conservative.

In summary, there is a range of reasonable assumptions for the investment return assumption, and we believe the recommended assumption of 7.00% falls within that range. Other reasonable approaches could lead to different recommendations of which some might be lower than 7.00% and some might be higher. In light of the economic volatility over the last three years related at least in part to COVID, we believe that choosing to leave this assumption unchanged is reasonable.

Use of Investment Return Assumption for GASB Discount Rate: The investment return assumption used in the funding valuation is net of both investment and administrative expenses. GASB requires the use of an assumption regarding the expected return on assets that is net of investment expenses, but not administrative expenses. Administrative expenses are directly modeled in the projection of the Fiduciary Net Position for purposes of determining whether there is a depletion date of the plan assets in the future (called the crossover test). This test determines whether the assumption for the expected return on assets may be used for the GASB discount rate.

As part of the experience investigation, Milliman reviewed the actual administrative expenses for the past 10 years and estimated that these expenses have averaged about 0.15% of the asset value. Consequently, their recommendation for GASB 67 and 68 reporting is to use an investment return assumption that is 0.15% higher than the investment return assumption used for funding purposes. This approach has been used in the past, and we believe it is reasonable and appropriate to continue its use.

COLA: Closely related to the price inflation assumption is the Cost-of-Living Adjustment (COLA) assumption. The actual COLAs granted to LACERA members are based upon the change in the CPI-U for the Los Angeles metropolitan area. By law, there are upper limits on the COLA that may be granted each year (varying by plan), but to the extent that inflation exceeds the actual COLA granted in any year, there is a "carry-over" which future COLAs may use in years when inflation is lower than the cap. If inflation is less than 0% for a year, the member benefit may be reduced, but not below the original benefit. In these situations, it is also anticipated that the carry-

over would be utilized to offset the negative inflation adjustment and perhaps even provide a positive COLA as well. Based on the design of the COLA, we believe Milliman's recommendation to set the COLA assumption equal to the price inflation assumption (up to the capped level) is an appropriate model.

2. ACTUARIAL ASSUMPTIONS

DEMOGRAPHIC ASSUMPTIONS

The major demographic assumptions used in the valuation process are the assumed rates of retirement, termination of employment (with or without a vested benefit), disability, and mortality (death before or after retirement). Other non-economic assumptions that are typically evaluated include salary merit increases, election of refunds in lieu of a deferred benefit, and family composition (where applicable for death and some disability benefits).

General Comments

The purpose of a study of demographic experience is to compare what actually happened to the individual members of LACERA during the study period (July 1, 2019 through June 30, 2022) with what was expected to happen based on the actuarial assumptions, using the results as an important tool to evaluate whether some adjustment to the current assumptions is necessary.

The basic steps performed by most actuaries include the following:

- First, the number of members changing membership status, called decrements, during the study is tabulated by age, duration, gender, group, and membership class as appropriate (active, retired, etc.).

- Next, the number of members expected to change status is calculated by multiplying certain membership statistics, called exposure, by the expected rates of decrement.

- Finally, the number of actual decrements is compared with the number of expected decrements. The comparison is called the actual to expected ratio (A/E Ratio), and is expressed as a percentage.

The A/E ratio is a key indicator as to the *overall fit* of actual experience to that expected based on the assumptions. While this metric is an important measurement, the fit of the assumption at each individual age or service duration is also critical because experience that is higher at certain ages/durations does not typically offset the impact of experience that is lower at other ages/durations. The fit of the actual experience to the assumption at each age or duration is important in order to more accurately value the liabilities (present value of future benefits). The A/E ratio also provides a good way to easily evaluate the impact of the recommended assumption in comparison to the current assumption to determine how much the assumption was adjusted.

For the most part, Milliman's analysis develops these A/E ratios with compensation-weighted exposures and decrements (for actives) or benefit-weighted exposures and decrements (for retirees) rather than using the counts of members. This means, for example, that the influence of the higher-paid members on retirement rates is greater than lower-paid members. Since the higher paid (and usually longer service) group also has greater liability, this aligns the assumptions better with actual experience of the plan liabilities and should reduce the dollar amount of actuarial gains

and losses from year to year. We are very supportive of this approach, as we use it in our own practice.

As part of our review of the demographic assumptions, Milliman provided us with the processed valuation data files for the 2019 through 2022 valuations. They also provided us with their detailed experience study results, including the number of exposures and observed decrements, broken down by LACERA plan, sex, and age or service as appropriate for each assumption. We used the valuation data files to replicate the exposure and decrement summary for active and retired members over the study period and matched the total number of decrements almost exactly. We also attempted to validate Milliman's results at each age or service data point. Due to rounding issues, we did not always match each cell exactly, but we were able to satisfy ourselves that Milliman's processing was performed with a sufficient degree of accuracy that the results are reliable for the assessment and development of actuarial assumptions.

In the following paragraphs, we make specific comments on the demographic assumptions.

Merit Salary Increases: In the economic assumptions section, we discussed Milliman's development of the general wage growth assumption. A second type of salary increase occurs at the individual level as a result of such things as promotion and longevity. Milliman examined these increases separately for General and Safety members, recognizing that the two groups have different patterns of salary increase through a typical member's career. They also studied the assumption as a function of years of service. We agree that these two factors are the most appropriate and commonly used approaches to model merit increases.

Total salaries are reported from year to year so, in order to isolate the merit component of the salary increases, Milliman compared the total salaries of each individual member in each consecutive year of employment, after removing the estimated general wage inflation observed in the actual LACERA data for each year. We find this approach a reasonable way in which to isolate the salary increases due to merit and longevity.

For purposes of this analysis, Milliman used the last 15 years of actual salary increases. We note that this period is quite long and includes the recession of 2008 and subsequent recovery. From our perspective, a period that is too long may not be sensitive to recent changes or trends. For instance, with nearly all of the active membership being employed by the County, a change in the longevity compensation structure could quickly affect the merit scale but might not be easily detected with Milliman's longer time frame. Milliman's report indicates this analysis was also performed for the most recent time periods to detect any significant recent change, but none was found.

Rates of Mortality: One of the most important demographic assumptions in the pension valuation is mortality because it projects how long benefit payments are expected to be made. The longer retirees live and receive benefits, the larger the liability of the system, thus increasing the contributions necessary to actuarially fund the system. In addition, if members live longer than anticipated by the assumption, the true cost of future benefit obligations will be understated and

contributions will increase as the unfavorable experience unfolds. Because there are also death benefits payable for active members, it is also relevant to consider the patterns of death for active members, although this assumption has comparatively little impact on the valuation results due to the low probability of active member deaths.

In early 2019, the Society of Actuaries (SOA) published a new set of mortality tables (Pub-2010 Tables) that are based solely on the experience of public retirement systems rather than corporate pension plans (the source of data for past mortality tables published by the SOA). The new tables include mortality rates for active members, healthy retirees, disabled retirees, and beneficiaries of retirees, and also vary by membership type (general government, teachers, and public safety). They represent a significant improvement in the universe of mortality tables available to value public retirement systems. Milliman adopted these new tables in the last study, with certain adjustments as appropriate, for their recommended mortality rates. We believe that Milliman's use of these tables is appropriate and reasonable.

In the past, mortality rates for those of retirement age have gradually declined each year. Because actuarial valuations are projecting many years into the future, it is reasonable to anticipate that mortality rates will continue to decline, so they will be lower in the future than they are now. In order to anticipate that improvement, Milliman uses an approach known as "generational mortality" in which the mortality rates at most ages are "improved" by a small amount each year in estimating an individual's future lifespan. The SOA publishes a projection scale each year which essentially grades recently observed mortality improvement into its long-term expected improvement over a short period of time. Milliman's assumption has been, and continues to be, a simplified version of the SOA-published mortality improvement scale that uses only the ultimate year of that projection scale. There is insufficient data from LACERA to statistically test this assumption, but we believe it is reasonable and have observed other systems using similar simplified mortality improvement assumptions. Because the SOA has updated the ultimate improvement scale since the last study, Milliman recommends updating to this scale, a recommendation that we find reasonable.

Milliman uses separate mortality assumptions based on sex, membership type (General or Safety), and status (active, healthy retiree, and disabled retiree). For the most part, they use the corresponding table from the SOA Pub-2010 tables, sometimes scaled by a constant multiplier to achieve a better fit to actual experience. For General disabled members, they blend the healthy and disabled retiree tables to achieve a table that more appropriately reflects LACERA's actual experience. Overall, this approach to selecting mortality tables is common actuarial practice. Further, Milliman bases their analysis on benefit-weighted amounts for retirees and compensation-weighted amounts for actives. This weighting is an appropriate way in which to reflect the observed patterns of mortality rates varying by benefits/compensation.

While we do not disagree with Milliman's recommendations, we offer some considerations for the next investigation of experience. First, the SOA Pub-2010 Tables include beneficiary mortality tables. Milliman elected to use the General membership healthy retiree table for beneficiaries and

provides a rationale for their approach. We note that there is not a uniform approach in the pension actuarial community and so we have no objection to Milliman's preference.

Second, in our experience we have found that the quality of the fit of a mortality table can sometimes be improved by applying one scaling factor at younger ages and a different factor at older ages (with a blending around the transition age). When they next make a change to the mortality assumption, we would suggest that Milliman consider whether or not such an approach might allow a better fit of the mortality assumption to observed experience across all ages. This approach is not as widely used in the pension actuarial profession, but for larger retirement systems, such as LACERA, may have some merit. Milliman has indicated that they will give this consideration.

Rates of Retirement: Retirement is a decision that is usually planned by an individual at a time that is perceived as most beneficial from a personal and financial perspective. One significant factor is the interaction of the retirement eligibility provisions with the potential retirement date. Because the different LACERA retirement plans have different eligibility requirements and benefit provisions, it is not surprising that retirement behavior varies by plan. Milliman develops retirement rates for General plans A-C, plan D, plan E, and plan G, and for Safety plans A&B and plan C. The newer plans (General G and Safety C) do not have any meaningful retirement experience yet, and so the proposed rates are based on applying professional judgment to the experience observed in the other plans. Likewise, General plans A-C and Safety plan A have been in existence long enough that there are few members left, and so there is no longer sufficient data to perform a meaningful analysis.

For each plan or group of plans, Milliman observed the actual and expected retirements, weighted by compensation, as described earlier. The assumption and analysis varies by age, a typical approach. In general, we believe that the proposed changes recommended by Milliman are an appropriate response to the observed retirement patterns.

In some plans, particularly in the public safety arena, the provisions for the availability and amount of benefits lead to patterns that are more influenced by years of service than age. Milliman performed additional analysis in this study to determine how retirement rates vary with service and modified their assumptions to now be effectively a function of age and service. We believe this was a useful enhancement.

Rates of Termination: The termination of employment assumption is a service-based assumption which is the most commonly used format for other public retirement systems. Milliman examined General members and Safety members separately, which is reasonable given the different jobs and termination patterns of the two groups. General plan E is valued separately from plans D and G because experience has shown a different behavior by those who elected this option.

Milliman proposes some minor adjustments to some of the termination rates to improve the quality of the fit to actual experience. Their analysis considered compensation-weighting in the development of the A/E ratios, and we concur with that.

For General plans A-C, the termination assumption has no significant effect on estimating future obligations since there are few members left who are not currently retirement eligible. Our preference would be to use the termination rates from the newer plans for General plans A-C because in calculating the normal cost, the Entry Age Normal cost method requires the use of retrospective termination rates. This is primarily a theoretical issue, and we acknowledge that Milliman's approach will produce very similar results.

Refund of Employee Contributions: In the valuation process, this assumption is applied to active members who are assumed to terminate employment after becoming vested. It anticipates the election of a refund of accumulated employee contributions by the member and the resulting forfeiture of any vested monthly benefit payable once the member is eligible for retirement. As would be expected, the probability of electing a refund declines as service increases, and so Milliman studies this assumption as a function of service, with separate rates for General and Safety membership.

We find Milliman's analysis and proposed changes reasonable. There are some retirement systems where the valuation assumes that the decision of whether or not a refund is elected is based on which option is most valuable (i.e., the higher present value) to the member from the system's perspective. Such an approach is designed to value the worst case scenario to the system, regardless of how experience is expected to unfold. While we are not necessarily suggesting that Milliman change to this approach, they have indicated they have considered it and will continue to in the future.

Rates of Disability: Disability is a relatively low occurrence event, and so the analysis of disability rates is generally challenging. Lack of data creates results with limited credibility. Milliman has considered disability separately for males and females and for General and Safety members, which is a very common and appropriate approach. (Because General plan E has no disability provision, those members are excluded.) Disability may be either service-connected or not-service-connected, so an analysis of both rates was conducted for General members. For Safety members, all but four of over 460 observed disabilities were service-connected, so the analysis focused on service-connected disability only.

In general, we believe that Milliman's analysis and proposed adjustments to the disability rates are reasonable and appropriate.

Other Assumptions: There are some miscellaneous assumptions that were addressed in the experience study report. These assumptions do not have a major impact on the valuation results, and we believe the recommendations are all reasonable. The assumptions include:

- Probability of retiring with an eligible survivor
- Beneficiary age
- Deferred vested member retirement age
- Reciprocity employment rates for deferred vested members

3. ACTUARIAL METHODS

ACTUARIAL COST METHOD

For all retirement plans, whether defined benefit or defined contribution, the basic retirement funding equation is:

$$C + I = B + E$$

Where:

- C = employer and member contributions
- I = investment income
- B = benefits paid
- E = expenses paid from the fund, if any.

As can be seen from the formula, for a given level of benefits and expenses the greater "I" is, the smaller "C" is. This is the underlying reason for advance funding a pension plan, and historically investment income pays for 65% to 75% of the benefit dollars received by plan members. In other words, for every dollar paid to a member only 25 to 35 cents comes from contributions. To determine what pattern of contributions is needed, plan sponsors hire actuaries to estimate the cost of their plans and to create a budget for systematic contributions to meet that cost.

Different actuarial cost methods can provide for more rapid funding, more level funding over time, or more flexibility in funding. The choice of an actuarial cost method will determine the pattern or pace of the funding and, therefore, should be linked to the long-term financing objectives of the system and benefit security considerations.

The actuarial cost method used by LACERA is the individual Entry Age Normal method. This cost method determines the normal cost as a level percentage of pay which, if paid from entry into the plan to the last assumed retirement age, will accumulate to an amount sufficient to pay the expected benefit payments. Entry Age Normal tends to result in stable normal cost rates, a feature that has helped make it the most commonly used cost method for public plans. An additional cost is determined by amortizing the unfunded actuarial accrued liability (discussed later in this section).

In our opinion, the actuarial cost method employed by the LACERA is appropriate and will systematically fund the prospective pension benefits on an actuarially sound basis, if all of the actuarial assumptions are realized and the actuarial required contributions are made.

ASSET VALUATION METHOD

Since the purpose of actuarial funding is to build up an asset pool (remember the importance of "I" in "C + I = B + E") actuaries need to value the current asset pool on each valuation date. The market value could be used, but it would tend to create too much volatility from valuation date to valuation date, and a single day's measurement is not necessarily indicative of the true underlying value of the investments held by the plan. Thus, most actuaries use an asset valuation method which smoothes out these fluctuations in pursuit of achieving more stable funding measures and (when relevant) developing more level contributions. A good asset valuation method places values on a plan's assets which are related to current market value, but which will also produce a smooth pattern of costs.

The goal of the actuarial asset valuation method is thus to smooth or reduce investment market fluctuations. This is particularly important during periods of volatile capital markets in which abrupt changes in asset values, when factored into the funding valuation, produce sudden unnecessary changes in contribution levels. In this case, "unnecessary" implies that the change in asset values is not necessarily a true revaluing of the assets involved, but rather a fluctuation reflecting a current economic climate or a short-term reaction to specific news.

LACERA's Asset Valuation Method: The asset valuation method used by Milliman in the valuation is a variant of methods commonly used by other public sector retirement systems. The smoothing method finds the difference between the actual investment return and the expected investment return on the market value of assets. The dollar amount of this difference is then recognized equally over five years. In this study, Milliman proposed a modification of the current method in which the prior deferred gains or losses are first used to offset any current loss or gain respectively.

Compliance with ASOP 44

Actuarial Standard of Practice Number 44, "*Selection and Use of Asset Valuation Methods for Pension Valuations"*, provides guidance to the actuary when selecting an asset valuation method for purposes of a defined benefit pension plan actuarial valuation. Several of the terms in the criteria of ASOP 44 such as "reasonable" and "sufficiently narrow" are not specifically defined. As a result, actuaries can differ in their opinion on these matters. As we consider the current asset valuation method used by LACERA, with the recommended modification discussed above, we believe it satisfies the requirements of ASOP 44.

We find LACERA's asset valuation method to be reasonable and appropriate and compliant with ASOP 44.

3. ACTUARIAL METHODS

AMORTIZATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITY METHOD

Currently, the unfunded actuarial accrued liability is amortized using a layered base approach. Following the establishment of the initial UAAL base, each year actuarial gains or losses arising from asset and demographic experience or other factors such as assumption and benefit changes are amortized over a new 20-year period with payments that are determined as a level percentage of payroll. In this study, Milliman propose that future benefit improvements be amortized over 10 years.

The layered amortization approach has rapidly become the most common amortization method used by public retirement systems, and we believe this method is reasonable for amortizing LACERA's UAAL**.** It is also worth noting that, as LACERA does, most public retirement systems develop UAAL payments that are intended to be level, as a percentage of payroll, in the future. This general amortization methodology is very much in the mainstream with public retirement systems.

We believe Milliman's recommendation for the amortization method is appropriate.

GENERAL OBSERVATIONS

Because of the diversity of public retirement systems and their actuaries, along with the scope and frequency of experience studies, the reports are also very diverse, ranging from extensive formal reports with many charts and tables to only a slide presentation. Actuarial Standards of Practice provide only minimal guidance on the contents of these reports, so much of the report depends upon the style and preference of both the retained actuary and the retirement system board and staff. Milliman's report is on the more comprehensive end of the spectrum, including some degree of numerical detail and graphical illustration along with narrative explanation.

In offering the following ideas, we are by no means suggesting that these are necessary or that the current report is inadequate. Rather, we are sharing some ideas from our years of experience that we believe might be useful to LACERA and Milliman. Ultimately, they will decide if any of these ideas are worth pursuing in future experience studies.

At the end of the report, Milliman includes an appendix that contains the proposed assumptions, with the assumption changes highlighted. While this approach makes it very easy to identify which rates were changed, it is not clear how they have changed. As an alternative, they could consider an additional appendix which includes the current assumptions, allowing an easy way to compare not only what rates were changed, but how they were changed.

Generally, Milliman has presented graphs with quinquennial grouped data. This has the advantage of smoothing out some of the variability that exists without the grouping, but it may also make the shape of assumption and its fit at each age/duration harder to observe, particularly for an assumption like retiree mortality which ranges from low rates at younger ages to high rates at older ages. It might be worth considering whether some of the graphs, especially those for retirement, would better communicate the results if they were not grouped.

Another idea for improvement would be to provide tables to show the exposure, actual decrements, expected decrements and proposed decrements, and resulting A/E ratios for each key assumption. Viewing the data graphically does not tell the reader which rates are based on more underlying data and, therefore, are more credible. In our opinion, including tables with the details of the underlying calculation of the results would improve the technical aspect of the report. These tables could be included as an Appendix rather than be in the body of the report.

EXAMINATION OF PRIOR REVIEW

Cavanaugh Macdonald Consulting prepared a review report of the 2019 Milliman Investigation of Experience which included a number of suggestions for future experience studies. Most of these suggestions were simply ideas for enhancements, many of which simply suggested consideration of an alternative approach. We note that Milliman clarified their assumption regarding the Los Angeles area and national inflation, provided some commentary on real investment return, and reflected service in the determination of retirement rates, all of which were items we suggested.

Our 2019 review also made some suggestions that were minor or primarily stylistic. We note that Milliman did consider how service might interact with retirement rates in this study and that they clarified to us that they considered the short term as well as the long term in their salary merit analysis. Milliman indicated to us directly that they considered each of our recommendations from last time and made some changes where they found it appropriate. We do not believe there any items identified last time which needed to be addressed that were not addressed this time.

SUMMARY OF CMC SUGGESTIONS FOR FUTURE INVESTIGATIONS OF EXPERIENCE

CMC performs a concurrent review of Milliman's work, allowing for us to provide feedback in advance to Milliman regarding corrections or suggestions. As a result, we do not expect to have many suggestions beyond some stylistic preferences. We do suggest the following:

- We suggest that Milliman consider enhancing their report with some of the ideas presented earlier in this section.
- Milliman reflects expected mortality improvement by using the ultimate rates of the Society of Actuary's projection improvement scale. As noted, we believe this is reasonable. For the next study, however, we would encourage a re-examination of this practice to be sure that any issues related to COVID are fully considered. We expect the Society to provide additional resources between now and then which will help in this consideration.

Attachment V

Milliman's presentation slides (includes Cavanaugh Macdonald's review slides)

LACERA

June 30, 2022 Actuarial Valuation of Retirement Benefits

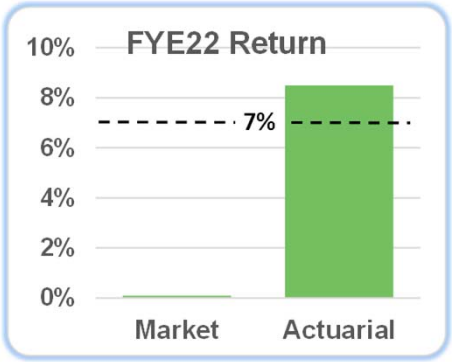
Nick Collier and Craig Glyde

MARCH 8, 2023

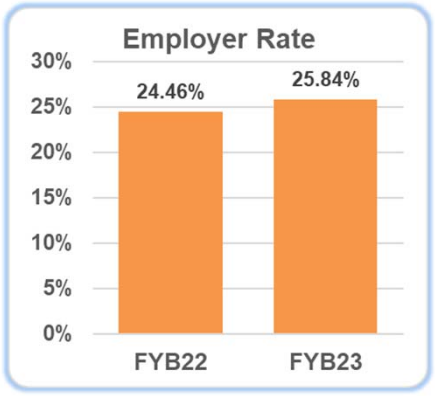
Milliman

Overview of Valuation Results

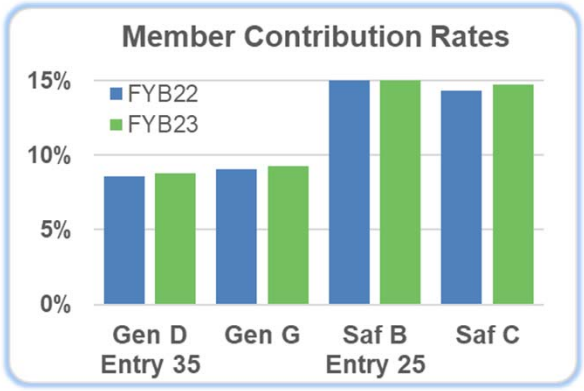
Challenging Markets



Higher Employer Rates



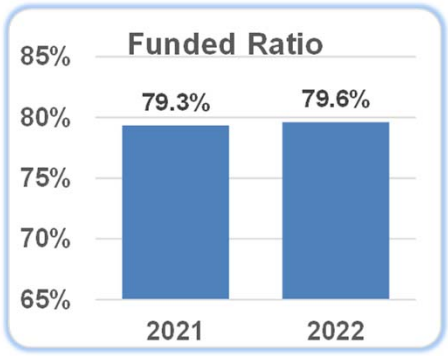
Higher Member Rates



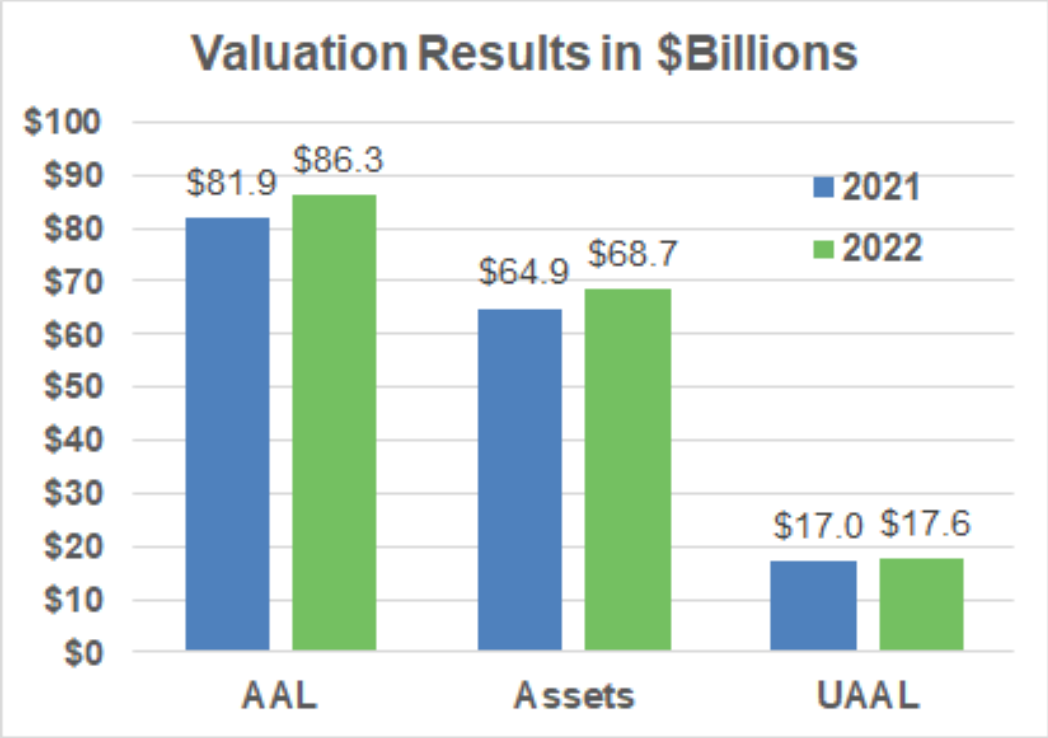
Valuation Assets Increased

Liability Increased

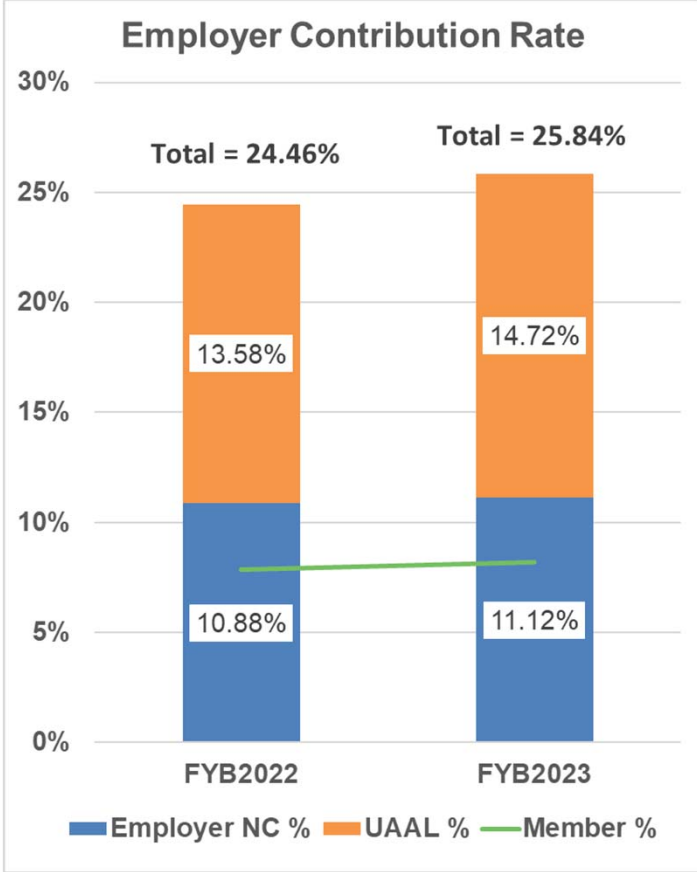
Stable Funded Ratio



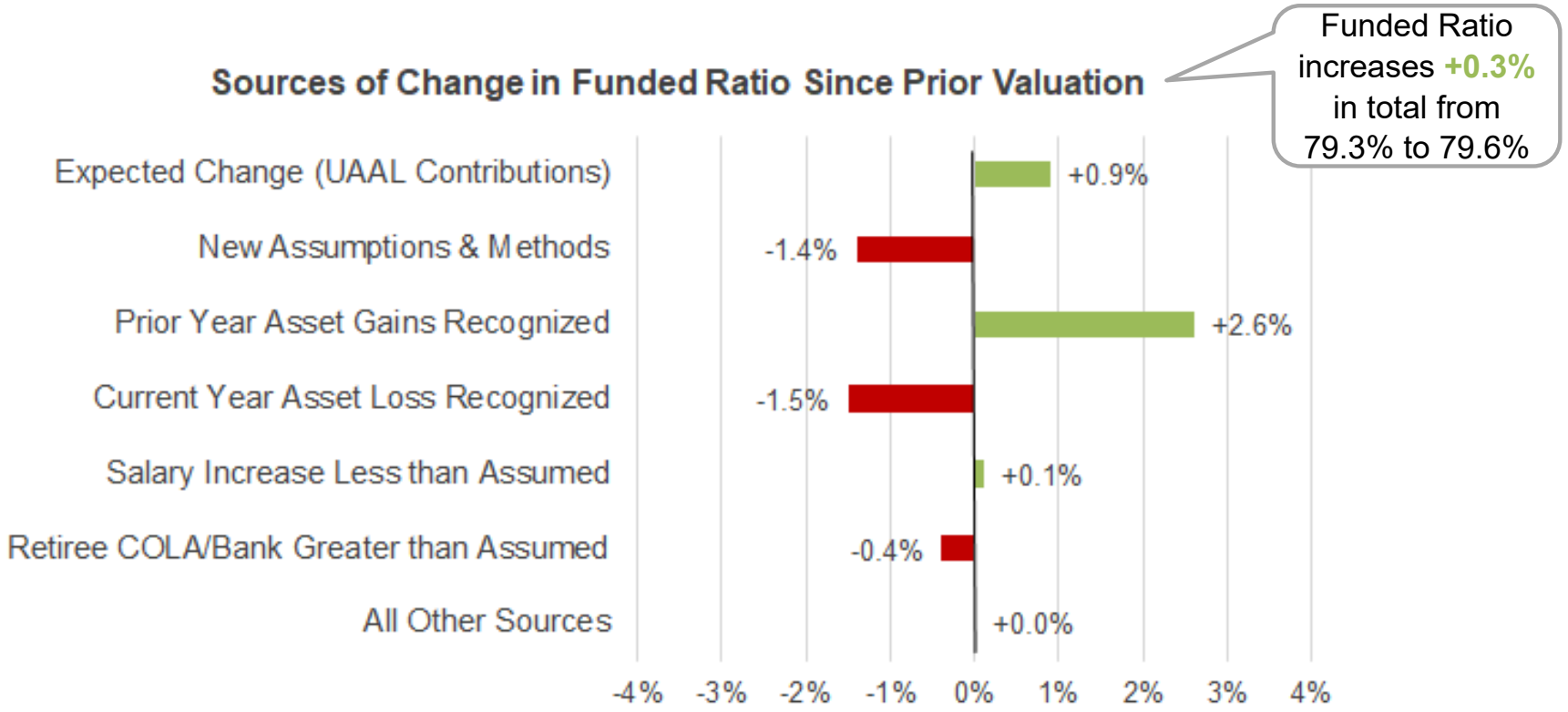
Summary of Results



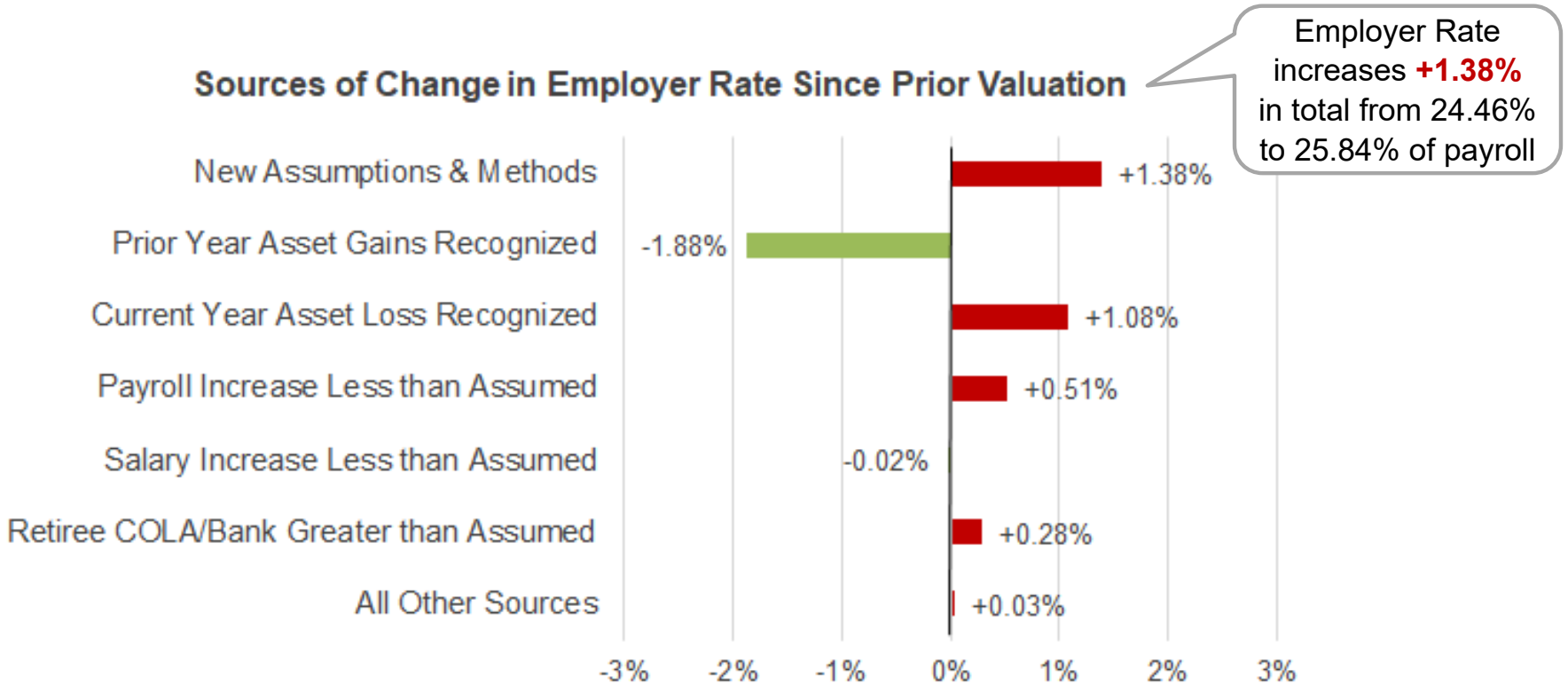
Funded Ratio increased from 79.3% to 79.6%



Summary of Results
Analysis of changes since last year



Summary of Results
Analysis of changes since last year

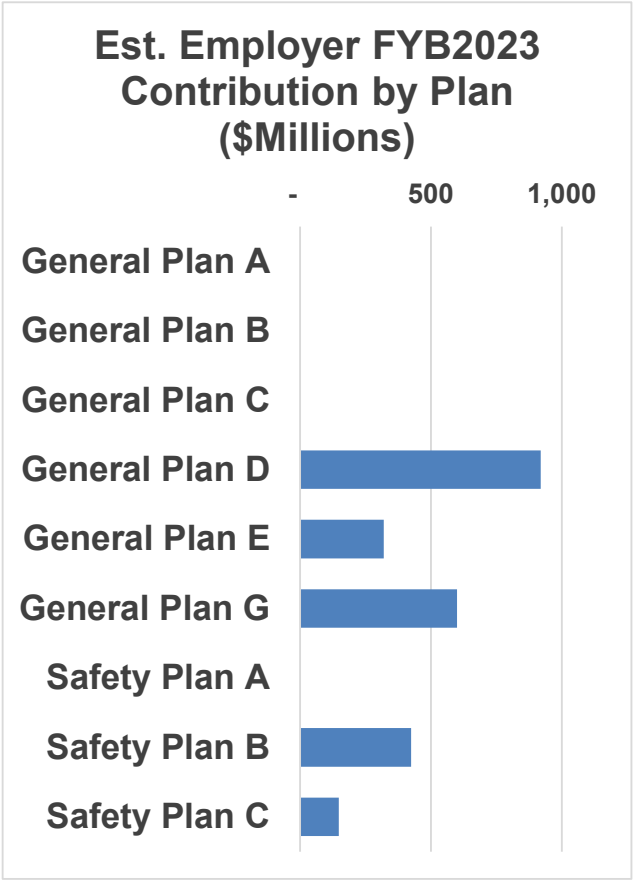


Summary of Results

Employer Contribution Rates beginning July 1, 2023

	Employer Normal Cost Rate	UAAL Rate	Total Employer Contribution Rate	Change Since Last Year
General Plan A	16.26%	14.72%	30.98%	0.39%
General Plan B	11.07%	14.72%	25.79%	1.66%
General Plan C	7.73%	14.72%	22.45%	1.22%
General Plan D	9.44%	14.72%	24.16%	1.41%
General Plan E	11.02%	14.72%	25.74%	1.44%
General Plan G	9.24%	14.72%	23.96%	1.30%
Safety Plan A	27.46%	14.72%	42.18%	2.25%
Safety Plan B	18.60%	14.72%	33.32%	1.52%
Safety Plan C	14.76%	14.72%	29.48%	1.57%

Note: All rates as are shown as a percentage of payroll.



Summary of Results

Member Contribution Rates beginning July 1, 2023

Entry Age	Member Contribution Rates				Relative Change
	Current	New	Monthly Increase % of Pay	Monthly Increase Average $	
General D					
25	6.95%	7.22%	0.27%	$ 22	+3.8%
35	8.56%	8.81%	0.25%	21	+2.9%
45	10.49%	10.68%	0.19%	16	+1.8%
55	12.19%	12.33%	0.14%	12	+1.1%
General G					
All Ages	9.08%	9.24%	0.16%	10	+1.8%
Safety B					
25	12.61%	13.04%	0.43%	50	+3.4%
35	14.99%	15.17%	0.18%	21	+1.2%
45	17.83%	17.88%	0.05%	6	+0.3%
Safety C					
All Ages	14.33%	14.76%	0.43%	37	+3.0%

Note: All rates as are shown as a percentage of payroll.

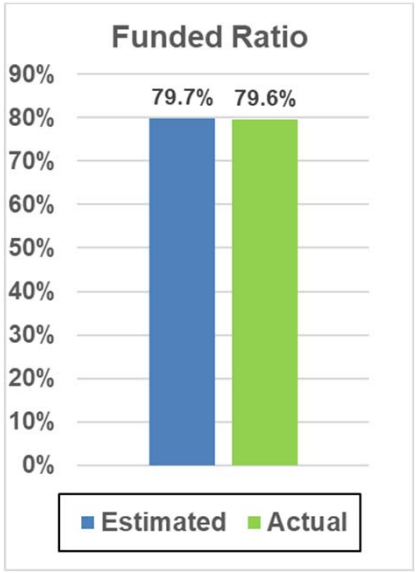
1. *Increases generally as a result of new assumptions.*
2. *Additional increases for General Plan G and Safety Plan C due to PEPRA compensation limit increase greater than assumed, and salary / demographic changes.*
3. *Average $ increases are based on the percent of pay increase and the average monthly compensation for active members of the specified plan.*

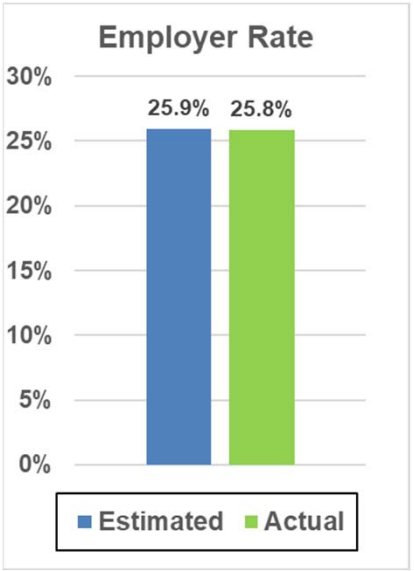
Average Monthly Compensation Used

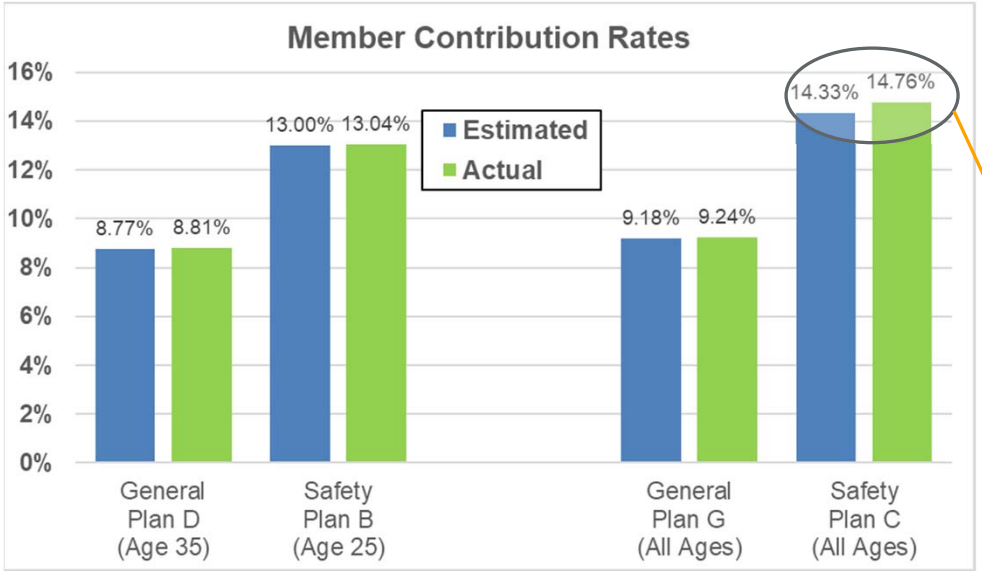
General D = $8,300 per month
General G = $6,300 per month
Safety B = $11,700 per month
Safety C = $8,500 per month

4. *Sample rates shown. Full schedule of member rates in Appendix D of 2022 valuation report.*

Valuation Calculations vs Estimates from Experience Study







- Safety C has about a 0.4% percent of pay increase due to year-to-year variance
  - Greater variance than we typically see – what caused this?
    - Larger-than-assumed increase in PEPRA compensation limit increased projected value of benefits more than projected compensation → Safety Normal Cost rate increased → Safety C member contribution rate increased
      - PEPRA compensation limit is projected to impact a significant number of Safety C members (not currently, but in 20+ years)
      - Likely to see this again in the next valuation as there was a large increase in the PEPRA compensation limit for 2023
    - Other changes in membership group including smaller-than-assumed actual salary increases

Actuarial Review Comments (Cavanaugh Macdonald)

Review of Milliman's Work

Scope of Work

- Review of the underlying data
  - Review appropriateness of data use
  - Confirm appropriate treatment of LACERA raw data
- Parallel valuation results
  - Liability measures
  - Actuarial value of assets, reflecting new method
  - Amortization and cost calculations
  - Contribution rates for members
  - Detailed review of selected individuals

Review of Milliman's Work

Scope of Work (continued)

- Review of Milliman's valuation report
  - Assess compliance with applicable Actuarial Standards of Practice
  - Reports need to consider the style and preferences of the client and the consultant
  - Suggested minor enhancements for future reports

Review of Milliman's Work

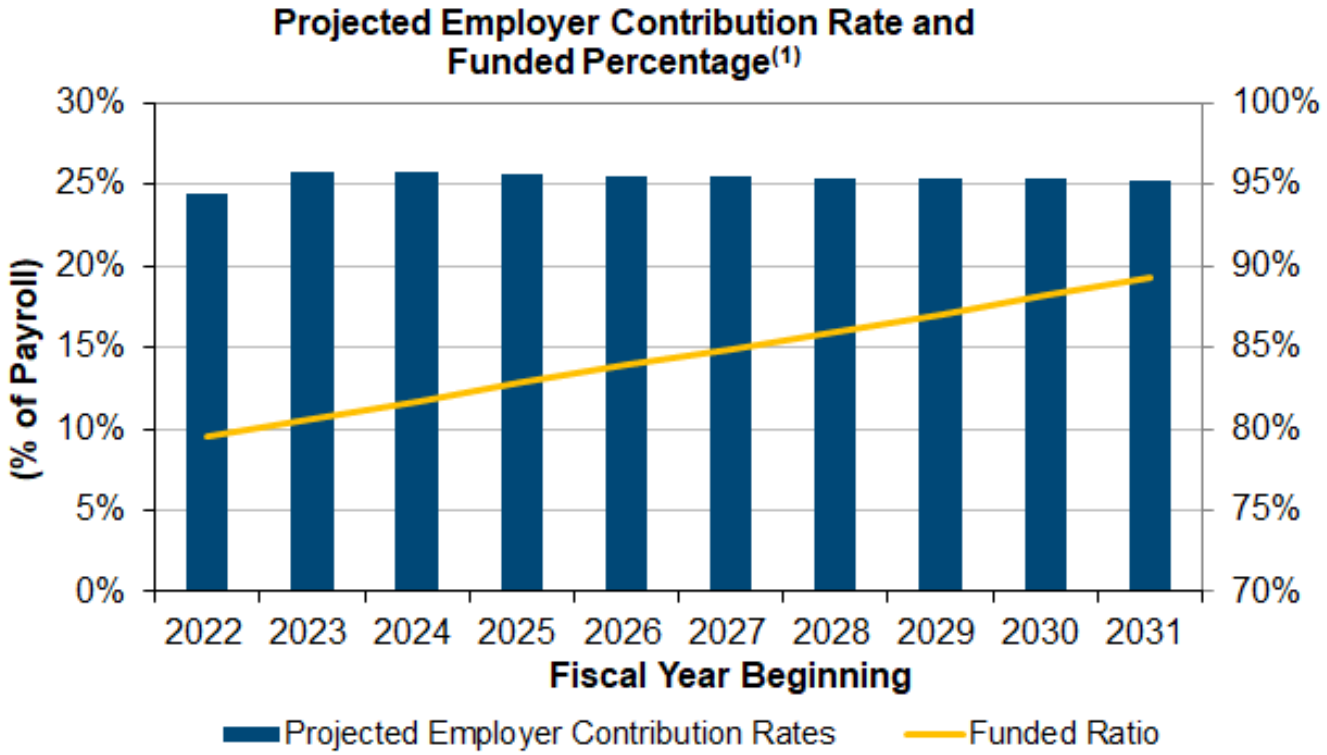
Findings

We find the June 30, 2022 actuarial valuation results to be reasonable and accurate, based on the assumptions and methods used. The valuation was performed by qualified actuaries and was performed in accordance with the principles and practices prescribed by the Actuarial Standards Board.

Milliman

Looking Ahead

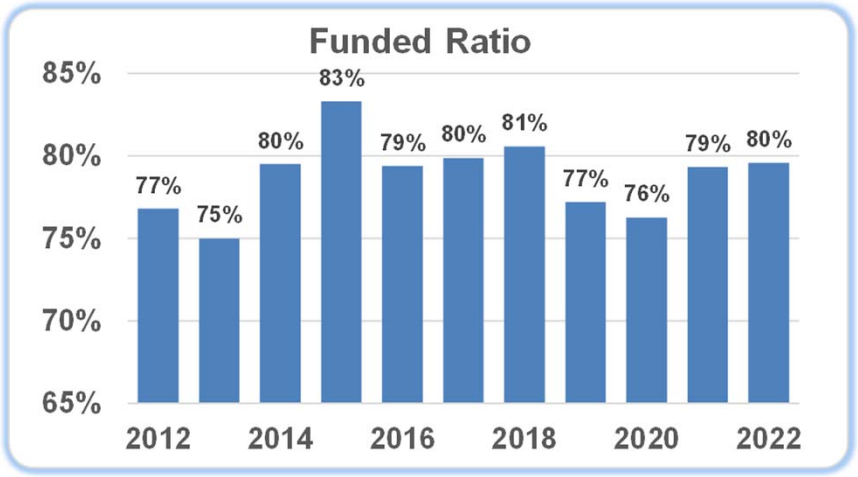
Looking Ahead – Baseline Scenario: All Assumptions Met

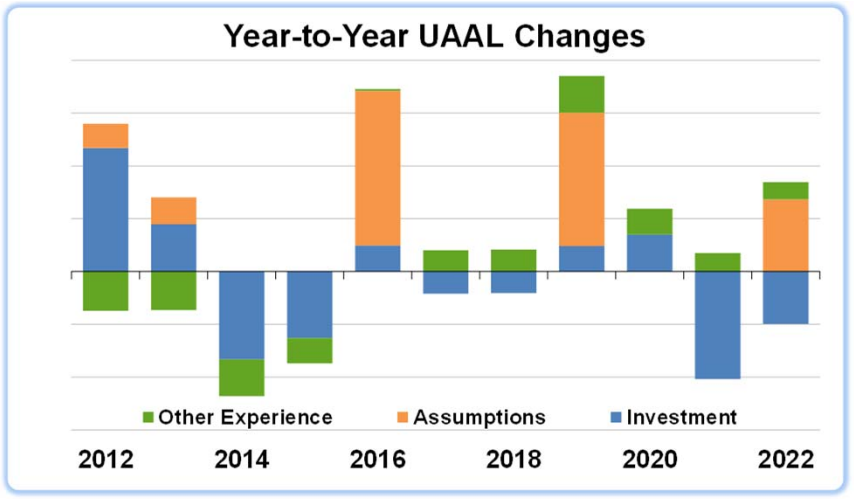


1. Projections assume that all actuarial assumptions are met after June 30, 2022 and reflect the scheduled recognition of asset gains and losses currently being deferred. ***Actual results will vary****.*

Future Variance – Risk Factors

- Risk Assessment report – May 2022
  - Section 9 has summary of key risks
- Risk factors – Increasing as LACERA continues to mature
  - Investment return
  - Salary increases
  - Payroll growth
  - Longevity and other demographic risk
  - Inflation → COLA





Recommendations
For fiscal year beginning July 1, 2023

- Adopt new employer contribution rates as shown on slide 6, and in Exhibit 11 (page 35) of Milliman's June 30, 2022 valuation report
  - Weighted average employer contribution rate = 25.84% of pay effective July 1, 2023
- Adopt new member contributions rates as summarized on slide 7, and in Appendix D-2 (page 109) of Milliman's June 30, 2022 valuation report
  - Weighted average member contribution rate = 11.12% of pay effective July 1, 2023
  - PEPRA plans
    - General Plan G = 9.24%
    - Safety Plan C = 14.76%
  - Legacy plans (dependent on entry age to LACERA, member class, and plan)
    - General Plan D: from 6.04% of pay (entry at age 16) to 12.36% of pay (entry at age 56+)
    - Safety Plan B: from 11.93% of pay (entry at age 16) to 17.89% of pay (entry at age 46+)

Questions?

Statement of Reliance and Limitation

This presentation is intended as a high-level discussion of the results of the June 30, 2022 actuarial valuation. It is based on the data, methods, assumptions and plan provisions described in our actuarial valuation report dated February 16, 2023. The statements of reliance and limitations on the use of this material is reflected in the actuarial report and still apply to this presentation.

These statements include reliance on data provided, on actuarial certification, and the purpose of the report.

Milliman's work product was prepared exclusively for LACERA for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning LACERA's operations, and uses LACERA's data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third-party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product but should engage qualified professionals for advice appropriate to its own specific needs.

The results of the actuarial valuation are based on one set of reasonable assumptions. However, it is almost certain that future experience will not exactly match the assumptions. As an example, investments may perform better or worse than assumed in any single year and over any longer time horizon. It is therefore important to consider the potential impacts of these potential differences when making decisions that may affect the future financial health of the Plan, or the Plan's participants. Please refer to the Risk Assessment report dated May 23, 2022 for a detailed analysis of the main risks applicable to LACERA.

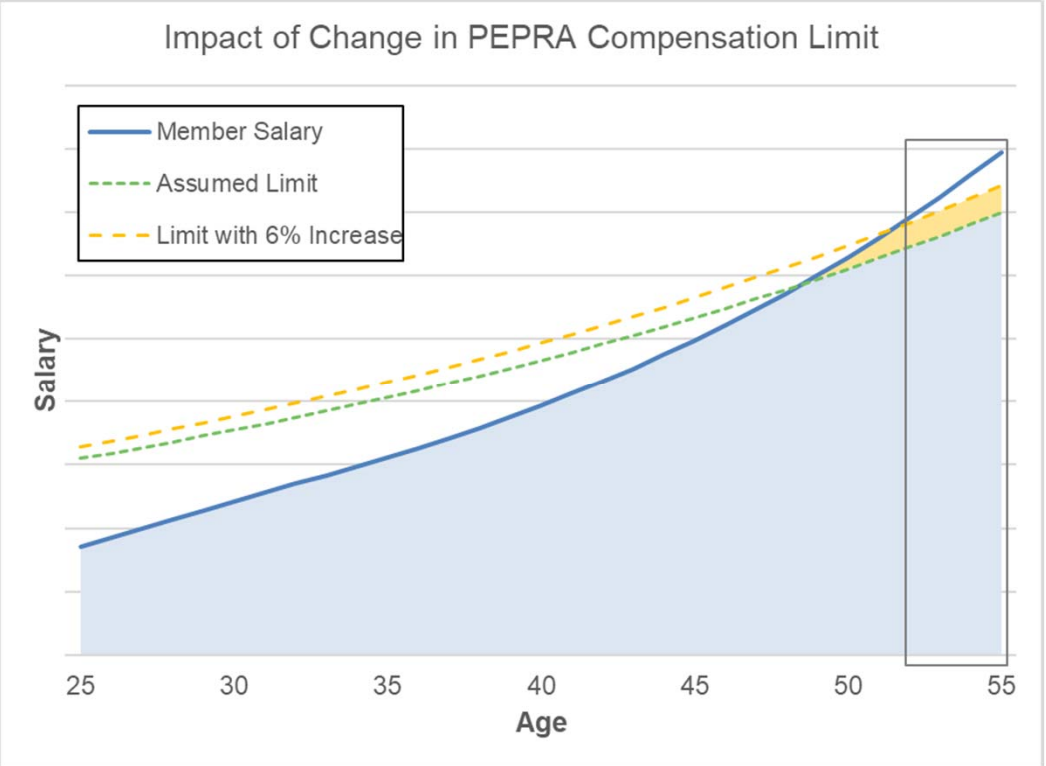
Milliman

Thank you

Supplemental Exhibits

Impact of PEPRA Compensation Limit on Normal Cost Rate

- Graph shows how a higher compensation limit affects the pensionable compensation for a sample member (entry at 25; retire at 55)
  - Blue shaded area shows compensation with limit and assumed increases
  - Orange shared areas shows increase in pensionable compensation with a higher limit
    - 6% higher limit for this example
  - Increase relative to total compensation from ages 25 to 55 is small (less than 1% increase)
    - This is the impact on the value of future compensation
  - If only ages 52 to 55 are looked at, the relative increase is much larger (6% increase)
    - This is the impact on the value of future benefits since the benefit is based on final average compensation which generally is based on the final 3 years
  - Value of benefits increase more than value of compensation so Normal Cost Rate (and consequently member rate increase)



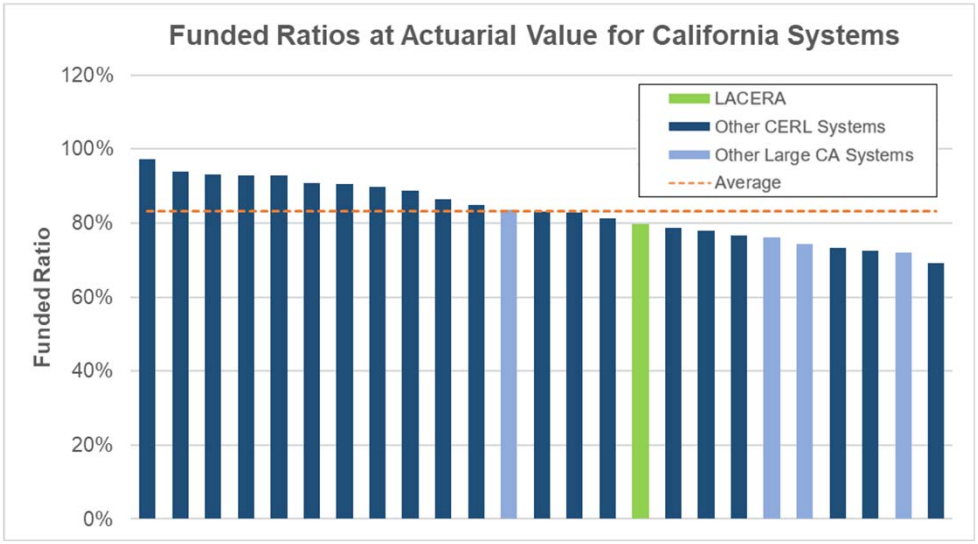
Normal Cost Rate = Value of Benefits / Value of Compensation

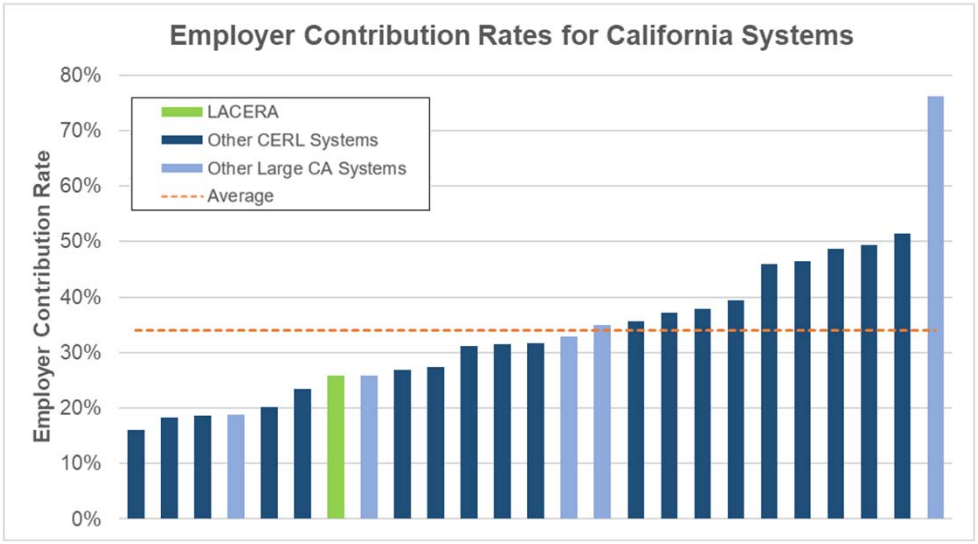
PEPRA Member Contribution Rate = 50% of Normal Cost Rate

Milliman

Note: Simplified example for illustrative purposes

Comparisons with Other California Systems





- Comparisons are not completely apples-to-apples
  - Different valuation dates: About a third have valuation dates in 2021, so investment experience is different
  - Different investment return assumptions: Average is 6.85% vs LACERA's 7.00%
  - A few systems do not smooth valuation assets

2022 Investigation of Experience Estimated Financial Impact

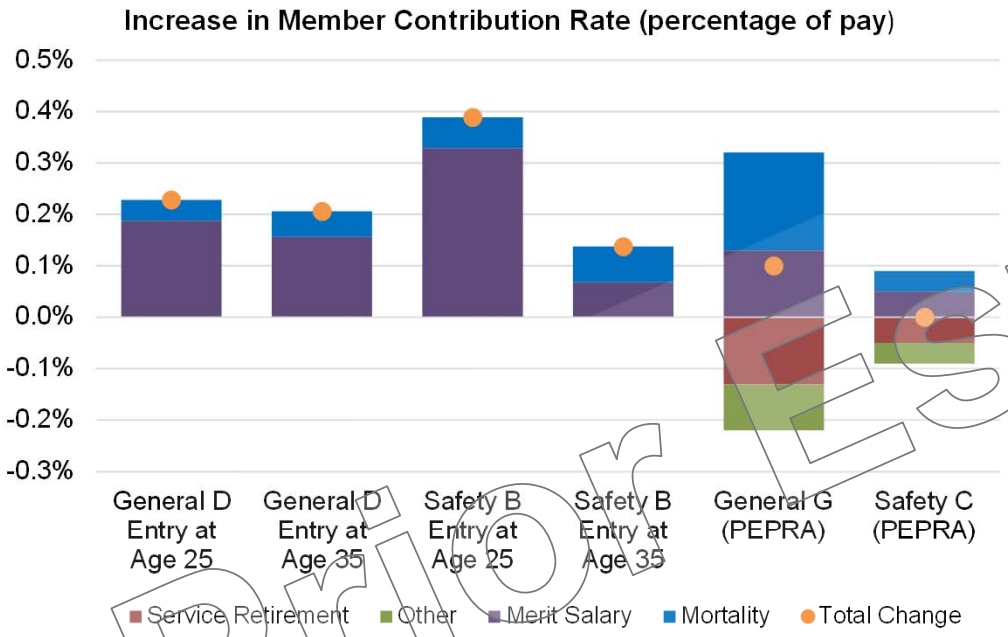
Financial Impact – Funded Ratio / Employer Rates

- Employer contribution rate:
  - FYB 2023 rate is 0.3% of payroll lower than FYB 2022 rate (before changes)
  - FYB 2023 rate is 1.4% of payroll higher than FYB 2022 rate (after changes)
- Funded Ratio (FR):
  - 2022 FR is 1.7% higher than 2021 FR (before changes)
  - 2022 FR is 0.4% higher than 2021 FR (after changes)

	Funded Ratio	Total Employer Contribution % of Payroll	Total Employer Contribution $ millions
June 30, 2021 Valuation	**79.3%**	**24.5%**	**$ 2,205**
Estimated June 30, 2022 Valuation (before changes)	**81.0%**	**24.2%**	**$ 2,178**
Recommended Actuarial Method Changes			
Alternate Asset Smoothing	0.0%	0.2%	$ 18
Exclude STAR Reserve from Funding Assets	-0.5%	0.5%	44
Total Method Changes	**-0.5%**	**0.7%**	**$ 62**
Recommended Economic Assumption Changes			
Economic Assumptions	**0.0%**	**0.0%**	**$ -**
Recommended Demographic Assumption Changes			
Merit Salary Increases	-0.5%	0.7%	$ 62
Service Retirement	-0.9%	1.1%	98
Mortality	0.5%	-0.6%	(52)
Other	0.1%	-0.2%	(15)
Demographic Assumption Changes	**-0.8%**	**1.0%**	**$ 93**
Recommended Changes			
Total Recommended Changes	**-1.3%**	**1.7%**	**$ 155**
Estimated June 30, 2022 Valuation (with all changes)	**79.7%**	**25.9%**	**$ 2,333**

** All amounts and percentages shown on this page are estimates except June 30, 2021 values*

Financial Impact – Member Contribution Rates



	Change in Member Rate	Average Monthly Salary	Change in Monthly Contribution
Legacy Members			
- General D (Entry Age 25)	0.23%	$ 8,200	$19
- General D (Entry Age 35)	0.21%	$ 8,200	$17
- Safety B (Entry Age 25)	0.39%	$ 11,600	$45
- Safety B (Entry Age 35)	0.14%	$ 11,600	$16
PEPRA Members			
- General	0.10%	$ 6,100	$6
- Safety	0.00%	$ 8,300	$0

- Increase in member contribution rates for most members
- Amount of increase dependent on plan and entry age (for Legacy plan members)
  - Legacy members with younger entry ages will see largest percentage increase

Financial Impact – Member Contribution Rate Comparison

- Additional detail on member contribution rates

Entry Age	Estimated Member Contribution Rates[1] Current	Estimated New	Estimated Monthly Increase % of Pay	Estimated Monthly Increase Average $[2]
General D				
25	6.95%	7.18%	0.23%	$ 19
35	8.56%	8.77%	0.21%	17
45	10.49%	10.63%	0.14%	11
General G				
All Ages	9.08%	9.18%	0.10%	6
Safety B				
25	12.61%	13.00%	0.39%	45
35	14.99%	15.13%	0.14%	16
45	17.83%	17.83%	0.00%	0
Safety C				
All Ages	14.33%	14.33%	0.00%	0

1. *Final member contribution rates will not be determined until the June 30, 2022 actuarial valuation is completed.*
2. *Average increases are based on the estimated percent of pay increase and the average monthly compensation for active members of the specified plan.*

Average Monthly Compensation

General D = $8,200 per month
General G = $6,100 per month
Safety B = $11,600 per month
Safety C = $8,300 per month

Glossary

Glossary

- **Accrued Liability / Actuarial Accrued Liability (AAL):** That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.
- **Actuarial Asset Smoothing:** A method used to determine the Actuarial Values of Assets that reduces the effect of short-term market volatility while still tracking the overall movement of the market value of assets.
- **Actuarial Assumptions**: Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets. The Actuarial Assumptions fall in to two main categories: Demographic and Economic Assumptions.
- **Actuarial Methods**: Procedures used to determine the Actuarial Value of Assets; how the liabilities (value of promised benefit payments) are allocated to accrued and future; how the Unfunded Actuarial Accrued Liability is systematically paid down (amortization method); and other relevant items.
- **Actuarial Standards of Practice:** The Actuarial Standards Board sets standards for appropriate actuarial practice in the United States through the development and promulgation of Actuarial Standards of Practice (ASOPs). These ASOPs describe the procedures an actuary should follow when performing actuarial services and identify what the actuary should disclose when communicating the results of those services.

Glossary (continued)

- **Actuarial Valuation**: The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.
- **Actuarial Value of Assets**: The value of cash, investments and other property belonging to a pension plan after reflection of Actuarial Asset Smoothing, as used by the actuary for the purpose of an Actuarial Valuation.
- **Alpha**: Actual investment return, if any, above the benchmark return.
- **Amortization Payment**: That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
- **Capital Market Assumptions (or Expectations):** Capital Market Assumptions are numerical expectations about the future performance of available asset classes that incorporate theories, observations and experience. Each asset class has an expected return, variance and correlation between other asset classes.
- **COLA**: LACERA retirement and survivor allowances are adjusted annually by the cost-of-living adjustment (COLA). The adjustment is based on changes in the cost of living over the previous 12-month period as of December 31.
- **COLA Bank**: Also referred to as the COLA Accumulation. The COLA Bank is the accumulation of annual CPI increases that exceed the COLA Cap. In years where the CPI increase is less than the COLA Cap, a withdrawal from the COLA Bank takes place to increase the actual COLA granted, up to the COLA Cap.

Glossary (continued)

- **COLA Cap (Maximum)**: LACERA retirees and beneficiaries cannot receive an annual COLA increase above the COLA Cap. For Plan A, the amount is 3%; for other plans the maximum is 2%.
- **CPI**: Consumer Price Index. Used to measure local and national price inflation.
- **Demographic Assumptions**: Assumptions as to the occurrence of future events specific to member experience, such as: mortality, withdrawal, disability, retirement, and changes in compensation in excess of General Wage Growth.
- **Discount**: The discount is the reduction that is applied to future cash flows (primarily benefit payments and contributions) to determine the present value as of the valuation date of those cash flows. For LACERA, the discount rate is equal to the investment return assumption.
- **Economic Assumptions:** Assumptions as to the occurrence of future events specific to economic factors, such as: investment returns, compensation increases related to inflation and productivity, and inflation.
- **Employer Contribution Rate**: Annual employer contribution calculated under LACERA's funding policy as a percent of payroll. The rate is a sum of contributions to fund the Normal Costs (net of member contributions) and the UAAL.
- **Inflation**: See Price Inflation.
- **Investigation of Experience**: Periodic review of Actuarial Assumptions to review recent experience and future forecasts. For LACERA, this is completed every three years

Glossary (continued)

- **Layered Amortization Period**: Payment of each year's change in the Unfunded Actuarial Accrued Liability (UAAL) is amortized over separate closed periods. For LACERA, the original UAAL as of June 30, 2009 is being amortized over a closed 30-year period. Subsequent changes in the UAAL were amortized over new closed 30-year periods. Effective with the June 30, 2019 valuation all existing layers with more than 22 years remaining as of June 30, 2020 were re- amortized over closed 22-year periods. All new UAAL layers thereafter are amortized over closed 20-year periods beginning with the date the contribution is first expected to be made. All amortization payments are based on a level percent of pay.
- **Legacy**: Legacy plans are those plans that existed prior to the implementation of PEPRA. For LACERA, these are the following defined benefit plans: General Plans A, B, C & D and Safety Plans A & B.
- **Median Expected Return**: The numerical value that there is a 50% probability the actual return will exceed (and 50% probability it will fall short of) this value over a long-term time horizon on annualized geometric basis.
- **Merit Salary Increases:** Salary increases in excess of the General Wage Growth that are expected as a member moves through their career related to merit, promotion and longevity.
- **Mortality Projection Scale:** A scale that is used to project future changes in mortality rates. A scale that project declines in future mortality rates is expecting increased life expectancies for future retirees.
- **Normal Cost Rate:** The value of benefits earned as a percent of pay calculated as a level percent of payroll from entry age

Glossary (continued)

- **Payroll Growth:** The annual increase in the pensionable payroll used in the calculation of the UAAL amortization rate.
- **PEPRA**: The California Public Employees' Pension Reform Act (PEPRA) of 2013 specifies benefit provisions for LACERA General Plan G and Safety Plan C. It also governs certain provisions of other LACERA plans and places additional restrictions on employer contribution rates to be paid.
- **Price Inflation:** A sustained increase in the general level of prices for goods and services.
- **Price-to-Earnings (P/E) Ratio:** The price-to-earnings ratio is the ratio for valuing a company that measures its current share price relative to its earnings per share. P/E ratios are used by investors and analysts to determine the relative value of a company's shares in an apples-to-apples comparison
- **Projected Benefits**: Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.
- **Real Rate of Return:** The portion of the expected investment return that is in excess of national Price Inflation.
- **Real Wage Growth:** The portion of General Wage Growth that is not related to local Price Inflation.

Glossary (continued)

- **STAR Reserve**: Reserves accumulated for the payment of cost-of-living benefits as defined in California Government Code Section 31874.3. Supplemental Targeted Adjustment for Retirees (STAR) Benefits Supplemental cost-of-living payments to retired members to restore purchasing power at a specified percentage level, as described in California Government Code Section 31874.3.
- **Unfunded Actuarial Accrued Liability (UAAL)**: The excess, if any, of the Actuarial Accrued Liability over the Valuation Assets.
- **Valuation Assets:** Assets considered in the calculation of the UAAL contribution rate. Valuation assets are equal to Actuarial Value of Assets but net of certain non-valuation reserves (for the 2022 valuation, the non-valuation reserves are the Contingency Reserve and the STAR Reserve
- **Valuation Date:** The date upon which the Normal Cost, Actuarial Accrued Liability, and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the ending of a Plan Year.
- **Wage Growth**: See General Wage Growth.

LACERA

SUPPLEMENTAL DOCUMENT

March 2, 2023

TO: Board of Investments

FROM: Santos H. Kreimann SHK
Chief Executive Officer

FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **SUPPLEMENTAL BUDGET IMPACT – LACERA'S ORDINANCE OF POSITIONS MEMO DATED FEBRUARY 23, 2023 - Retirement** Benefits Specialist I, Retirement Benefits Specialist II, Senior Disability Retirement Specialist

SUMMARY

This report is provided as supplementary information to correct the budget impact outlined in the memo to the Board of Retirement and Board of Investments dated February 23, 2023 and to address questions raised in the Board of Retirement meeting held on March 1, 2023.

The memo dated February 23, 2023, requests the Board of Retirement and the Board of Investments to increase the following additional positions in the County of Los Angeles Salary Ordinance Section 6.127.010 (Ordinance), including submission to the Board of Supervisors:

Summary of Request

Item No.	Position Title	Ordinance	Request	Total
1309	Retirement Benefits Specialist I, LACERA	18	17	35
1310	Retirement Benefits Specialist II, LACERA	79	21	100
1632	Senior Disability Retirement Specialist, LACERA	22	3	25

BUDGET IMPACT

The budget impact reported in the February 23, 2023, memo erroneously stated the budget impact for fiscal year (FY) 2022-2023 to be $650,000. The actual FY 2022-2023 budget impact is zero as the Ordinance is not anticipated to be adopted by the Board of Supervisors until approximately six months after Board action.

The full year cost for salaries and benefits for the 41 additional Ordinance positions requested would be approximately $3.8 million. However only the three Senior Disability Retirement Specialist positions are proposed to be added to the fiscal year (FY) 2023-

2024 Budget. If filled today, the full year cost of salaries and benefits for these three positions is approximately $409,000. Authority and six months funding ($207,000) for these three positions will be brought to the Board of Retirement and Board of Investments for consideration later this spring. Positions will not be filled until or unless they are both included in the Ordinance and funded in the Adopted Budget approved by the Board of Retirement and Board of Investments.

No additional funding beyond non-discretionary salary and benefit adjustments will be requested for the 85 Retirement Benefits Specialists II included in the FY 2022-2023 Adopted Budget. No funding for Retirement Benefits Specialists I are currently budgeted. Our current practice is to fund them through salary savings from vacant Retirement Benefits Specialist II positions. The additional Ordinance positions requested for Retirement Benefits Specialists I and II will allow us to have a regular cadence of trained staff prepared to serve members instead of the current practice where we are perpetually understaffed due to attrition that occurs during the training period. If attrition does not occur as anticipated, the impact to the 2023-2023 Adopted Budget could be as high as $219,000 (based on 9 positions for three months).

The following table summarizes the potential budget impact:

Classification	**Ordinance Positions Requested**	**Total Annual Estimated Cost***	**FY 22/23 Budget Impact**	**FY 23/24 Budget Impact**
Retirement Benefits Specialist I, LACERA	17	$1,384,000	$0	$0
Retirement Benefits Specialist II, LACERA	21	$2,013,000	$0	$219,000
Senior Disability Retirement Specialist, LACERA	3	$409,000	$0	$207,000
TOTAL	**41**	**$3,806,000**	**$0**	**$426,000**

*If all positions are filled

LEGAL AUTHORITY

County Employees Retirement Law (CERL) Section 31580.2 grants Joint Boards authority to approve a budget no greater than 21 basis points of the Actuarial Accrued Liability (AAL) by June 30. The appropriation limit for FY 2022-2023 totals $171,985,893. The approved FY 2022-2023 Administrative Budget totals $127,766,860 or $44,219,033 below the appropriation limit outlined in CERL.

cc: All Trustees, Board of Retirement
Luis Lugo
Laura Guglielmo
JJ Popowich
Steven P. Rice
Carly Ntoya

February 23, 2023

TO: Each Trustee
Board Retirement
Board of Investments

FROM: Santos H. Kreimann SHK
Chief Executive Officer

FOR: March 1, 2023 Board of Retirement Meeting
March 8, 2023 Board of Retirement Meeting

SUBJECT: **UPDATE LACERA'S ORDINANCE OF POSITIONS –** Retirement Benefits Specialist I, Retirement Benefits Specialist II, Senior Disability Retirement Specialist

RECOMMENDATIONS

It is recommended that the Board approve an increase in the number of Retirement Benefit Specialist I (Item #1309) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 17 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

It is recommended that the Board approve an increase in the number of Retirement Benefit Specialist II (Item #1310) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 21 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

It is recommended that the Board approve an increase in the number of Senior Disability Retirement Specialist II (Item #1632) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 3 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

The request is for ordinance positions only and funding for the position will be recommended as part of the budget and/or mid-year budget adjustment process.

DISCUSSION

The Retirement Benefit Specialist (RBS) series (RBS I, RBS II, RBS III, and Sr. RBS) are critical positions that provide frontline and processing services to members. Staffing in the various units in Benefits and Member Services are determined based on historical trend data and projected future needs. If any of the various units does not have sufficient trained staff LACERA cannot meet its expected service levels leading to delays in processing member requests, high call wait times in the call centers and insufficient

capacity to offer enough appointments (virtual or in-person) in the Member Service Center, and a lack of our ability to provide enough webinars and in-person events. Staff shortages also leads to increased overtime costs and staff burnout as the remaining staff step in to fill the void.

It should also be noted that the RBS series is also often a feeder series for higher level positions in Disability Retirement Services and Quality Assurance. An additional result of not being able to keep the RBS positions in Benefits and Member Services fully staffed can lead to long term vacancies in these other divisions – especially Quality Assurance which requires highly trained and proficient staff that can only be produced through gaining work experience in the RBS series.

Therefore, this request is designed to create flexibility and an adequate pipeline of trainees to meet the needs of the Member Operations Group. The request is specifically aimed at increasing our ordinance. We will address any increases to our budget as part of annual or mid-year budgetary process.

Predicting Future Needs

Each year, the management teams for the Member Operations Group review staffing needs. This involves both a data driven look at historical attrition trends combined with an intuitive predictive effort based on demographic data and staff comments shared about future plans. The team also considers what positions are likely to be available for promotion and what feeder positions are most likely to be successful in promoting. Using this data, along with insights based on past experiences, and the current vacancy rates the team determines how many new RBS I we will need to hire. At times this projected need exceeds the number of Ordinance and budgeted positions.

Based on historical data the average attrition rate for the RBS series (Retirement Benefits Specialist II, Retirement Benefits Specialist III, Senior Retirement Benefits Specialist) we are estimating annual attrition at approximately 5.4%.

Filling the Predicted Needs

To prepare for this, LACERA will hire more RBS I's in the training program to be promoted to RBS II's in one year, than is needed to fill current vacancies. Specifically, LACERA will hire 32 RBS I for 2023 training class and expects those same 32 individuals to onboard as permanent RBS IIs in April 2024. During this time frame, LACERA anticipates four additional vacancies due to attrition, for 21 total RBS II vacancies. The number of current and anticipated RBS II vacancies is insufficient to hire the 32 Trainees.

In order to allow for the necessary flexibility to keep staffing consistent, LACERA will need to seek changes to the number of Ordinance positions for both the RBS I and RBS II positions as discussed below.

Requested Changes

Before we discuss the requested changes here is a summary of our current Ordinance and budgeted positions.

Retirement Benefits Specialist I and II as of February 1, 2023

Item Number	Position Title	Ordinance	Budgeted	Vacant
1309	Retirement Benefits Specialist I, LACERA	18	0	n/a
1310	Retirement Benefits Specialist II, LACERA	79	85	17

We are requesting the following:

Summary of Request

Item Number	Position Title	Ordinance	Request	Total
1309	Retirement Benefits Specialist I, LACERA	18	17	35
1310	Retirement Benefits Specialist II, LACERA	79	21	100

The changes we are requesting are all in the Ordinance position numbers. We will address the budget later in this memo.

Retirement Benefits Specialist I

The Retirement Benefits Specialist I (RBS I) classification is used as the entry point to the Retirement Benefits Specialist series. RBS I's are hired as temporary staff members to participate in a one-year Core Benefits Training (CBT) program. Once the RBS I's successfully complete the training program, they are hired as Retirement Benefits Specialist II's and are placed in the Member Services (MS) or Benefits Division.

There are currently 18 RBS I and 79 RBS II positions approved in the Ordinance. The addition of 17 RBS I positions (for a total of 35 positions) and 21 RBS II positions (for a total of 100 positions) gives LACERA the ability to train and onboard a sufficient number of staff to ensure a consistent level of service to our members.

The additional Ordinance positions are required due to the way in which RBS I positions are funded. The RBS I positions are not budgeted; RBS I staff members are assigned to vacant RBS II positions and are paid via salary savings. Assigning RBS I staff members to RBS II positions prevents hiring more RBS I's than can be promoted to RBS IIs.

This practice limits the number of CBT participants to the number of vacant RBS IIs at the time the training program starts.

Increasing the number of RBS I positions in the Ordinance allows more participants in the CBT program. Having additional positions in the Ordinance allows LACERA's management the flexibility to hire more Trainees at one time, to meet forecasted staffing needs, and to ensure a more consistent member experience. The intent of this request is to maintain a consistent, fully trained staffing level at the currently authorized budget (zero vacancy rate) for staff directly serving members.

There are currently 17 RBS I positions in the Ordinance available for Member Services and Benefits to use. There is currently one RBS I position available in the Ordinance for RHC to use. All 18 positions are vacant. This number of vacancies is insufficient to meet current needs. Management requests to hire 32 RBS I's to participate in the training classes – six in RHC and 26 between Member Services and Benefits. Therefore, a minimum of 14 RBS I positions need to be added to the Ordinance. LACERA is requesting to add 17 RBS I positions, for a total of 35 RBS I positions to allow for flexibility in the future.

Retirement Benefit Specialist II

Ideally, our forecasting described earlier and the natural attrition that occurs during a training class would be addressed by the RBS I staff in training creating a smooth pipeline to fill vacancies. However, there is a risk that we may be off in our predicted vacancies. In this case, we would have trained RBS I staff, but no RBS II Ordinance positions available. Increasing the number of RBS II Ordinance positions would allow us to have reasonable flexibility if this situation were to occur. In the event, we exceeded the number of RBS I we need to fill RBS II vacancies, we would pause future CBT program activity until we saw the natural attrition catch up to the available trained RBS II from the last CBT program.

Additionally, the number of budgeted RBS II positions exceeds the number of positions in the Ordinance. There are currently 79 RBS II positions in the Ordinance and 85 RBS II positions in the Budget. The Human Resources and Budget teams could not pinpoint when this mismatch occurred, but it pre-dates 2015. Historically, the mismatch has not caused a problem since LACERA had vacancies in the classification. As we fill the vacancies, the number of budgeted and Ordinance positions need to match.

To match the number of budgeted positions, account for anticipated attrition, and permanently hire all 32 Trainees, LACERA is requesting to increase the number of RBS II positions in the Ordinance from 79 to 100.

Senior Disability Retirement Specialist

The Disability Retirement Services (DRS) Division is requesting three additional Senior Disability Retirement Specialist positions in the 2023-2024 Budget Request to address the current and anticipated workload. Should this request be approved, the current

number of positions in the Ordinance will need to increase from 22 to 25. This request is being made ahead of the Budget approval process because Ordinance changes routinely take six months to complete. If the Boards do not approve the additional positions in the 2023-2024 Budget, they will not be filled even if the additional positions are added to the Ordinance. In support of the need in DRS, the Executive Team reprioritized the Senior Disability Retirement Specialist examination from Tier 3 to Tier 1.

BUDGET IMPACT

There are no currently Budgeted RBS I positions. By hiring 32 Trainees LACERA will "overhire" – fill more positions than listed in the budget. However, RBS I positions are filled with County Temporary employees. Since these positions are not being filled with permanent staff, regular permanent funding is not required to hire eligible candidates this year. The funding for 32 RBS I staff members from March 2023 through June 2023 is estimated at $650,000. This can be funded with salary savings as staff attrition will continue over the course of the fiscal year. This action will ensure LACERA maintains the current authorized staffing levels for staff directly serving members.

The RBS II positions will be filled in April 2024, when the current class of RBS I Trainees are hired permanently. The funding for 11 RBS II (32 Trainees – 21 anticipated vacancies) staff members from April 2024 through June 2024 is currently estimated at $270,000. If this cannot be funded via salary savings, LACERA will make a mid-year request to fund the full or remaining portion of the cost.

The Senior Disability Retirement Specialist funding request is included in the 2023-2024 Budget. There is no fiscal year 2022–2023-year budget impact. The request to increase the number of positions in the ordinance is being made ahead of the budget request to facilitate administrative processing. Ordinance change requests routinely take six months to be approved and implemented.

IMPLEMENTATION

Under Article XVI, Section 17 of the California Constitution, the Board of Retirement and Board of Investments have plenary authority and exclusive fiduciary responsibility for the administration of LACERA in the paramount interest of providing benefits to members and their beneficiaries. Government Code Section 31522.1 authorizes the LACERA Boards to "appoint such administrative, technical, and clerical staff personnel as are required to accomplish the necessary work" of the Boards, and further provides such personnel "shall be county employees and shall be subject to the county civil service or merit system rules and shall be included in the salary ordinance or resolution adopted by the boards of supervisors for the compensation of county officers and employees." Ensuring adequate staff to perform LACERA's member service functions is a high organizational priority to enable the fund its fiduciary duty to provide benefits to members and their beneficiaries. For the reasons stated above, staff recommends that the Boards

find the additional ordinance positions to be required to provide adequate service to members in furtherance of LACERA's fiduciary duty.

The proposed change to LACERA's Ordinance will need to be added Title 6 – Salaries, Section 6.127.010 Positions in the Los Angeles County Code. Therefore, upon your approval, LACERA's Human Resources will work with LACERA's Legal Office to prepare and forward the information to the Los Angeles County Board of Supervisors to make the changes to LACERA's portion of the County Code.

RECOMMENDATIONS

Therefore, it is recommended that the Board approve an increase in the number of Retirement Benefit Specialist I (Item #1309) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 17 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

It is recommended that the Board approve an increase in the number of Retirement Benefit Specialist II (Item #1310) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 21 positions including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

It is recommended that the Board approve an increase in the number of Senior Disability Retirement Specialist II (Item #1632) positions in the County of Los Angeles Salary Ordinance, Section 6.127.010 (Ordinance), by 3 positions, including submission to the Board of Supervisors (BOS) to provide operational flexibility to train staff.

The request is for ordinance positions only and funding for the position will be recommended as part of the budget and/or mid-year budget adjustment process.

CN:AC:ac

cc: Luis Lugo
Laura Guglielmo
JJ Popowich
Steven P. Rice
Carly Ntoya

LACERA

February 15, 2023

TO: Each Trustee
Board of Retirement
Board of Investments

FROM: Carly Ntoya, Ph.D.
Director, Human Resources

FOR: March 1, 2023 Board of Retirement Meeting
March 8, 2023 Board of Investments Meeting

SUBJECT: Chief Executive Officer Compensation and Benefits – Transportation Allowance

RECOMMENDATION

The Board of Retirement and the Board of Investments approve a $600 per month Transportation Allowance for Chief Executive Officer, Santos H. Kreimann, effective July 1, 2021.

LEGAL AUTHORITY

Los Angeles County Salary Ordinance Section 6.127.030 B

1. Compensation and Benefits. Notwithstanding any other provision of Title 6 of this code, the salary and benefits for any person designated to act as retirement administrator pursuant to Section 6.127.020 may be determined by written agreement between the boards of retirement and investments and such designated person. In the event of any inconsistency between the provision of Title 6 of this code and any such written agreement, the provisions of the written agreement shall control.

The Brown Act provides in Government Code Section 54953(c) (3) that action on senior executive compensation must be taken in open session and that a summary of the terms of the compensation, including benefits, must be orally announced before final action is taken.

DISCUSSION

Previous employment contracts between LACERA's Boards and the Chief Executive Officer have specified the dollar amount to be paid to the Chief Executive Officer as a transportation allowance or vehicle allowance. Mr. Kreimann's employment contract does not specify a monthly allowance amount but rather provides that an allowance

alternatively to a LACERA vehicle will be “separately negotiated.” LACERA Human Resources documents indicated that since at least 2011, LACERA has paid a $600 per month transportation or vehicle allowance. Therefore, this request is made to document the Boards approval of a $600 per month allowance for Mr. Kreimann.

A LACERA leased vehicle was issued to Mr. Kreimann on January 2, 2020. Mr. Kreimann used the vehicle for 18 months and returned the vehicle on June 30, 2021. Per his employment contract Mr. Kreimann should have been paid a transportation allowance effective July 1, 2021 in lieu of using the LACERA vehicle.

The Board’s decision will be documented and implemented by staff. Mr. Kreimann will acknowledge the Board’s decision by way of a counter-signed memorandum.

CN:cn

March 1, 2023

TO: Trustees – Board of Investments

FROM: Jude Pérez, Principal Investment Officer

FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **LACERA QUARTERLY PERFORMANCE BOOK**

Attached is LACERA's quarterly performance book as of December 31, 2022. The report includes both performance and risk sections utilizing data from our platform providers, Solovis and MSCI BarraOne, respectively.

In addition to the standard report, a presentation (**ATTACHMENT 1**) covering the highlights of quarter- and year-end results as well as an overview of asset category-specific environmental, social, and governance and climate profile is included and will be reviewed with Trustees.

Noted and Reviewed:

Jonathan Grabel
Chief Investment Officer

Attachments

LACERA

Los Angeles County Employees Retirement Association

Investments Division

TOTAL FUND

PERFORMANCE REPORT

For the quarter ended
December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Table of Contents

total fund

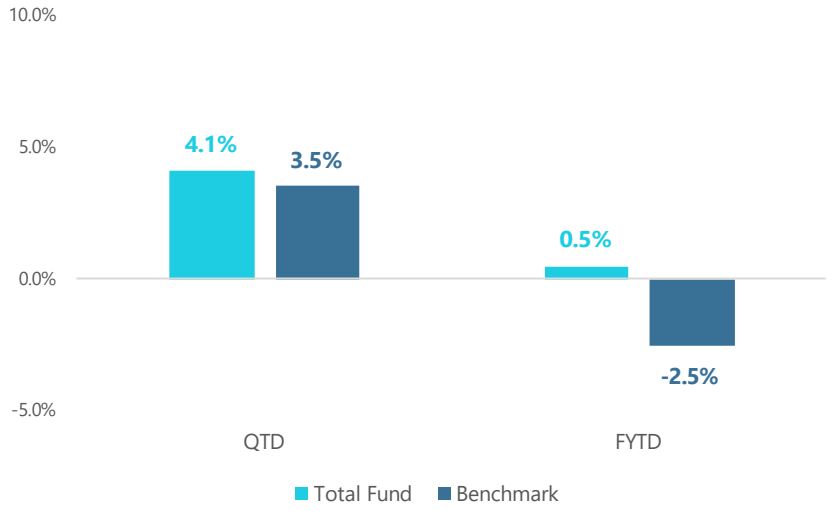
Quarterly Snapshot

for the quarter ended December 31, 2022

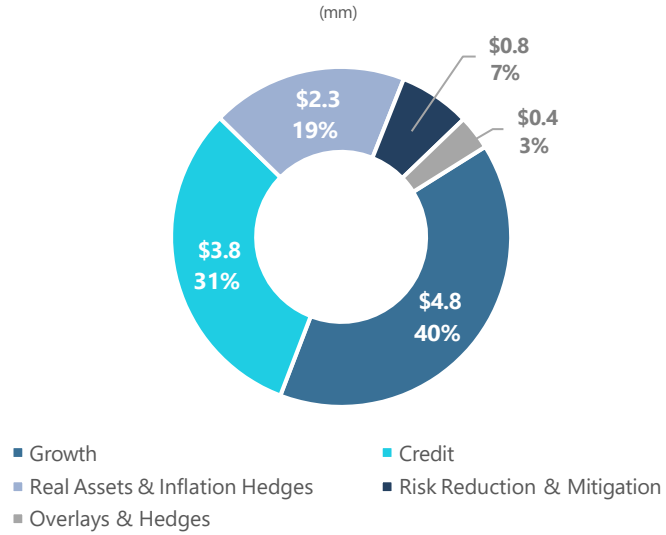
LACERA

Los Angeles County Employees Retirement Association

Performance (net)



Public Markets Fees[1]



Ending Market Value	Sharpe Ratio[2]	Batting Average[3]	Standard Deviation[2]	Tracking Error[2]
70,079	0.7	56%	9.6	2.6
▲ 4% from prior quarter	▼ -5% from prior quarter	▲ 8% from prior quarter	▲ 3% from prior quarter	▲ 8% from prior quarter

[1] Reflects estimated investment management fees. Additional details found in the appendix.

[2] 3 Year Annualized.

[3] Percentage of managers that outperformed the benchmark for the quarter.

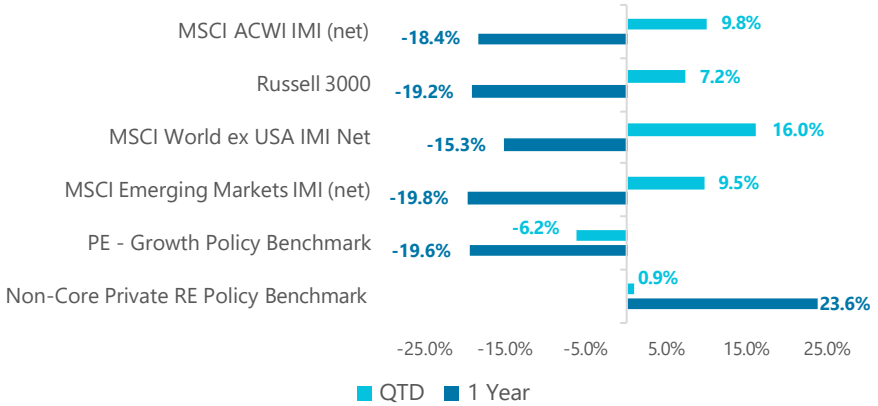
Market Environment

for the quarter ended December 31, 2022

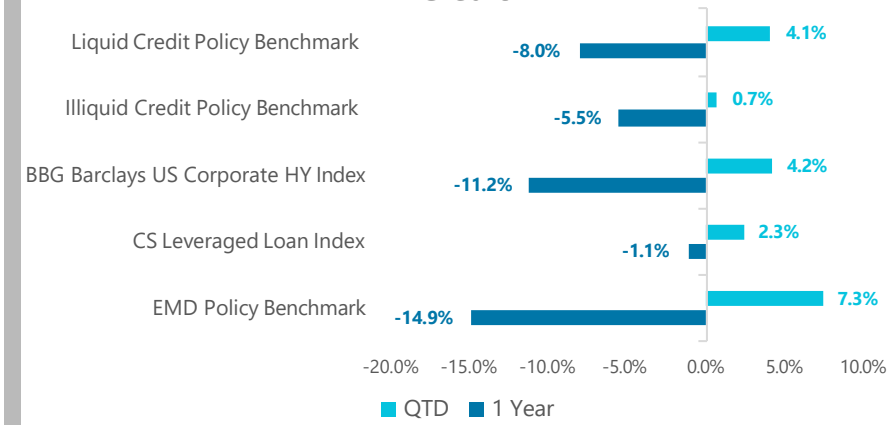
LACERA

Los Angeles County Employees Retirement Association

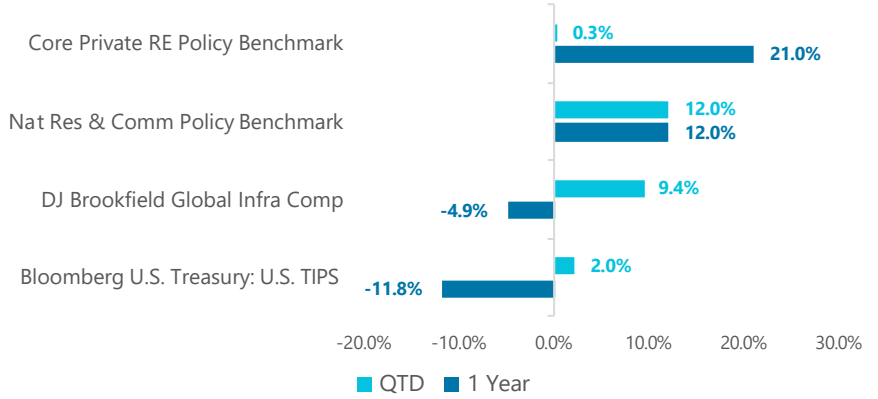
Growth



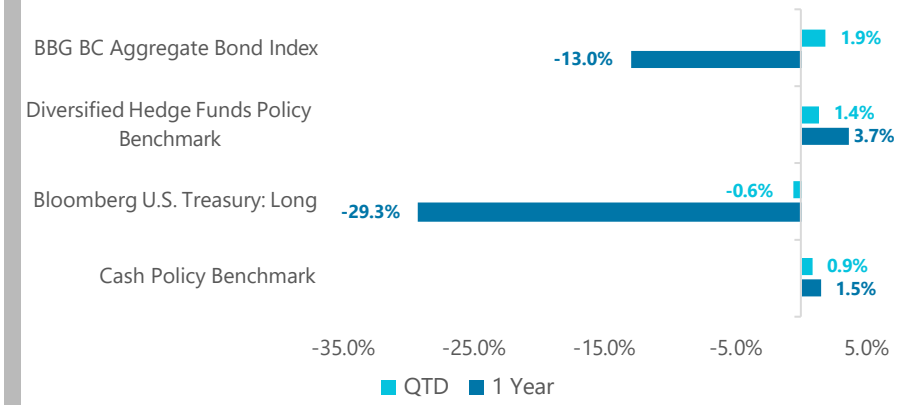
Credit



Real Assets & Inflation Hedges



Risk Reduction & Mitigation



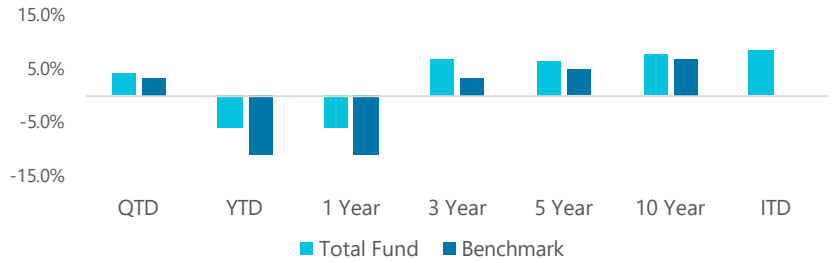
Summary

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

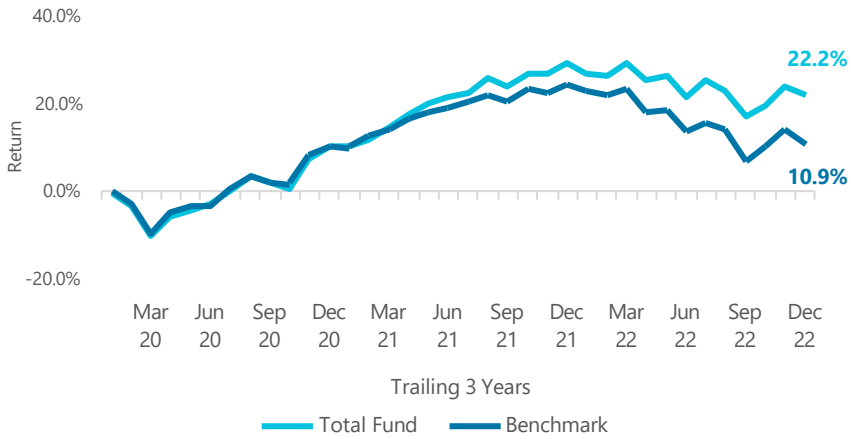
Performance (net)



	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Total Fund	**4.1%**	**-5.6%**	**-5.6%**	**6.9%**	**6.7%**	**7.9%**	**8.5%**
Benchmark	3.5%	-10.9%	-10.9%	3.5%	5.1%	6.9%	--
Excess	0.6%	5.2%	5.2%	3.4%	1.6%	1.0%	--

	FY22	FY21	FY20	FY19	FY18
Total Fund	**0.1%**	**25.2%**	**1.8%**	**6.4%**	**9.0%**
Benchmark	-4.6%	23.1%	2.0%	8.6%	7.8%

Cumulative Return



Functional Category[1]

	QTD	FYTD	1 Year	3 Year
Growth	**6.0%**	**0.8%**	**-9.7%**	**10.0%**
Growth Policy Benchmark	4.0%	-4.8%	-17.0%	5.2%
Excess	2.1%	5.6%	7.3%	4.8%
Credit	**2.2%**	**1.6%**	**-5.5%**	**2.8%**
Credit Policy Benchmark	1.9%	1.0%	-7.4%	0.3%
Excess	0.3%	0.6%	1.9%	2.5%
Real Assets & Inflation Hedges	**3.9%**	**1.7%**	**7.8%**	**8.1%**
RA & IH Policy Benchmark	5.4%	2.1%	6.4%	8.3%
Excess	-1.4%	-0.4%	1.4%	-0.2%
Risk Reduction & Mitigation	**1.1%**	**-2.7%**	**-9.8%**	**-1.0%**
RR & M Policy Benchmark	1.1%	-2.9%	-11.0%	-1.9%
Excess	0.0%	0.3%	1.2%	0.9%
Overlays & Hedges	**-10.6%**	**1.5%**	**178.0%**	**--**

[1] Cash Overlay composite returns reflect non-notionalized returns.

Peer Ranking (gross)

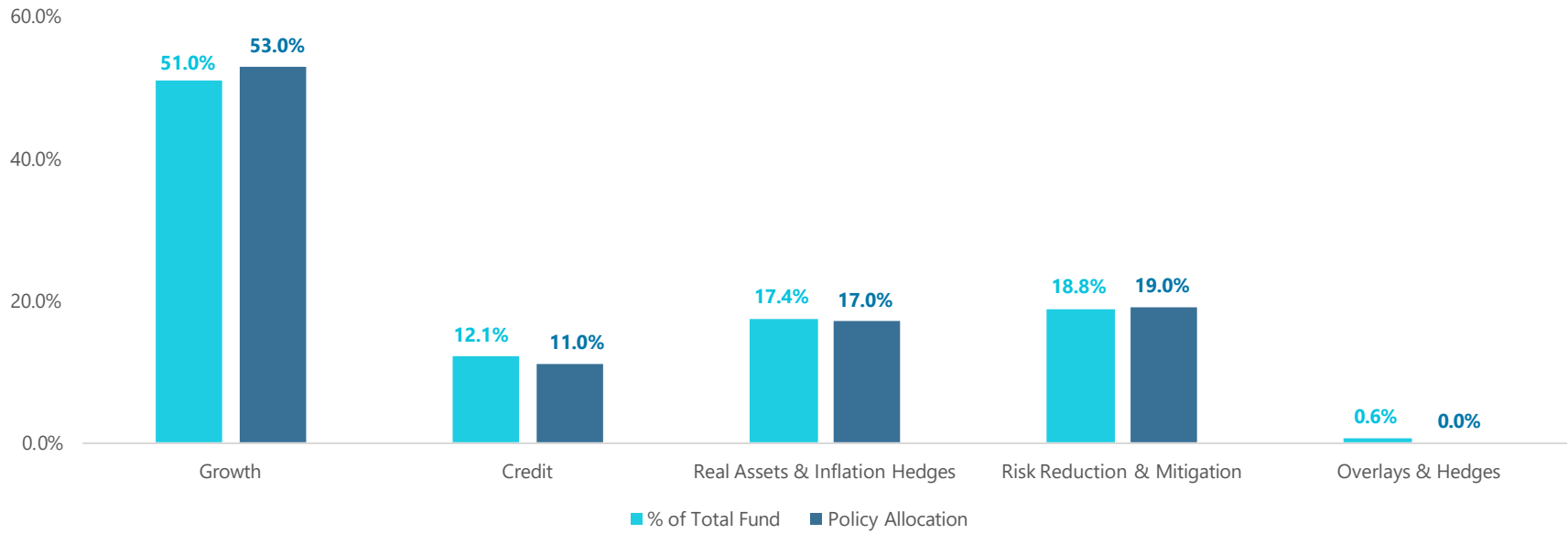
	QTD		1 Year		3 Year		5 Year		10 Year	
Total Fund	**4.2%**	**52**	**-5.4%**	**13**	**7.3%**	**19**	**7.0%**	**24**	**8.2%**	**29**
60/40 Portfolio	6.7%	23	-16.0%	95	1.6%	86	3.3%	86	5.4%	89
S&P 500 Index	7.6%	10	-18.1%	100	7.7%	13	9.4%	4	12.6%	4
5th Percentile	9.4%		0.6%		9.6%		9.2%		9.8%	
25th Percentile	6.3%		-6.3%		7.0%		7.0%		8.6%	
50th Percentile	4.5%		-8.9%		6.1%		6.4%		7.8%	
75th Percentile	3.8%		-12.0%		4.4%		5.2%		7.1%	
95th Percentile	2.9%		-16.4%		-1.6%		1.1%		3.2%	

Asset Allocation

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Actual vs. Policy



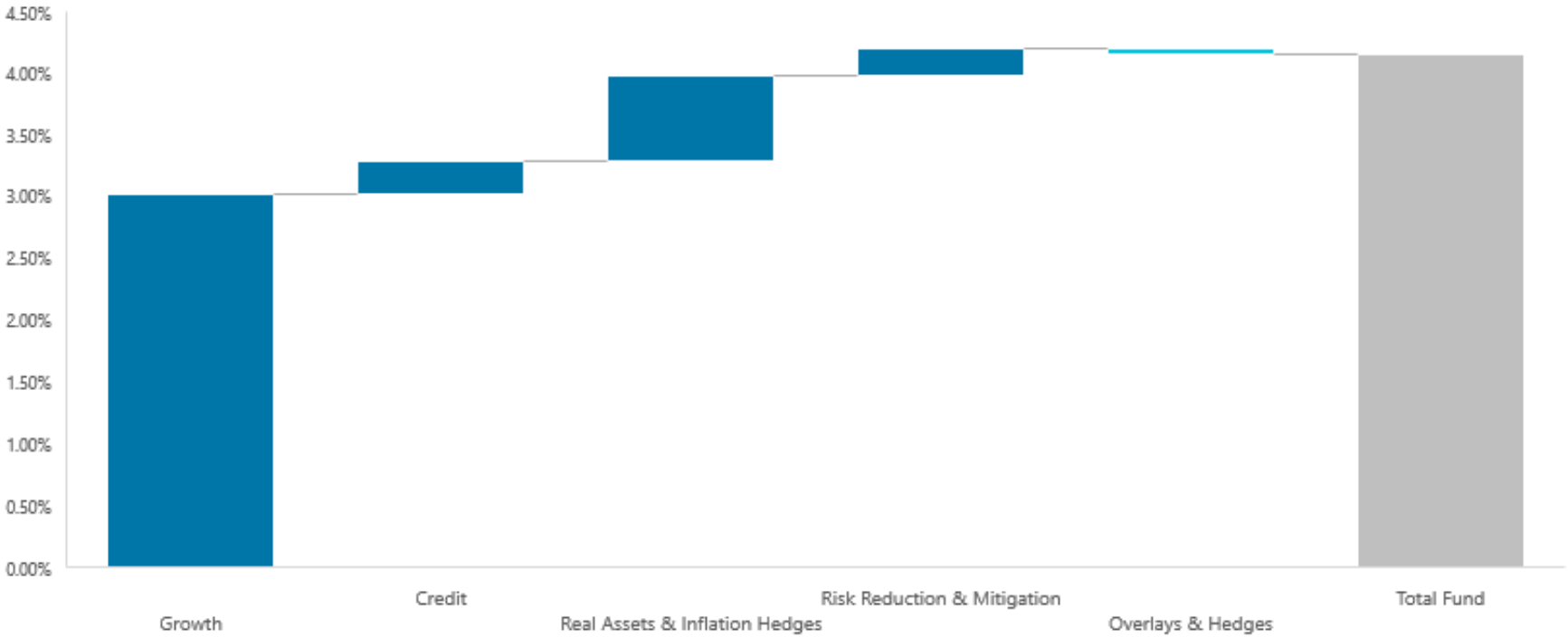
	Ending Market Value (mm)	% of Total Fund	Policy Allocation	Over/Under (%)	Over/Under (mm)
Total Fund	**70,079**	**100.0%**	**100.0%**		
Growth	35,773	51.0%	53.0%	-2.0%	-1,369
Credit	8,446	12.1%	11.0%	1.1%	737
Real Assets & Inflation Hedges	12,222	17.4%	17.0%	0.4%	309
Risk Reduction & Mitigation	13,202	18.8%	19.0%	-0.2%	-113
Overlays & Hedges	436	0.6%	0.0%	0.6%	436

Contribution to Return

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

QTD Contribution to Return



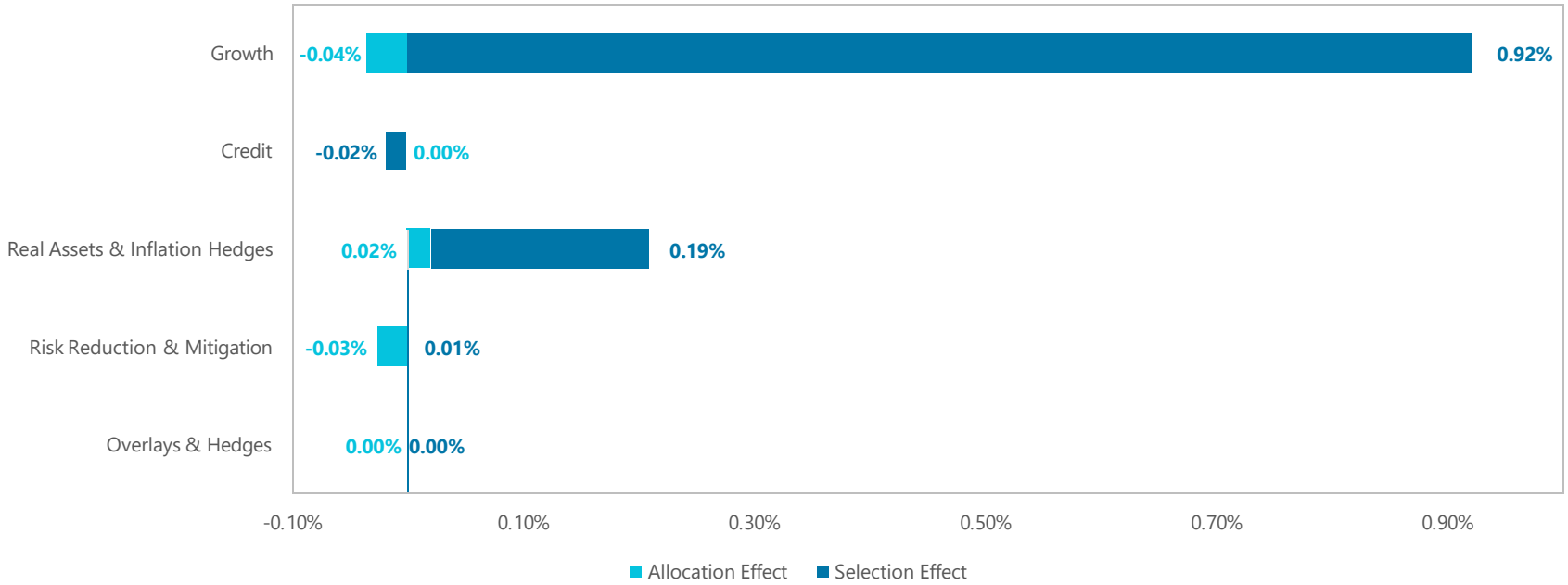
Functional Category		Contributors		Detractors	
Growth	3.02%	BTC Passive Currency Hedge	2.12%	BlackRock Long Treasury Bonds	-0.03%
Credit	0.26%	SSGA MSCI ACWI IMI	1.93%	Parametric GE Region	-0.02%
Real Assets & Inflation Hedges	0.70%	JPMAM Strategic Beta US	0.41%	Parametric RA & IH Overlay	-0.02%
Risk Reduction & Mitigation	0.21%	DWS Infrastructure	0.33%	Beach Point - Fund III	-0.01%
Overlays & Hedges	-0.05%	Parametric Growth Overlay	0.25%	Napier Park	-0.01%
Total Fund	4.15%				

Return Attribution

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

QTD Performance Attribution[1]



	Ending Market Value (mm)	% of Total Fund	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
Total Fund	**70,079**	**100.0%**	**100.0%**	**4.1%**	**3.5%**	**-0.08%**	**1.11%**	**0.64%**
Growth	35,773	51.0%	53.0%	6.0%	4.0%	-0.04%	0.92%	0.97%
Credit	8,446	12.1%	11.0%	2.2%	1.9%	0.00%	-0.02%	0.02%
Real Assets & Inflation Hedges	12,222	17.4%	17.0%	3.9%	5.4%	0.02%	0.19%	-0.24%
Risk Reduction & Mitigation	13,202	18.8%	19.0%	1.1%	1.1%	-0.03%	0.01%	-0.03%
Overlays & Hedges	436	0.6%	0.0%	-10.6%	--	--	--	--

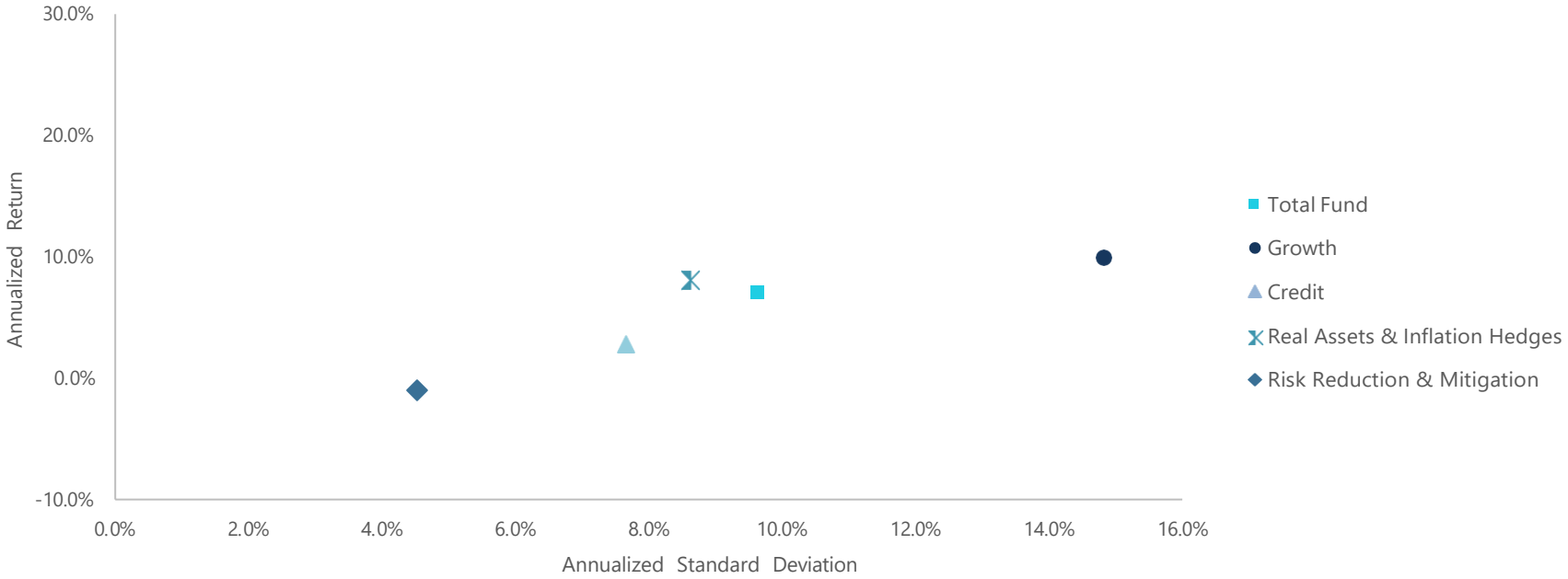
[1] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Total Fund	**6.9%**	**9.6%**	**0.67**	**1.22**	**0.94**	**2.6%**
Growth	10.0%	14.8%	0.67	0.92	0.91	4.9%
Credit	2.8%	7.7%	0.33	0.73	0.95	3.6%
Real Assets & Inflation Hedges	8.1%	8.6%	0.88	(0.02)	0.90	2.6%
Risk Reduction & Mitigation	-1.0%	4.5%	(0.35)	1.06	0.93	0.9%
Overlays & Hedges	140.4%	62.4%				

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns[1,2]

	% of Total Fund	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Total Fund	**100.0%**	**70,079**	**67,616**	**4.1%**	**-5.6%**	**-5.6%**	**6.9%**	**6.7%**	**7.9%**	**8.5%**	**Dec-1988**
Total Fund Policy Benchmark				3.5%	-10.9%	-10.9%	3.5%	5.1%	6.9%	--	
Growth	**51.0%**	**35,773**	**33,535**	**6.0%**	**-9.7%**	**-9.7%**	**10.0%**	**--**	**--**	**11.3%**	**Apr-2019**
Growth Policy Benchmark				4.0%	-17.0%	-17.0%	5.2%	--	--	7.6%	
Global Equity	31.3%	21,969	19,936	10.0%	-17.5%	-17.5%	4.5%	--	--	7.0%	Apr-2019
Global Equity Policy Benchmark				9.8%	-18.4%	-18.4%	3.9%	--	--	6.4%	
Private Equity - Growth	18.2%	12,733	12,522	0.0%	5.7%	5.7%	22.8%	--	--	19.8%	Jan-2019
PE - Growth Policy Benchmark				-6.2%	-19.6%	-19.6%	5.7%	--	--	4.9%	
Non-Core Private Real Estate	1.5%	1,071	1,077	1.9%	20.5%	20.5%	15.3%	12.6%	11.9%	4.8%	Jan-1996
Non-Core Private RE Policy Benchmark				0.9%	23.6%	23.6%	14.3%	12.3%	13.1%	11.6%	
Credit	**12.1%**	**8,446**	**7,883**	**2.2%**	**-5.5%**	**-5.5%**	**2.8%**	**--**	**--**	**3.6%**	**Apr-2019**
Credit Policy Benchmark				1.9%	-7.4%	-7.4%	0.3%	--	--	2.0%	
Liquid Credit	6.7%	4,709	4,533	3.9%	-8.4%	-8.4%	--	--	--	-6.6%	Oct-2021
Liquid Credit Policy Benchmark				4.1%	-8.0%	-8.0%	--	--	--	-6.2%	
Illiquid Credit	5.3%	3,736	3,350	-0.1%	-0.8%	-0.8%	10.3%	--	--	9.3%	Apr-2019
Illiquid Credit Policy Benchmark				0.7%	-5.5%	-5.5%	1.5%	--	--	3.7%	
Real Assets & Inflation Hedges	**17.4%**	**12,222**	**12,075**	**3.9%**	**7.8%**	**7.8%**	**8.1%**	**--**	**--**	**7.2%**	**Apr-2019**
RA & IH Policy Benchmark				5.4%	6.4%	6.4%	8.3%	--	--	8.0%	
Core Private Real Estate	6.2%	4,339	4,471	1.7%	23.7%	23.7%	11.3%	9.1%	9.1%	7.4%	Oct-1985
Core Private RE Policy Benchmark				0.3%	21.0%	21.0%	11.7%	9.7%	10.4%	7.2%	
Natural Resources & Commodities	3.2%	2,210	2,476	4.4%	12.3%	12.3%	11.8%	6.3%	-0.6%	-0.9%	Jul-2007
Nat Res & Comm Policy Benchmark				12.0%	12.0%	12.0%	12.9%	6.9%	-1.1%	-1.7%	
Infrastructure	5.4%	3,812	3,305	7.2%	-4.6%	-4.6%	4.9%	--	--	7.3%	Jun-2019
DJ Brookfield Global Infra Comp				9.4%	-4.9%	-4.9%	1.1%	--	--	3.5%	
TIPS	2.7%	1,861	1,823	2.1%	-11.9%	-11.9%	1.1%	--	--	2.2%	May-2019
Bloomberg U.S. Treasury: U.S. TIPS				2.0%	-11.8%	-11.8%	1.2%	--	--	2.3%	
Risk Reduction & Mitigation	**18.8%**	**13,202**	**13,536**	**1.1%**	**-9.8%**	**-9.8%**	**-1.0%**	**--**	**--**	**0.6%**	**Apr-2019**
RR & M Policy Benchmark				1.1%	-11.0%	-11.0%	-1.9%	--	--	-0.2%	
Investment Grade Bonds	7.1%	5,003	5,292	1.8%	-13.1%	-13.1%	-2.6%	0.2%	1.5%	5.1%	Nov-1994
BBG BC Aggregate Bond Index				1.9%	-13.0%	-13.0%	-2.7%	0.0%	1.1%	4.6%	
Diversified Hedge Funds	6.3%	4,402	4,281	1.4%	5.8%	5.8%	7.3%	--	--	6.7%	Apr-2019
Diversified Hedge Funds Policy Benchmark				1.4%	3.7%	3.7%	3.2%	--	--	3.5%	
Long-Term Government Bonds	4.1%	2,857	2,874	-0.6%	-28.9%	-28.9%	--	--	--	-25.6%	Nov-2021
Bloomberg U.S. Treasury: Long				-0.6%	-29.3%	-29.3%	--	--	--	-26.8%	
Cash	1.3%	940	1,088	1.3%	3.2%	3.2%	1.7%	2.0%	1.3%	1.8%	Jun-2001
Cash Policy Benchmark				0.9%	1.5%	1.5%	0.7%	1.3%	0.8%	1.4%	
Overlays & Hedges	**0.6%**	**436**	**587**	**-10.6%**	**178.0%**	**178.0%**	**--**	**--**	**--**	**140.4%**	**Oct-2021**
Cash Overlay	0.8%	591	424	39.4%	79.5%	79.5%	1.3%	--	--	-1.1%	Aug-2019
Total Overlay Policy BM				6.6%	-15.1%	-15.1%	2.4%	--	--	3.7%	
Currency Hedge	-0.2%	-155	163	-3.2%	4.7%	4.7%	--	--	--	4.2%	Oct-2021
50% FX Hedge Custom Benchmark				-3.2%	4.7%	4.7%	--	--	--	4.2%	

[1] Diversified Hedge Funds returns are net-of-all fees and expenses.

[2] Cash Overlay composite returns reflect non-notionalized returns.

growth

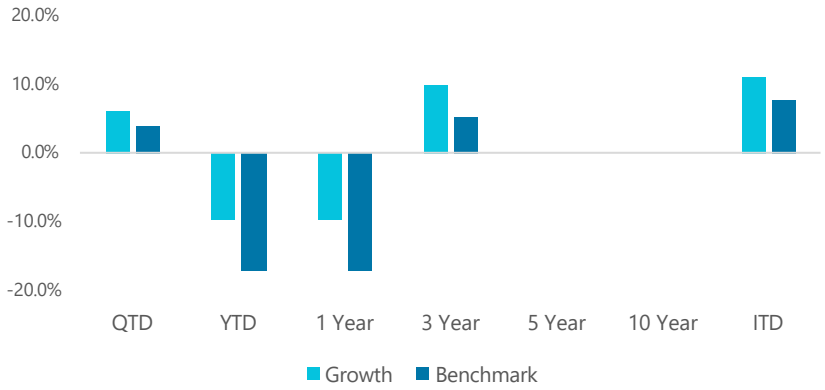
Summary

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Performance (net)



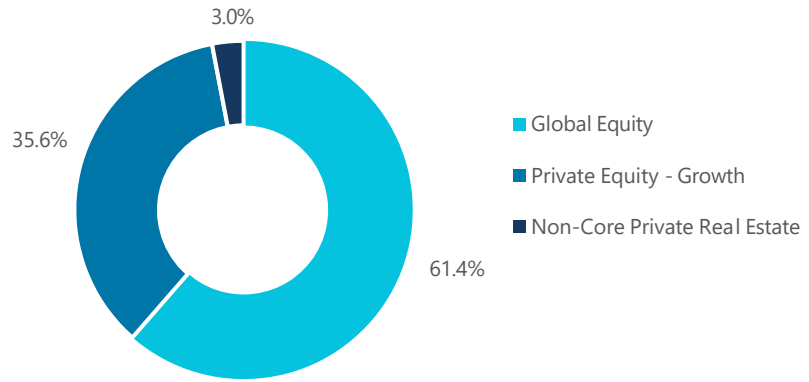
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Growth	**6.0%**	**-9.7%**	**-9.7%**	**10.0%**	**--**	**--**	**11.3%**
Benchmark	4.0%	-17.0%	-17.0%	5.2%	--	--	7.6%
Excess	2.1%	7.3%	7.3%	4.8%	--	--	3.7%

Functional Category

	QTD	FYTD	1 Year	3 Year
Global Equity	**10.0%**	**2.9%**	**-17.5%**	**4.5%**
Global Equity Policy Benchmark	9.8%	2.6%	-18.4%	3.9%
Excess	0.2%	0.3%	0.9%	0.6%
Private Equity - Growth	**0.0%**	**-3.2%**	**5.7%**	**22.8%**
PE - Growth Policy Benchmark	-6.2%	-20.6%	-19.6%	5.7%
Excess	6.2%	17.4%	25.2%	17.1%
Non-Core Private Real Estate	**1.9%**	**6.7%**	**20.5%**	**15.3%**
Non-Core Private RE Policy Benchmark	0.9%	6.0%	23.6%	14.3%
Excess	1.1%	0.7%	-3.1%	0.9%

Cumulative Return

Exposure

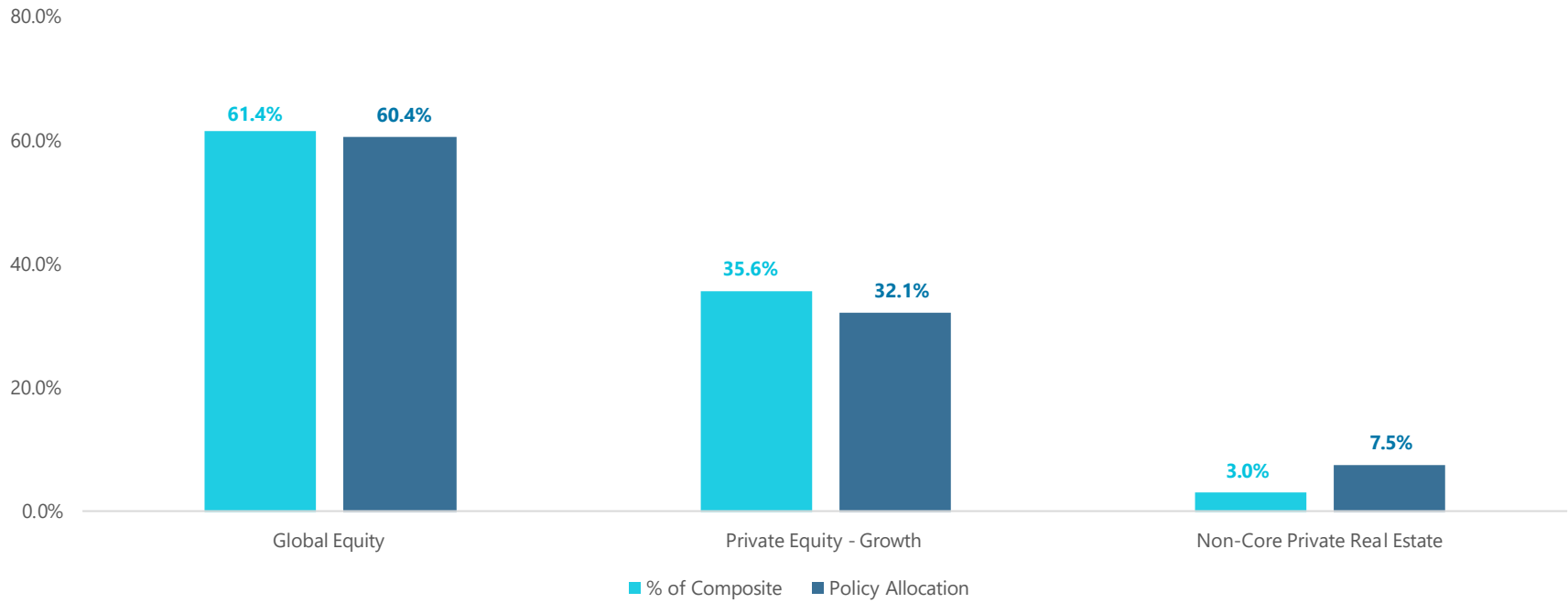


Asset Allocation

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Actual vs. Policy



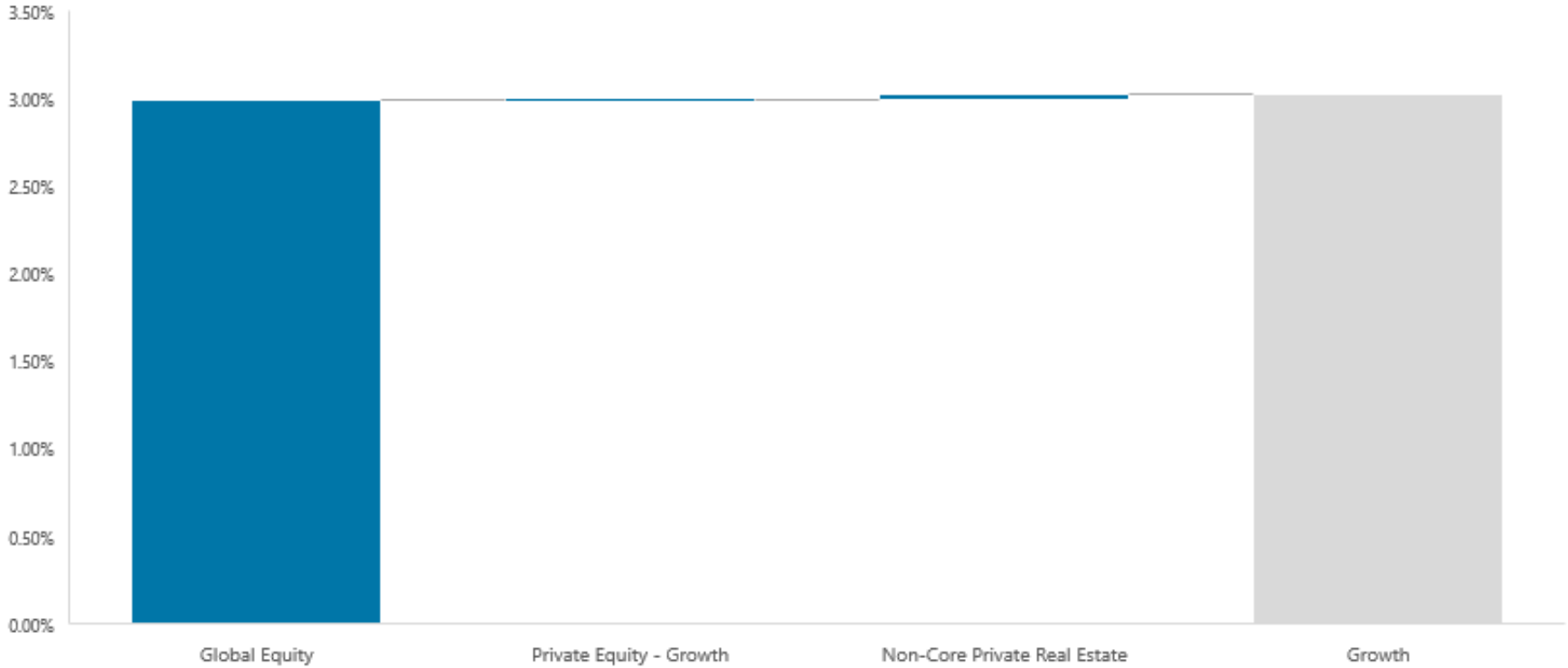
	Ending Market Value (mm)	% of Composite	Policy Allocation	Over / Under (%)	Over / Under (mm)
Growth	**35,773**	**100.0%**	**100.0%**		
Global Equity	21,969	61.4%	60.4%	1.0%	369
Private Equity - Growth	12,733	35.6%	32.1%	3.5%	1,256
Non-Core Private Real Estate	1,071	3.0%	7.5%	-4.5%	-1,626

Contribution to Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Contribution to Return



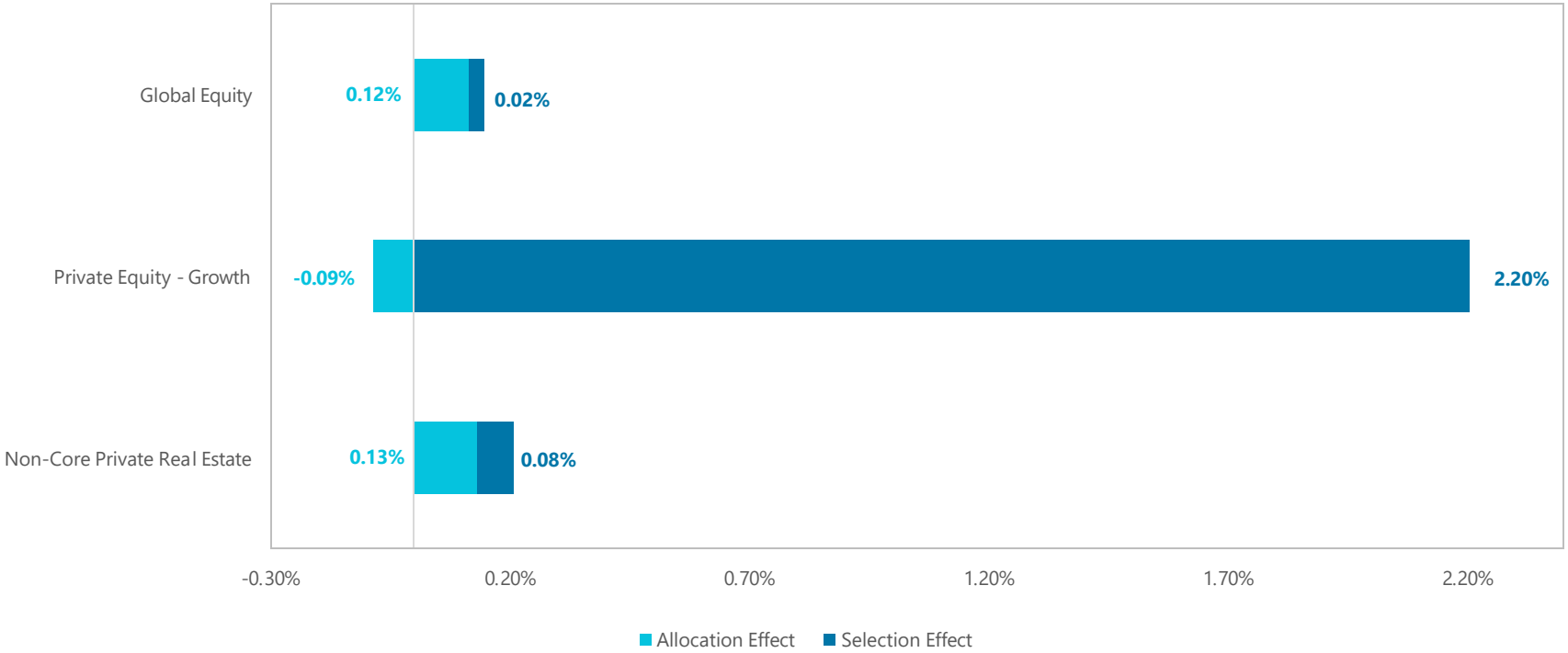
Functional Category		Contributors		Detractors	
Global Equity	2.99%	SSGA MSCI ACWI IMI	1.93%	Parametric GE Region	-0.02%
Private Equity - Growth	0.01%	JPMAM Strategic Beta US	0.41%	Parametric GE Market Cap	-0.01%
Non-Core Private Real Estate	0.03%	BTC Euro Tilts	0.12%		
Growth	3.02%	Acadian Developed Markets	0.11%		
		JPMAM Strategic Beta Non-US	0.10%		

Return Attribution

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Performance Attribution[1]



	Ending Market Value (mm)	% of Composite	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
Growth	**35,773**	**100.0%**	**100.0%**	**6.0%**	**4.0%**	**0.16%**	**2.31%**	**2.09%**
Global Equity	21,969	61.4%	60.4%	10.0%	9.8%	0.12%	0.02%	0.20%
Private Equity - Growth	12,733	35.6%	32.1%	0.0%	-6.2%	-0.09%	2.20%	1.73%
Non-Core Private Real Estate	1,071	3.0%	7.5%	1.9%	0.9%	0.13%	0.08%	0.16%

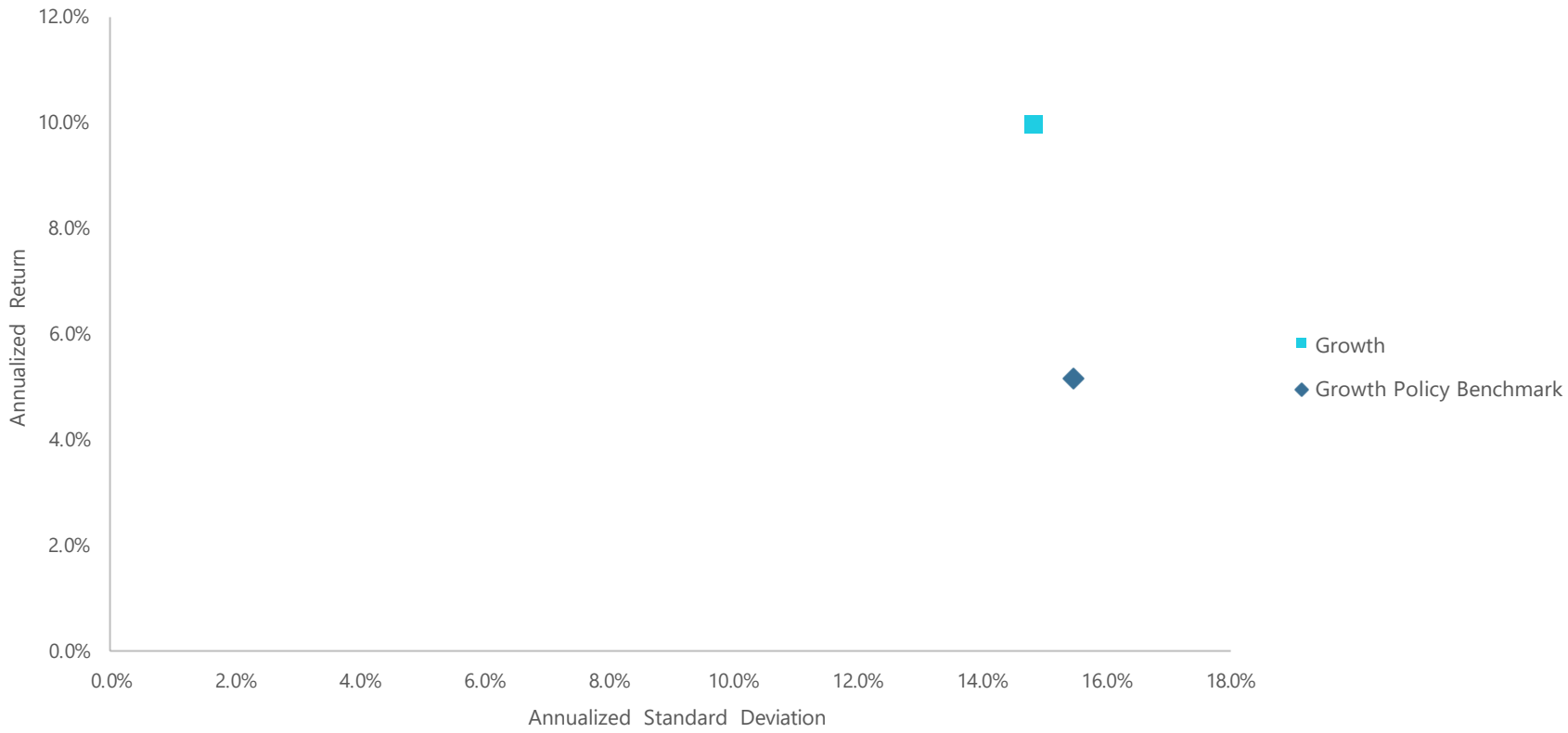
[1] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Growth	**10.0%**	**14.8%**				
Growth Policy Benchmark	5.2%	15.5%	0.67	0.92	0.91	4.9%

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns

	% of Composite	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Growth	**100.0%**	**35,773**	**33,535**	**6.0%**	**-9.7%**	**-9.7%**	**10.0%**	**--**	**--**	**11.3%**	**Apr-2019**
Growth Policy Benchmark				4.0%	-17.0%	-17.0%	5.2%	--	--	7.6%	
Global Equity	**61.4%**	**21,969**	**19,936**	**10.0%**	**-17.5%**	**-17.5%**	**4.5%**	**--**	**--**	**7.0%**	**Apr-2019**
Global Equity Policy Benchmark				9.8%	-18.4%	-18.4%	3.9%	--	--	6.4%	
Passive											
SSGA MSCI ACWI IMI	39.9%	14,270	12,667	10.1%	-17.9%	-17.9%	4.5%	--	--	4.5%	Jan-2020
Factor Based											
JPMAM Strategic Beta Non-US	1.5%	551	482	14.1%	-14.5%	-14.5%	--	--	--	4.5%	Aug-2020
JPMAM Strategic Beta US	11.2%	3,998	3,717	7.6%	-18.0%	-18.0%	--	--	--	11.1%	Jul-2020
Active											
Acadian Developed Markets	1.6%	560	488	14.7%	-15.0%	-15.0%	4.3%	3.0%	7.5%	4.3%	Apr-2006
BTC Euro Tilts	1.5%	528	444	18.8%	-12.7%	-12.7%	4.0%	2.8%	6.3%	3.3%	Jan-2007
Cevian Capital II - Activist	1.1%	398	364	9.5%	-3.6%	-3.6%	9.0%	5.6%	--	7.7%	Oct-2016
CGT International Equity	1.0%	364	310	17.5%	-23.4%	-23.4%	0.4%	3.3%	6.0%	5.2%	Nov-1994
Cornercap US Small Cap - EMP	0.2%	81	73	11.0%	-7.0%	-7.0%	9.1%	--	--	7.2%	Oct-2018
Frontier US SMID Growth	0.7%	256	231	11.1%	-17.9%	-17.9%	4.5%	4.9%	10.2%	9.7%	Jun-2002
Global Alpha	0.5%	166	144	15.1%	-19.2%	-19.2%	-0.8%	--	--	4.2%	Nov-2018
Jana JSI Fund V - Activist	0.0%	8	66	--	--	--	--	--	--	--	Oct-2016
Lazard Emerging Markets	1.0%	368	322	14.5%	-22.6%	-22.6%	-1.0%	0.3%	--	2.0%	Feb-2013
Parametric GE Market Cap	0.3%	100	112	-6.5%	-15.6%	-15.6%	--	--	--	0.9%	Oct-2021
Parametric GE Region	0.2%	89	117	-14.8%	-21.6%	-21.6%	--	--	--	-19.6%	Dec-2021
Systematic US Small Cap Value	0.5%	186	167	11.8%	-9.9%	-9.9%	7.0%	--	--	5.3%	Jul-2018
Private Equity - Growth	**35.6%**	**12,733**	**12,522**	**0.0%**	**5.7%**	**5.7%**	**22.8%**	**--**	**--**	**19.8%**	**Jan-2019**
PE - Growth Policy Benchmark				-6.2%	-19.6%	-19.6%	5.7%	--	--	4.9%	
Non-Core Private Real Estate	**3.0%**	**1,071**	**1,077**	**1.9%**	**20.5%**	**20.5%**	**15.3%**	**12.6%**	**11.9%**	**4.8%**	**Jan-1996**
Non-Core Private RE Policy Benchmark				0.9%	23.6%	23.6%	14.3%	12.3%	13.1%	11.6%	

Growth
Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**20.85**
Benchmark Risk	19.89
Active Risk	1.65
Portfolio Beta	1.05

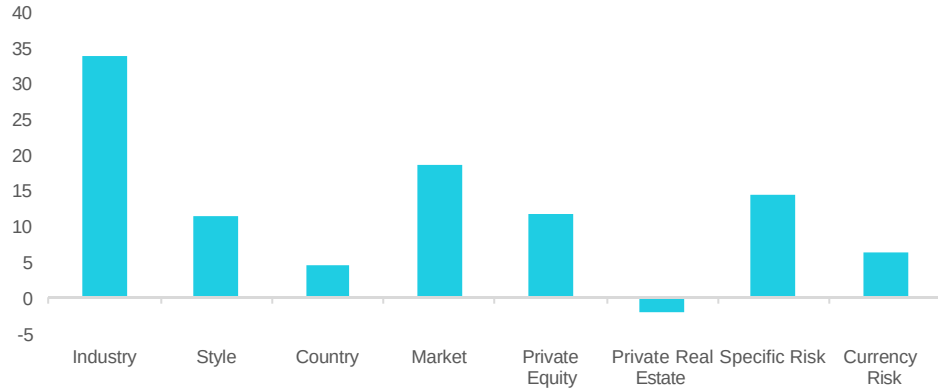
Contribution to Risk

	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Grow th	**35,193**	**100.00**	**20.85**	**20.85**	**100.00**
Global Equity	21,929	62.31	18.73	11.12	53.34
Private Equity	12,249	34.81	27.84	8.94	42.90
Non-Core Private Real Estate	1,015	2.88	43.72	0.78	3.76

Risk Decomposition

	Portfolio		Active	
Risk Source	Risk Contribution	%Risk	Risk Contribution	%Risk
Total Risk	**20.85**	**100.00**	**1.65**	**100.00**
Local Market Risk	19.79	94.94	1.54	93.50
Common Factor Risk	19.76	94.76	1.30	78.90
Specific Risk	0.04	0.17	0.24	14.61
Currency Risk	1.06	5.06	0.11	6.50

Active Risk from Common Factors

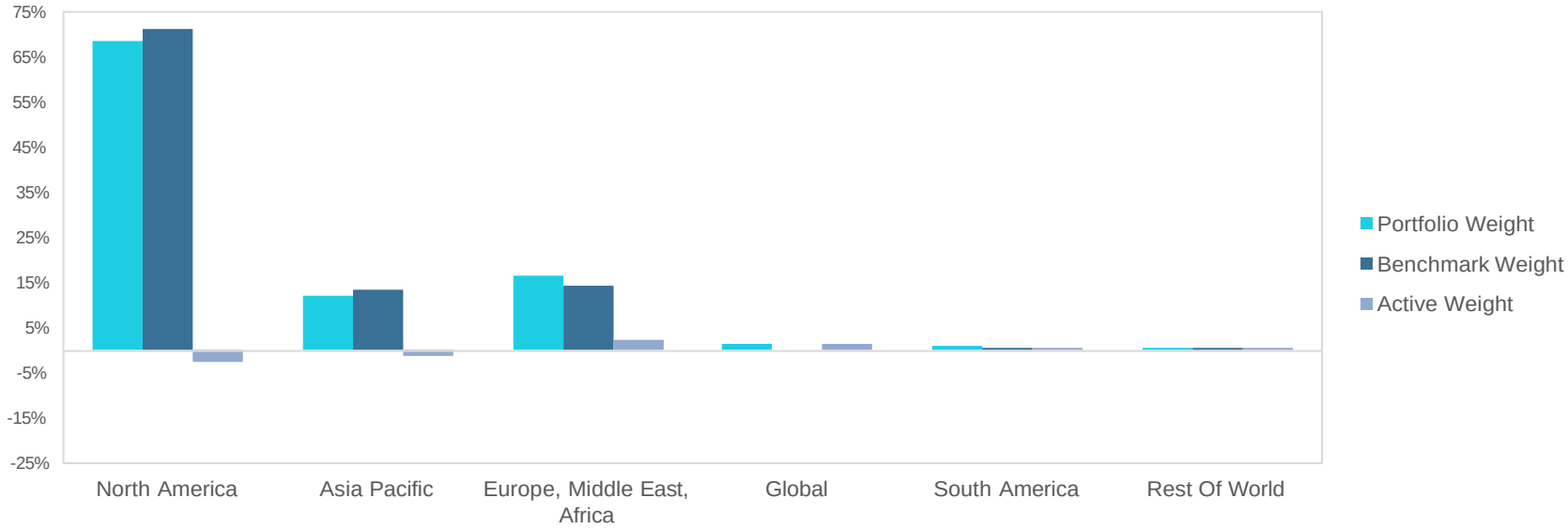


Growth
Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Allocation By Region



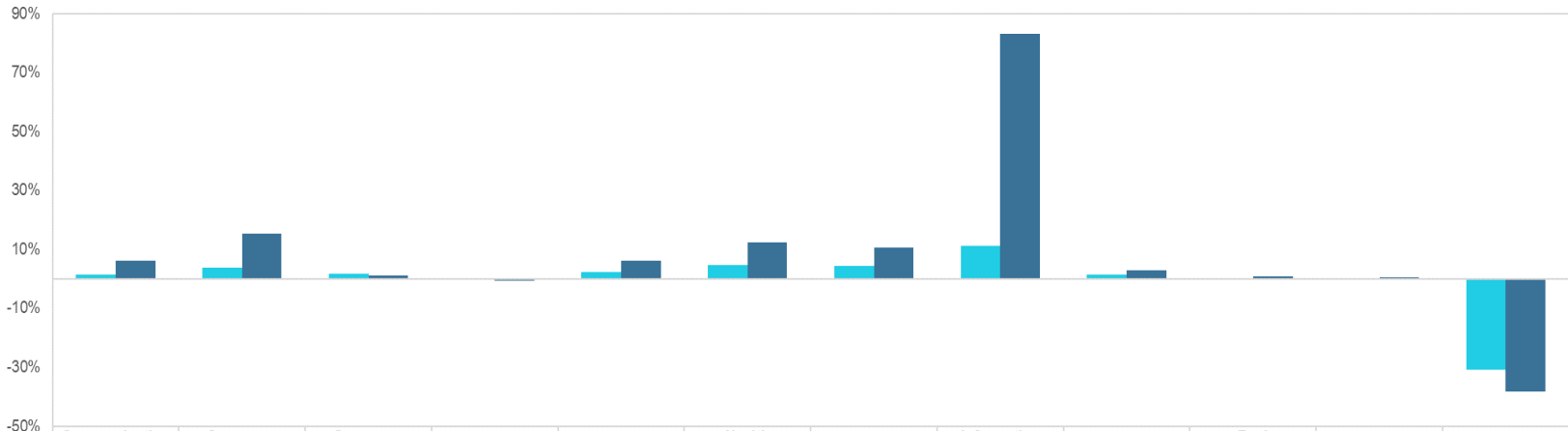
Region	Weight%			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
Total Fund	**100.00%**	**100.00%**	**0.00%**	**20.85**	**1.65**	**100.00**	**0.02**
North America	68.49%	71.24%	-2.75%	23.03	1.30	78.91	0.04
Asia Pacific	12.24%	13.56%	-1.31%	16.52	0.18	10.71	-0.04
Europe, Middle East, Africa	16.63%	14.41%	2.22%	21.95	0.17	10.23	0.02
Global	1.15%	0.00%	1.15%	20.97	-0.02	-1.27	-0.02
South America	1.13%	0.57%	0.56%	32.37	0.02	1.50	0.02
Rest Of World	0.36%	0.22%	0.14%	16.23	0.00	-0.09	-0.03

Growth
Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Allocation By GICS Sector



	Communication Services	Consumer Discretionary	Consumer Staples	Energy	Financials	Health Care	Industrials	Information Technology	Materials	Real Estate	Utilities	Others
Active Weight	1.42%	3.80%	1.58%	0.34%	2.38%	4.79%	4.26%	11.16%	1.36%	-0.12%	-0.09%	-30.89%
Active Risk Contribution	6.21%	15.35%	1.13%	-0.63%	6.00%	12.28%	10.69%	83.15%	2.77%	0.85%	0.48%	-38.28%

Growth – Global Equity
Acadian Developed Markets

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to capture mispriced opportunities through systematic stock, sector, and country valuation models that are customized to each market. The strategy may be suited to investors looking to gain exposure in non-U.S. developed markets and diversify portfolio through active quantitative investment approach.

Inception Date: April 2006

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	44,970.5	74,022.6
No. Of Issues	655.0	0.0
Dividend Yield	4.9	3.3
Return on Equity	26.3	18.3
Price to Sales	2.9	3.0
Price to Book	3.7	4.4
PE Ratio	9.3	14.7

Top Holdings (% of assets)

NOVO NORDISK A/S B	3.5%
ROCHE HOLDING AG GENUSSCHEIN	2.9%
BHP GROUP LTD	2.2%
WOLTERS KLUWER	1.9%
JAPAN POST HOLDINGS CO LTD	1.6%
Top 5 Holdings	**12.1%**

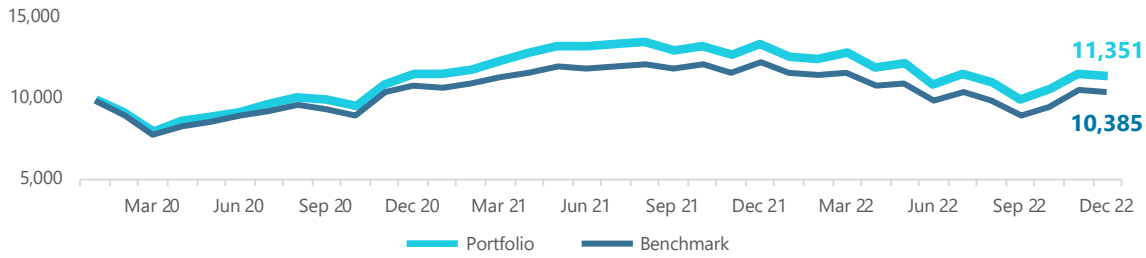
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

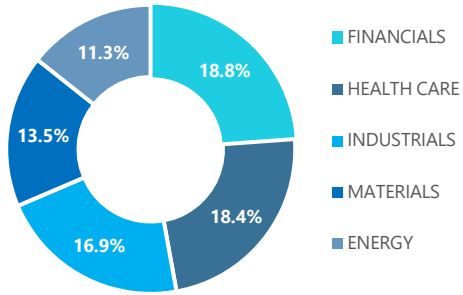
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Acadian Developed Markets	**560.2**	**14.7%**	**-15.0%**	**4.3%**	**3.0%**
MSCI EAFE + Canada Net Index		16.2%	-14.3%	1.3%	1.8%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

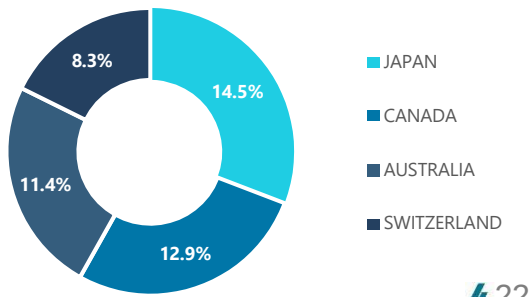
Universe data: Intl/Global Equity Funds - Core	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Acadian Developed Markets	**14.8%**	**17**	**-14.7%**	**36**	**4.7%**	**33**	**3.4%**	**50**
Median	12.4%		-16.1%		2.5%		3.3%	

Growth of $10,000



Top Exposures (% of assets)[2]





Growth Risk Analysis – Global Equity
Acadian Developed Markets

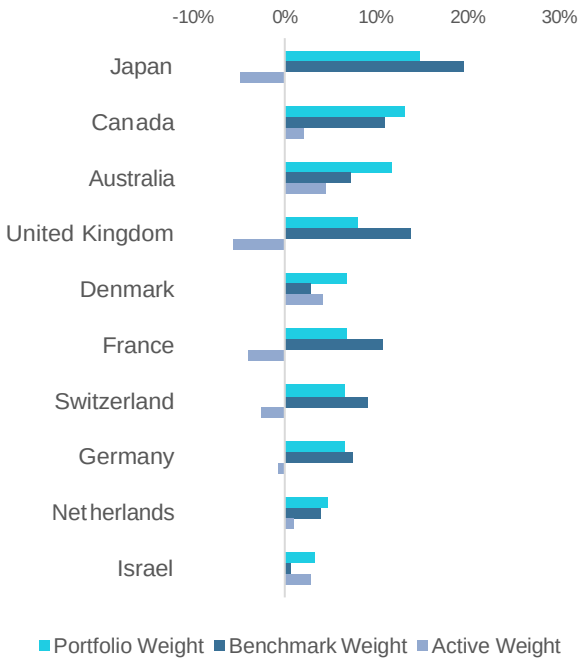
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**19.14**
Benchmark Risk	18.33
Active Risk	4.73
Portfolio Beta	1.01

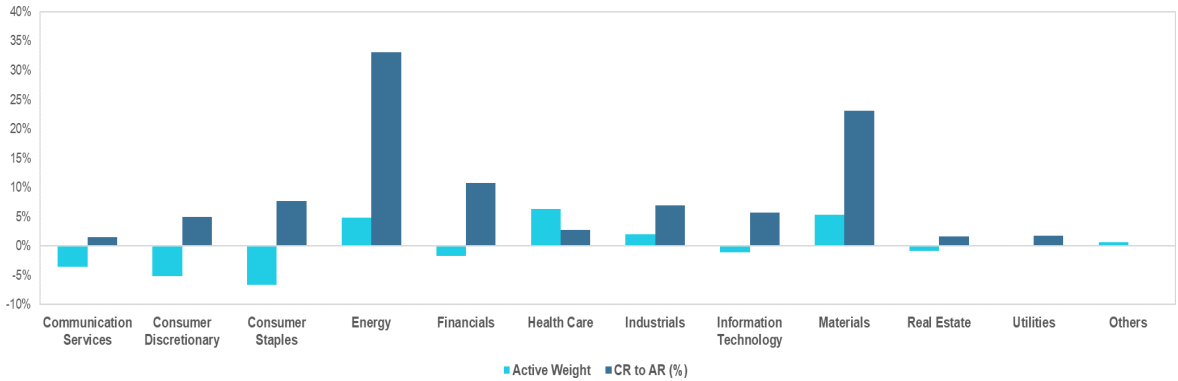
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
SOUTH32 LIMITED	1.55%	0.08%	1.48%	41.73	5.02	0.169
EQUINOR ASA	1.51%	0.21%	1.29%	39.22	4.66	0.179
MEG ENERGY CORP	0.68%	0.00%	0.68%	60.93	4.42	0.314
BHP GROUP LTD	2.26%	0.98%	1.28%	35.47	4.04	0.157
CRESCENT POINT ENERGY CORP	0.50%	0.00%	0.50%	63.93	3.49	0.336
BIRCHCLIFF ENERGY LTD	0.61%	0.00%	0.61%	57.08	3.38	0.270
WHITEHAVEN COAL LTD	0.56%	0.00%	0.56%	54.84	3.08	0.267
ADARO ENERGY INDONESIA TBK PT	0.71%	0.00%	0.71%	45.43	2.95	0.205
TOURMALINE OIL CORP	0.73%	0.10%	0.63%	43.60	2.80	0.217
BLUESCOPE STEEL LTD	1.00%	0.03%	0.97%	39.56	2.46	0.129

Portfolio Risk by GICS Sector



Growth – Global Equity
BTC Europe Alpha Tilts

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to generate risk-controlled and consistent active returns by using a unique blend of bottom-up stock selection insights and broader top-down thematic insights. The strategy may be suited to investors looking to capture active return opportunities in European region.

Inception Date: January 2007

Performance (net)[1]

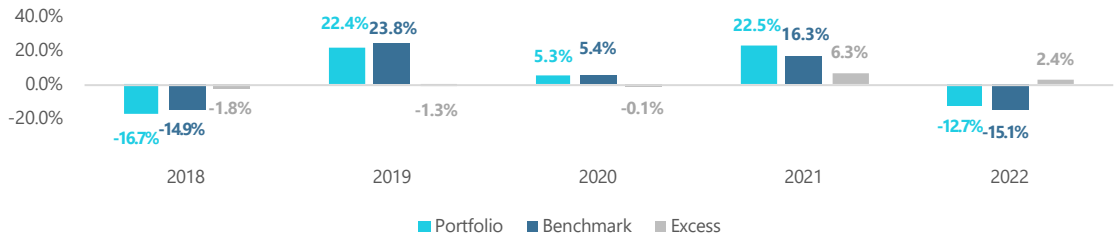
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
BTC Euro Tilts	**527.8**	**18.8%**	**-12.7%**	**4.0%**	**2.8%**
MSCI EUROPE		19.3%	-15.1%	1.3%	1.9%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

Universe data: Intl Equity Developed Mkt Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
BTC Euro Tilts	**19.0%**	**12**	**-12.3%**	**33**	**4.5%**	**11**	**3.2%**	**19**
Median	15.0%		-14.2%		1.1%		1.8%	

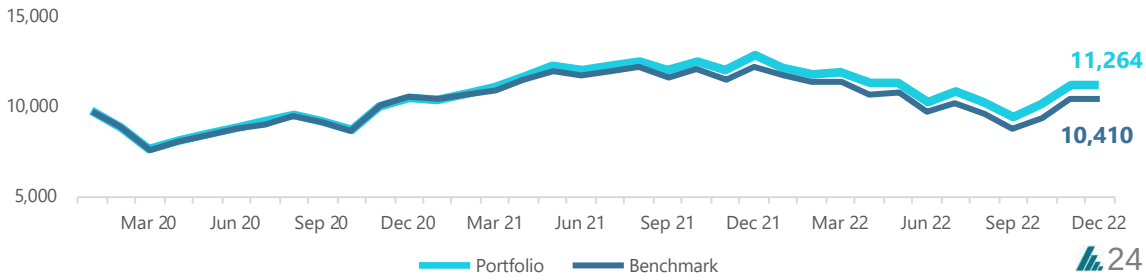
Risk Statistics (since inception)

Standard Deviation	19.3%
Benchmark Standard Deviation	19.4%
Sharpe Ratio	0.22
Information Ratio	0.54
Beta	0.99
Tracking Error	1.9%

Calendar Year Returns



Growth of $10,000



Note: Commingled fund account with no position-level transparency.
[1] Universe data is gross-of-fees.

Growth Risk Analysis – Global Equity BTC Europe Alpha Tilts

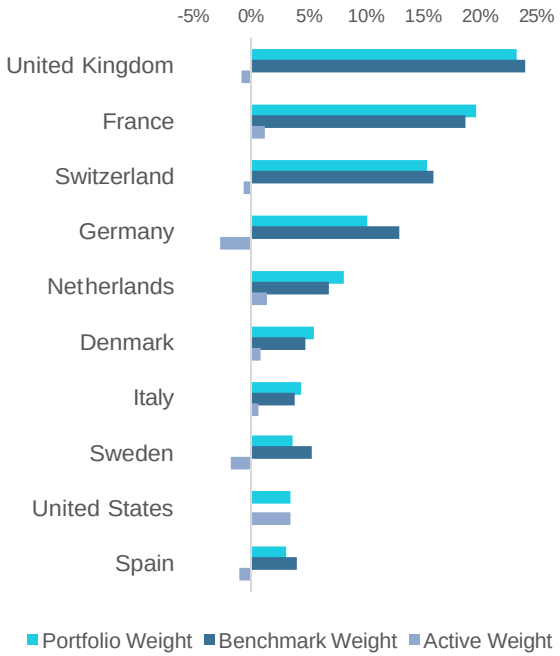
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**19.83**
Benchmark Risk	20.51
Active Risk	1.32
Portfolio Beta	0.97

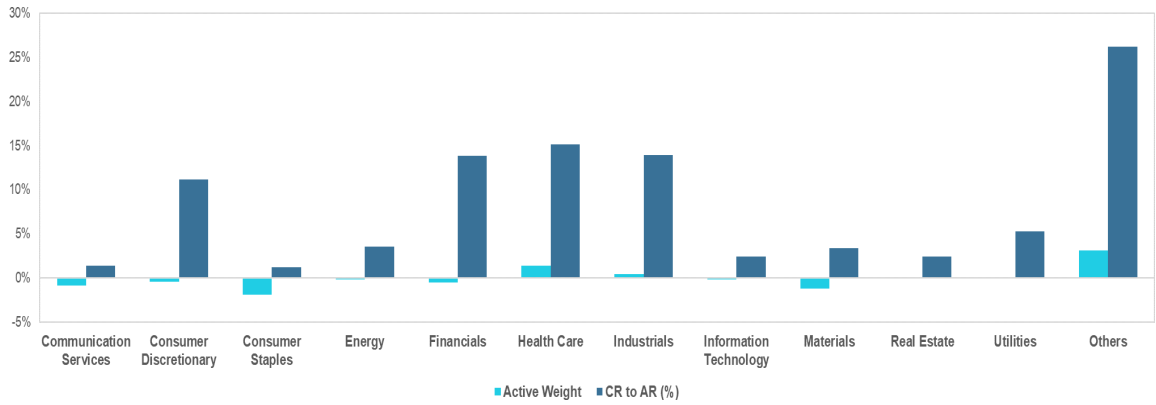
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
NOVARTIS AG	2.95%	2.12%	0.83%	19.88	4.61	-0.036
PROSUS NV	0.00%	0.62%	-0.62%	45.87	4.53	-0.206
BRITISH AMERICAN TOBACCO PLC	1.85%	0.92%	0.94%	23.88	4.04	-0.052
ENGIE	1.38%	0.28%	1.10%	33.06	3.32	-0.069
BP PLC	2.40%	1.17%	1.23%	32.80	3.10	-0.076
BEIERSDORF AG	0.83%	0.13%	0.70%	22.74	2.77	-0.057
RIO TINTO PLC	0.08%	0.85%	-0.77%	35.72	2.50	-0.152
SANOFI SA	1.64%	1.19%	0.46%	24.11	2.36	-0.041
GSK PLC	1.22%	0.76%	0.46%	27.09	2.07	-0.050
ROCHE HOLDING AG	0.45%	0.11%	0.33%	24.36	1.93	-0.033

Portfolio Risk by GICS Sector



Growth – Global Equity
Capital Group Developed Markets

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Seeks to generate long-term capital appreciation through fundamental research and proprietary models for earnings estimates and valuations. The strategy may be suited to investors looking to gain exposures in non-U.S. developed markets w ith emphasis on bottom-up, fundamental investment analysis.

Inception Date: October 1987

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	106,856.3	74,022.6
No. Of Issues	158.0	0.0
Dividend Yield	2.2	3.3
Return on Equity	21.2	18.3
Price to Sales	5.4	3.0
Price to Book	6.1	4.4
PE Ratio	23.0	14.7

Top Holdings (% of assets)

ASML HOLDING NV	4.3%
NOVO NORDISK A/S B	4.0%
LVMH MOET HENNESSY LOUIS VUI	3.1%
EVOLUTION AB	2.7%
ASTRAZENECA PLC	2.6%
Top 5 Holdings	**16.7%**

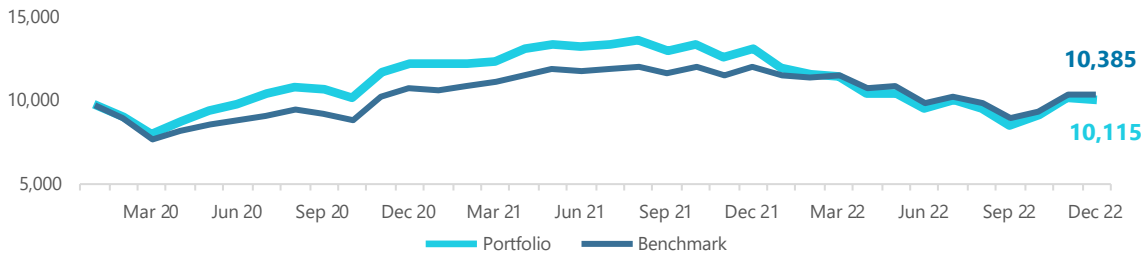
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

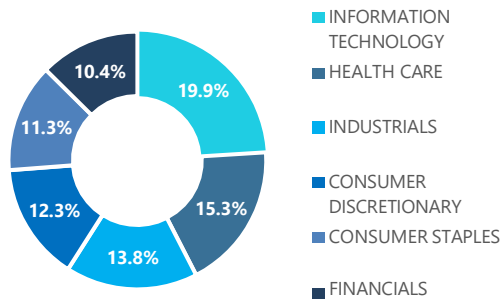
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Capital Group Developed Markets	**364.2**	**17.5%**	**-23.4%**	**0.4%**	**3.3%**
EAFE Custom Benchmark		16.2%	-14.3%	1.3%	1.8%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

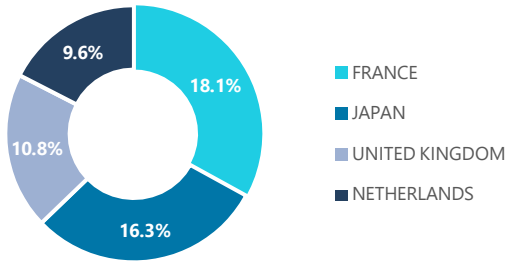
Universe data: Intl/Global Equity Funds - Core	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Capital Group Developed Markets	**17.6%**	**5**	**-23.1%**	**90**	**0.7%**	**66**	**3.7%**	**50**
Median	14.4%		-16.0%		2.5%		3.3%	

Growth of $10,000



Top Exposures (% of assets)[2]





Growth Risk Analysis – Global Equity Capital Group Developed Markets

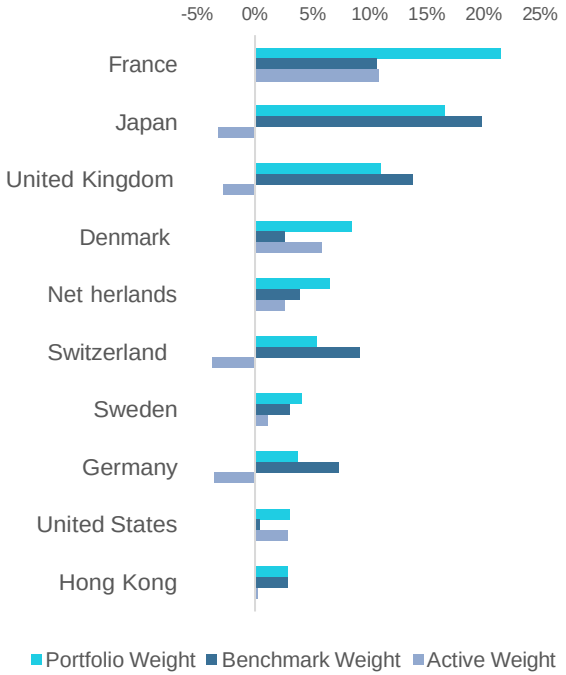
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**19.30**
Benchmark Risk	18.33
Active Risk	4.40
Portfolio Beta	1.03

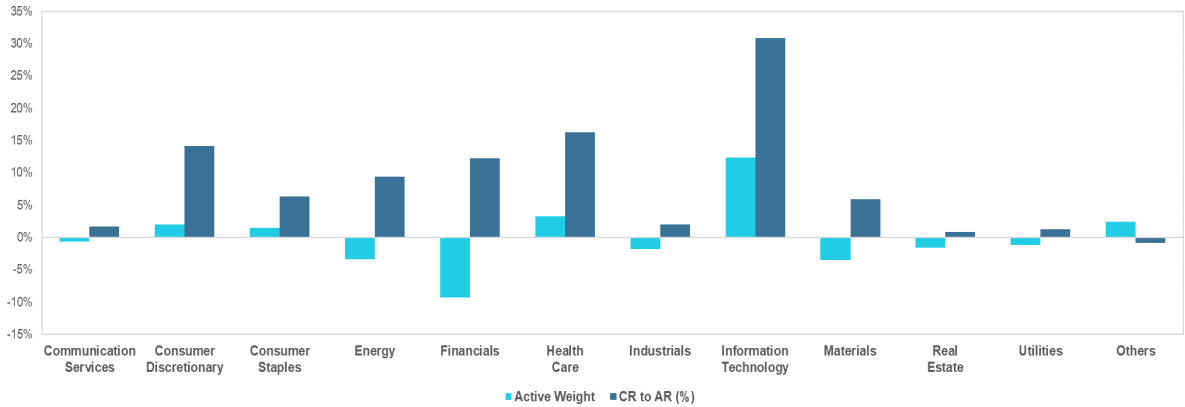
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
ASML HOLDING	4.34%	0.00%	4.34%	42.30	16.16	0.183
EVOLUTION AB	2.67%	0.11%	2.56%	48.31	8.98	0.174
GENMAB A/S	2.23%	0.17%	2.06%	32.69	5.45	0.136
NOVO NORDISK A/S	3.92%	1.40%	2.52%	29.10	4.86	0.104
OCADO GROUP PLC	1.37%	0.03%	1.34%	58.71	4.78	0.176
SHELL PLC	0.00%	1.27%	-1.27%	31.46	3.19	-0.091
HAMAMATSU PHOTONICS KK	1.93%	0.04%	1.89%	27.16	3.12	0.092
KEYENCE CORP	1.83%	0.48%	1.36%	30.69	2.95	0.115
TOKYO ELECTRON LTD	1.16%	0.28%	0.89%	39.38	2.53	0.145
LVMH MOET HENNESSY LOUIS VUITTON	3.13%	1.26%	1.87%	27.59	2.44	0.077

Portfolio Risk by GICS Sector



Growth – Global Equity
Cevian Capital II

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Seeks to generate long-term returns by researching and investing in European companies that have profitable businesses and significant improvement potential. The strategy may be suited to investors looking to increase portfolio diversification through differentiated investment approach and take advantage of return opportunities in Europe.

Inception Date: October 2016

Risk Statistics (since inception)

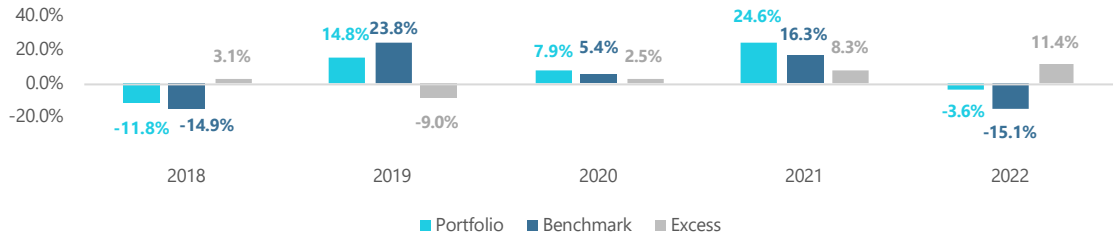
Standard Deviation	16.7%
Benchmark Standard Deviation	17.5%
Sharpe Ratio	0.46
Information Ratio	0.25
Beta	0.80
Tracking Error	9.9%

Performance (net)[1]

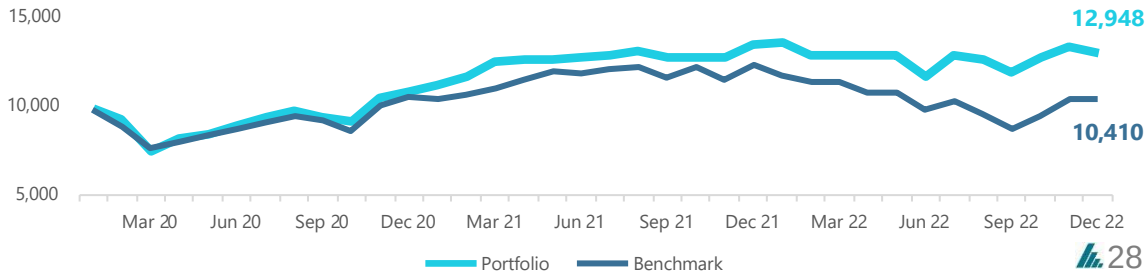
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Cevian Capital II - Activist	**398.3**	**9.5%**	**-3.6%**	**9.0%**	**5.6%**
MSCI EUROPE		19.3%	-15.1%	1.3%	1.9%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

Universe data: Europe Equity	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Cevian Capital II - Activist	**9.8%**	**82**	**-2.6%**	**8**	**10.2%**	**1**	**6.8%**	**5**
Median	15.0%		-14.2%		1.1%		1.8%	

Calendar Year Returns



Growth of $10,000



Note: Commingled fund account with no position-level transparency.
[1] Universe data is gross-of-fees.

Growth Risk Analysis – Global Equity
Cevian Capital II

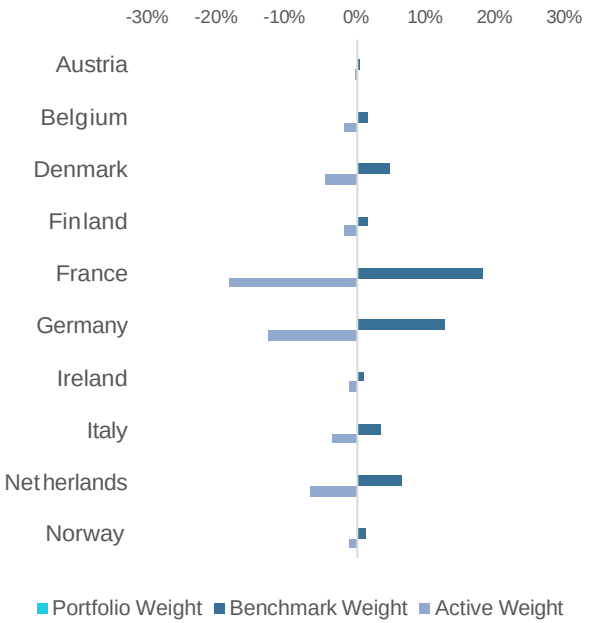
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**21.18**
Benchmark Risk	20.51
Active Risk	10.17
Portfolio Beta	0.91

Top Countries by Weight%

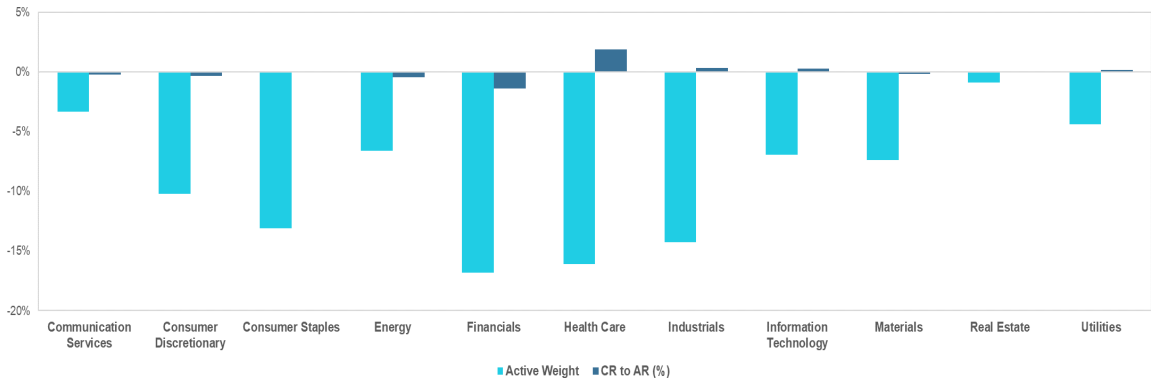


Note: Commingled fund account with no position-level transparency.

Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
ASTRAZENECA PLC	0.00%	2.27%	-2.27%	26.37	0.59	-0.063
NOVO NORDISK A/S	0.00%	2.42%	-2.42%	29.10	0.52	-0.059
ASML HOLDING NV	0.00%	2.37%	-2.37%	42.30	0.34	-0.052
ROCHE HOLDING AG	0.00%	2.40%	-2.40%	24.75	0.31	-0.050
NOVARTIS AG	0.00%	2.12%	-2.12%	19.88	0.13	-0.043
GSK PLC	0.00%	0.76%	-0.76%	27.09	0.13	-0.055
UNILEVER PLC	0.00%	1.39%	-1.39%	21.90	0.11	-0.045
DIAGEO PLC	0.00%	1.09%	-1.09%	23.26	0.10	-0.047
RELX PLC	0.00%	0.57%	-0.57%	25.43	0.08	-0.052
NATIONAL GRID PLC	0.00%	0.48%	-0.48%	25.49	0.08	-0.054

Portfolio Risk by GICS Sector



Growth – Global Equity
CornerCap US Small Cap

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to exploit small cap market inefficiencies by using proprietary fundamental factors. The strategy may be suited to investors looking to increase U.S. small cap exposure and diversify portfolio through an active quantitative investment approach.

Inception Date: October 2018

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	2,472.8	2,375.4
No. Of Issues	348.0	0.0
Dividend Yield	1.9	1.4
Return on Equity	13.7	11.9
Price to Sales	2.7	13.0
Price to Book	2.2	4.8
PE Ratio	14.3	29.0

Top Holdings (% of assets)

MERIT MEDICAL SYSTEMS INC	0.5%
MOOG INC CLASS A	0.5%
PROPETRO HOLDING CORP	0.5%
BOX INC CLASS A	0.5%
ENLINK MIDSTREAM LLC	0.5%
Top 5 Holdings	**2.5%**

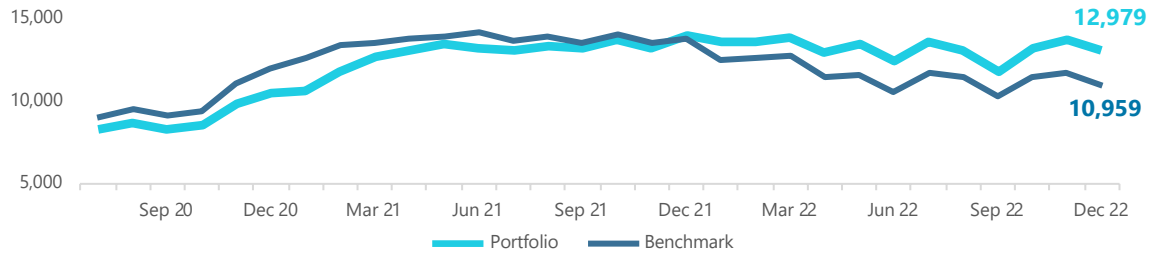
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

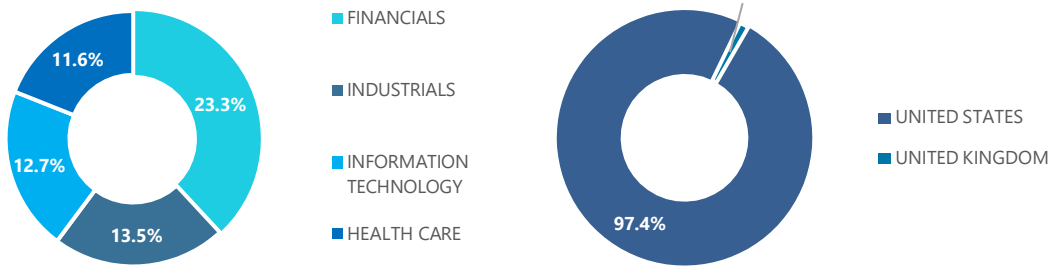
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Cornercap US Small Cap - EMP	**80.6**	**11.0%**	**-7.0%**	**9.1%**	**--**
RUSSELL 2000		6.2%	-20.4%	3.1%	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

Universe data: US Equity Funds - Small Cap	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Cornercap US Small Cap - EMP	**11.1%**	**24**	**-6.5%**	**10**	**9.7%**	**16**	**--**	**--**
Median	9.9%		-13.9%		6.6%		--	

Growth of $10,000



Top Exposures (% of assets)[2]



Growth Risk Analysis – Global Equity CornerCap US Small Cap

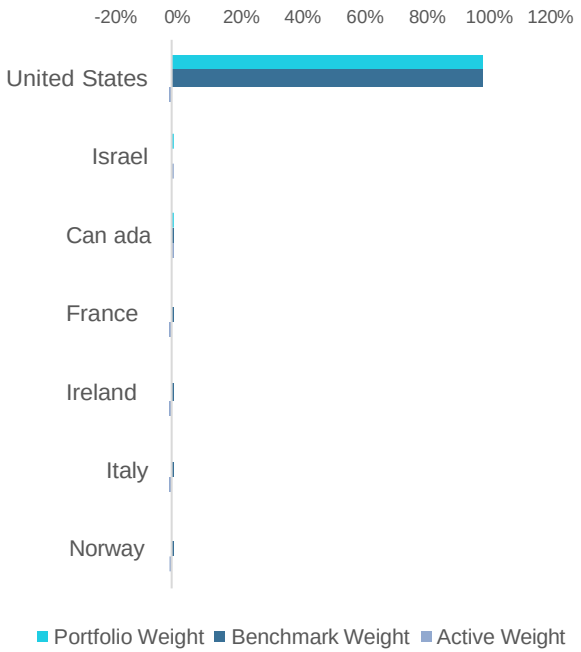
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**23.74**
Benchmark Risk	25.36
Active Risk	4.60
Portfolio Beta	0.92

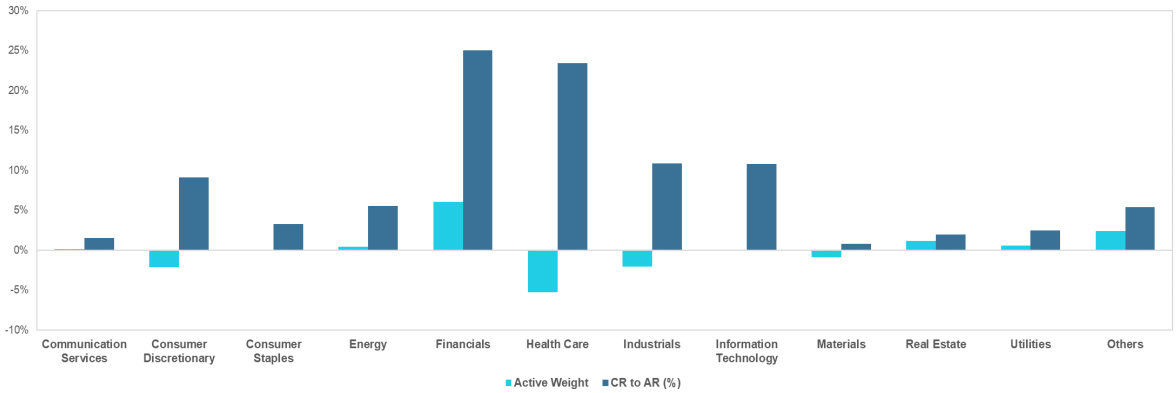
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
PROPETRO HOLDING CORP	0.49%	0.04%	0.45%	67.66	1.68	0.062
APA CORP	0.44%	0.00%	0.44%	57.85	1.39	0.038
TALOS ENERGY INC	0.43%	0.05%	0.37%	70.82	1.29	0.050
MERCANTILE BANK CORP	0.43%	0.02%	0.41%	30.10	1.28	0.036
PREFERRED BK LOS ANGELES CA	0.45%	0.04%	0.41%	28.64	1.24	0.032
BERRY CORP	0.39%	0.03%	0.36%	58.04	1.18	0.042
OCEANFIRST FINANCIAL CORP	0.47%	0.05%	0.42%	27.88	1.18	0.022
CIVISTA BANCSHARES INC	0.42%	0.01%	0.41%	28.88	1.16	0.023
PDC ENERGY INC	0.38%	0.00%	0.38%	57.03	1.15	0.029
SHOCKWAVE MEDICAL INC	0.00%	0.32%	-0.32%	54.30	1.14	-0.273

Portfolio Risk by GICS Sector



Growth – Global Equity
Frontier US SMID Growth

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to invest in high quality companies at attractive valuations and sustainable secular growth through fundamental analysis. The strategy may be suited to investors looking to increase U.S. mid and small cap exposures and generate returns through stock selection and low turnover.

Inception Date: June 2002

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	7,098.2	5,946.2
No. Of Issues	142.0	0.0
Dividend Yield	0.7	1.6
Return on Equity	12.5	15.5
Price to Sales	3.0	7.7
Price to Book	0.7	4.2
PE Ratio	21.5	21.8

Top Holdings (% of assets)

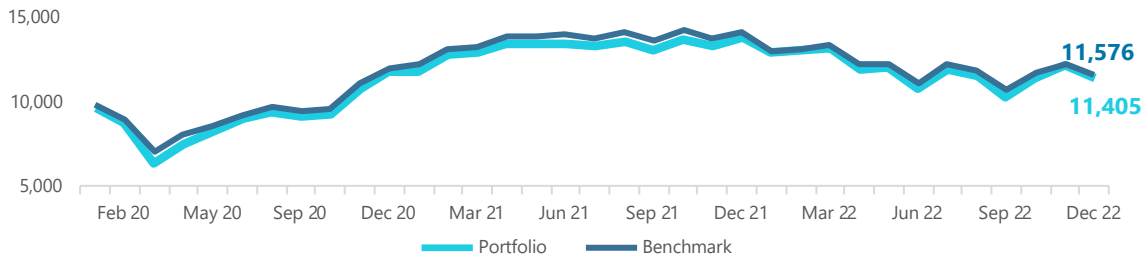
BUILDERS FIRSTSOURCE INC	2.3%
MRC GLOBAL INC	1.9%
ARRAY TECHNOLOGIES INC	1.8%
MACOM TECHNOLOGY SOLUTIONS H	1.8%
INSULET CORP	1.8%
Top 5 Holdings	**9.5%**

Performance (net)[1]

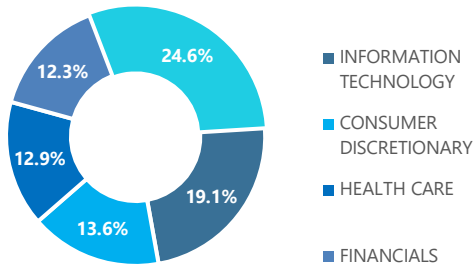
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Frontier US SMID Growth	**256.2**	**11.1%**	**-17.9%**	**4.5%**	**4.9%**
RUSSELL 2500		7.4%	-18.4%	5.0%	5.9%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

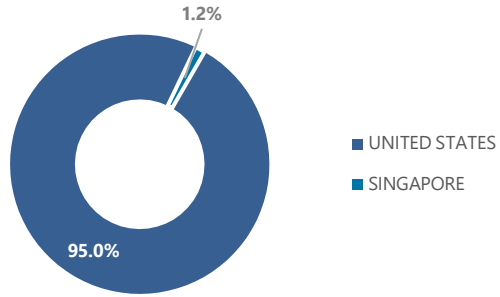
Universe data: US Equity Funds - Small Cap	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Frontier US SMID Growth	**11.3%**	**21**	**-17.3%**	**69**	**5.3%**	**74**	**5.7%**	**68**
Median	9.9%		-13.9%		6.6%		6.7%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Growth Risk Analysis – Global Equity Frontier US SMID Growth

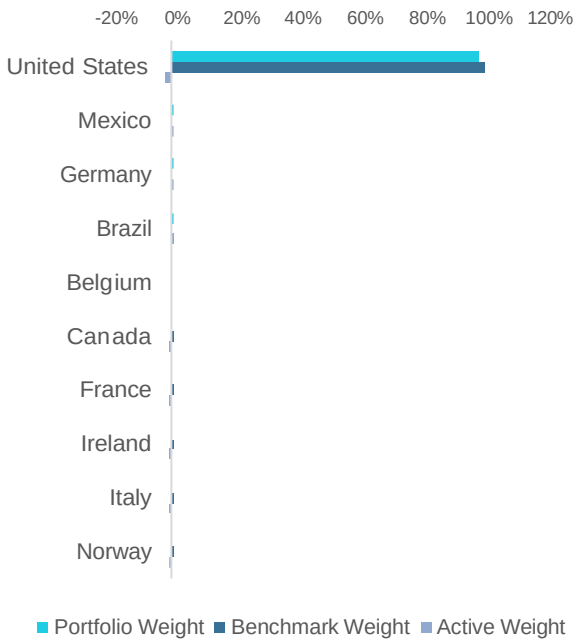
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**27.52**
Benchmark Risk	24.48
Active Risk	4.86
Portfolio Beta	1.11

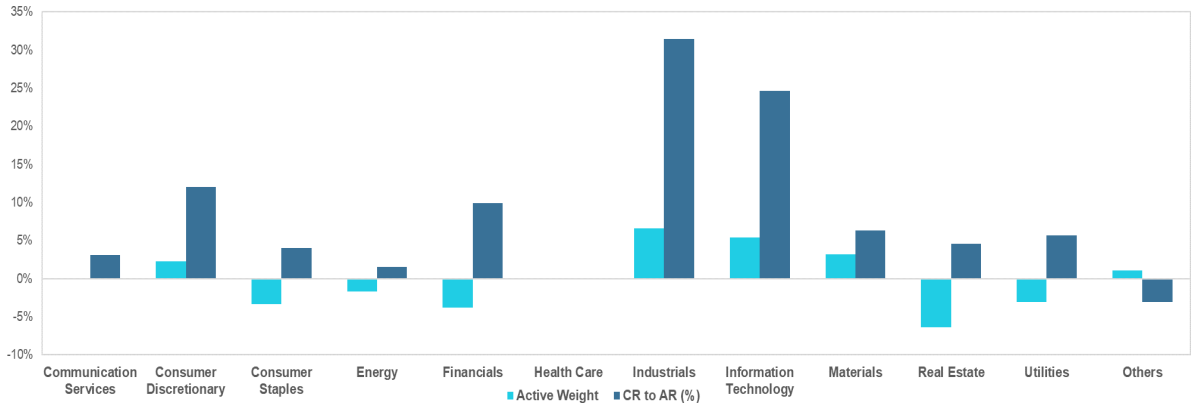
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
ARRAY TECHNOLOGIES INC	1.81%	0.06%	1.75%	72.19	9.51	0.402
WOLFSPEED INC	1.36%	0.16%	1.20%	59.99	5.15	0.347
MRC GLOBAL INC	1.91%	0.02%	1.89%	54.25	4.51	0.255
CAESARS ENTERTAINMENT INC	1.29%	0.00%	1.29%	54.78	3.81	0.282
MACOM TECHNOLOGY SOLUTIONS	1.80%	0.06%	1.74%	38.90	3.63	0.240
DANA INC	1.33%	0.04%	1.29%	48.81	3.57	0.273
SITIME CORPORATION	0.76%	0.03%	0.72%	66.10	3.48	0.372
BUILDERS FIRSTSOURCE INC	2.26%	0.18%	2.08%	42.18	3.38	0.218
CONTROLADORA VUELA	1.00%	0.00%	1.00%	59.68	3.12	0.291
ALBEMARLE CORP	1.27%	0.00%	1.27%	46.36	2.77	0.245

Portfolio Risk by GICS Sector



Growth – Global Equity
Global Alpha

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to identify mispriced companies with high rates of growth, strong balance sheets, and high insider ownership using a bottom-up, research-based approach coupled with investment themes. The strategy may be suited to investors looking to increase exposure to international small cap stocks.

Inception Date: November 2018

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	2,409.7	2,507.6
No. Of Issues	61.0	0.0
Dividend Yield	3.0	3.9
Return on Equity	12.1	13.3
Price to Sales	17.0	6.4
Price to Book	2.3	2.9
PE Ratio	15.8	14.2

Top Holdings (% of assets)

BIFFA PLC	4.2%
RAFFLES MEDICAL GROUP LTD	3.3%
SOPRA STERIA GROUP	3.2%
L OCCITANE INTERNATIONAL SA	3.1%
SEGA SAMMY HOLDINGS INC	3.1%
Top 5 Holdings	**16.9%**

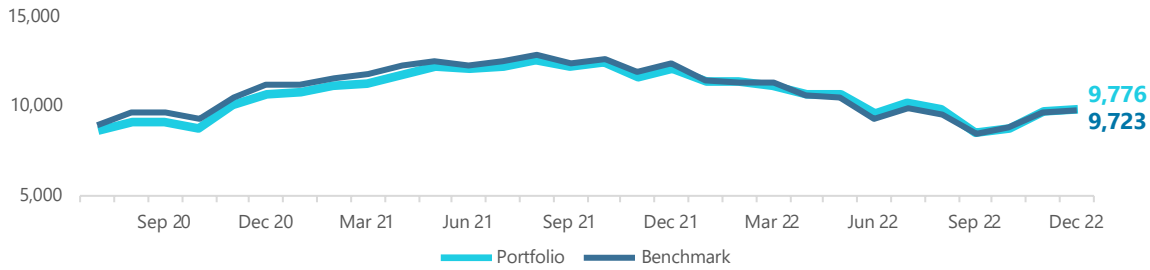
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

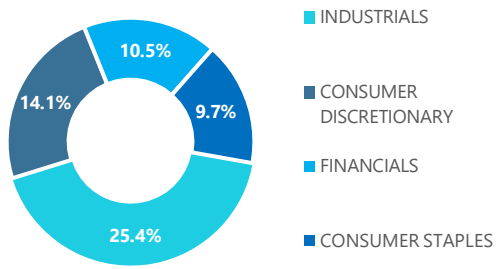
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Global Alpha	**165.5**	**15.1%**	**-19.2%**	**-0.8%**	**--**
MSCI EAFE SMALL CAP NET		15.8%	-21.4%	-0.9%	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

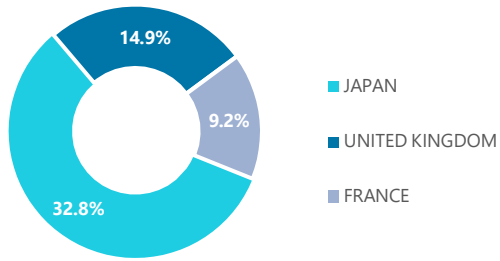
Universe data: International Equity Funds Core	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Global Alpha	**15.3%**	**12**	**-18.6%**	**68**	**0.0%**	**78**	**--**	**--**
Median	12.4%		-16.0%		2.5%		--	

Growth of $10,000



Top Exposures (% of assets)[2]





Growth Risk Analysis – Global Equity Global Alpha

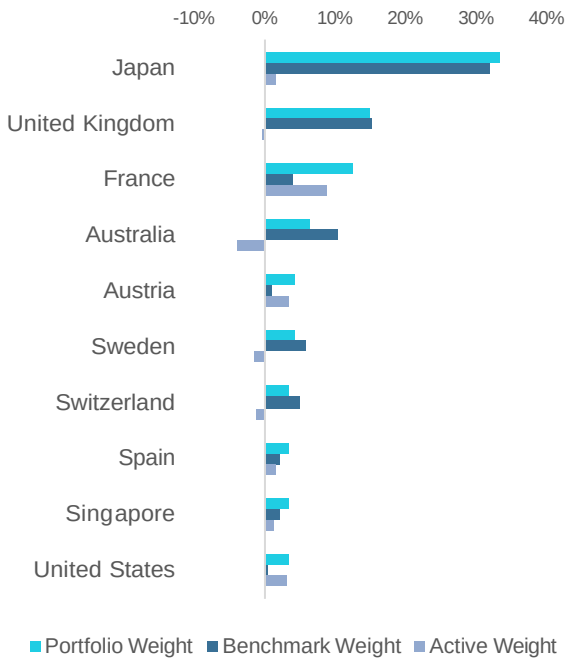
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**19.80**
Benchmark Risk	20.41
Active Risk	4.15
Portfolio Beta	0.95

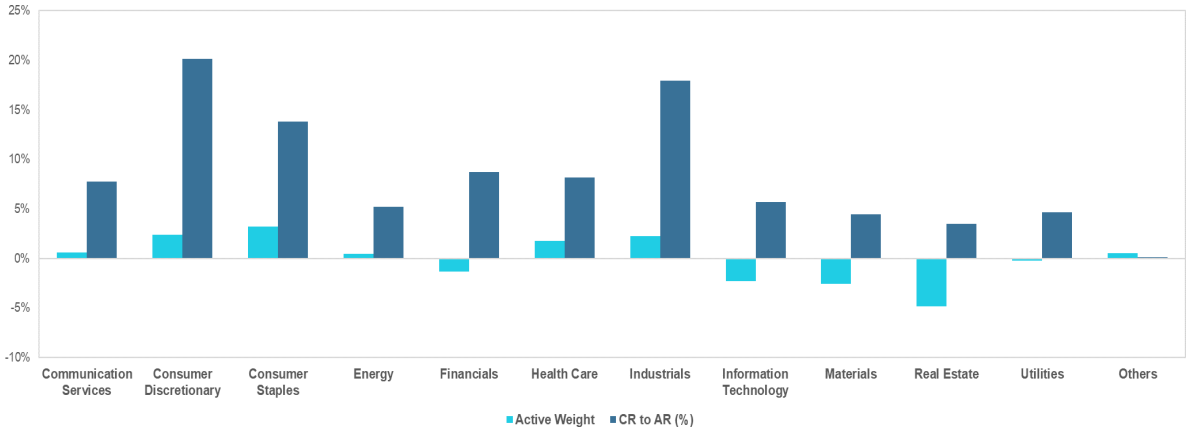
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
L'OCCITANE INTERNATIONAL SA	3.10%	0.00%	3.10%	38.15	8.46	0.063
ASICS CORP	3.08%	0.15%	2.94%	42.30	8.31	0.067
BIFFA PLC	4.18%	0.06%	4.11%	38.26	6.87	0.019
SEGA SAMMY HOLDINGS INC	3.09%	0.10%	2.99%	32.53	6.53	0.040
INTERNET INITIATIVE JAPAN INC	2.59%	0.08%	2.51%	35.50	5.68	0.044
RAFFLES MEDICAL GROUP LTD	3.32%	0.04%	3.28%	29.42	4.96	0.012
ORMAT TECHNOLOGIES INC	2.95%	0.00%	2.95%	34.32	4.67	0.015
AIN HOLDINGS	1.71%	0.05%	1.67%	34.30	3.51	0.037
DMG MORI CO LTD	2.34%	0.06%	2.28%	31.50	2.74	-0.001
ROTHSCHILD & CO	2.95%	0.00%	2.95%	30.99	2.65	-0.013

Portfolio Risk by GICS Sector



Growth – Global Equity
JPMorgan Strategic Beta Non-US

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to capture incremental alpha through investing in equity factors that are rule-based, transparent, and academically proven. This strategy may be suited to investors looking to gain equity factor exposures in non-U.S. markets at lower volatility and cost than active strategies.

Inception Date: August 2020

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	70,086.8	67,342.0
No. Of Issues	1,813.0	0.0
Dividend Yield	3.6	3.1
Return on Equity	19.5	17.7
Price to Sales	3.1	3.9
Price to Book	3.8	4.1
PE Ratio	11.9	14.0

Top Holdings (% of assets)

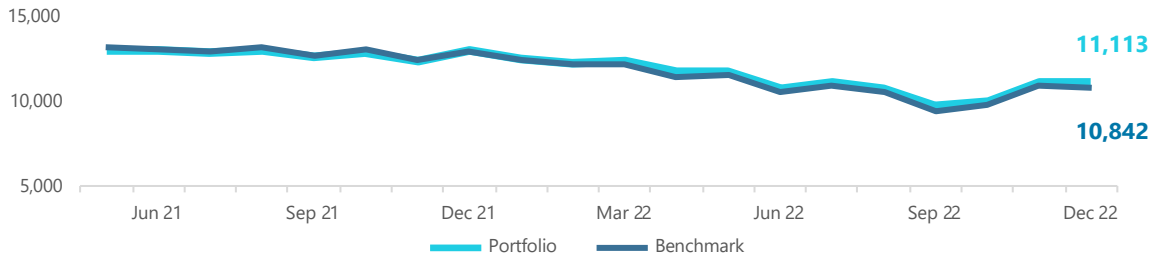
ISHARES MSCI INDIA ETF	3.9%
TAIWAN SEMICONDUCTOR MANUFAC	1.3%
NESTLE SA REG	1.2%
TENCENT HOLDINGS LTD	1.0%
NOVO NORDISK A/S B	0.9%
Top 5 Holdings	**8.4%**

Performance (net)[1]

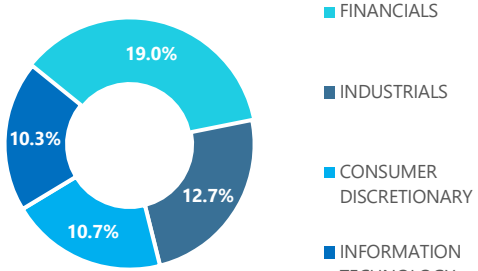
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
JPMAM Strategic Beta Non-US	**550.5**	**14.1%**	**-14.5%**	**--**	**--**
MSCI ACWI ex USA IMI Net		14.1%	-16.6%	--	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

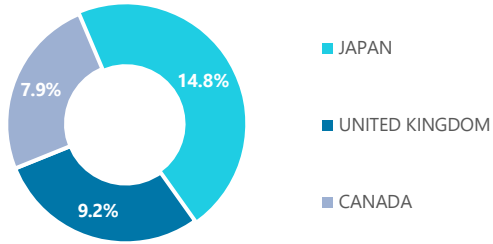
Universe data: International Equity	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
JPMAM Strategic Beta Non-US	**14.1%**	**54**	**-14.5%**	**30**	**--**	**--**	**--**	**--**
Median	14.3%		-16.5%		--		--	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Growth Risk Analysis – Global Equity
JPMorgan Strategic Beta Non-US

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

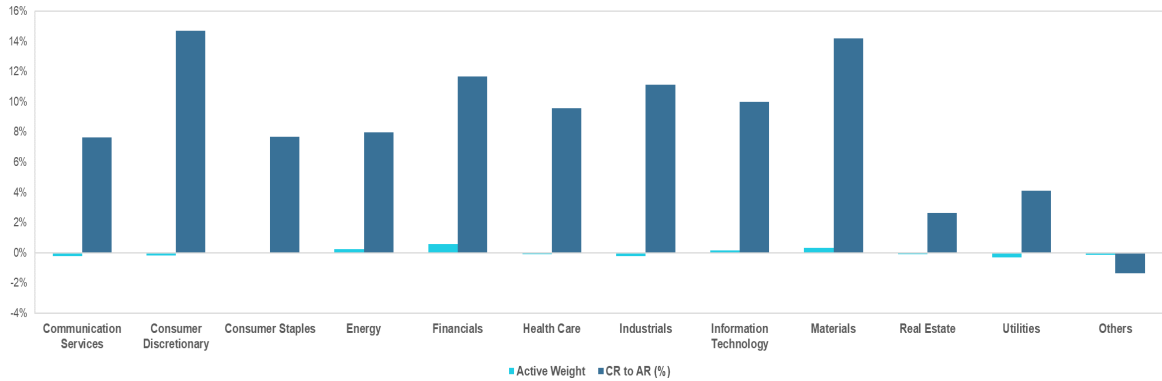
	Value
Total Risk	**17.95**
Benchmark Risk	18.06
Active Risk	0.81
Portfolio Beta	0.99

Top Countries by Weight%

Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
ALIBABA GROUP HOLDING LTD	0.00%	0.63%	-0.63%	51.07	14.29	-0.211
ASML HOLDING	0.01%	0.84%	-0.84%	42.30	4.78	-0.073
VALE SA	0.28%	0.00%	0.28%	49.35	3.89	0.086
NETEASE INC	0.00%	0.11%	-0.11%	44.56	1.93	-0.168
LI AUTO INC	0.00%	0.04%	-0.04%	63.18	1.30	-0.275
KUAISHOU TECHNOLOGY	0.02%	0.06%	-0.04%	63.13	1.25	-0.289
PDD HOLDINGS INC	0.11%	0.16%	-0.05%	57.98	1.17	-0.221
BEIGENE LTD	0.00%	0.04%	-0.04%	53.55	1.12	-0.251
WUXI BIOLOGICS CAYMAN INC	0.07%	0.11%	-0.04%	56.00	1.04	-0.250
JD HEALTH INTERNATIONAL INC	0.00%	0.04%	-0.04%	55.46	0.96	-0.227

Portfolio Risk by GICS Sector



Growth – Global Equity
JPMorgan Strategic Beta US

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to capture incremental alpha through investing in equity factors that are rule-based, transparent, and academically proven. This strategy may be suited to investors looking to gain equity factor exposures in the U.S. at lower volatility and cost than active strategies.

Inception Date: July 2020

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	358,369.2	417,431.3
No. Of Issues	956.0	0.0
Dividend Yield	1.4	1.3
Return on Equity	29.5	29.9
Price to Sales	4.3	4.5
Price to Book	8.5	9.5
PE Ratio	18.2	20.5

Top Holdings (% of assets)

APPLE INC	5.5%
MICROSOFT CORP	4.5%
AMAZON.COM INC	2.0%
ALPHABET INC CL A	1.4%
UNITEDHEALTH GROUP INC	1.3%
Top 5 Holdings	**14.7%**

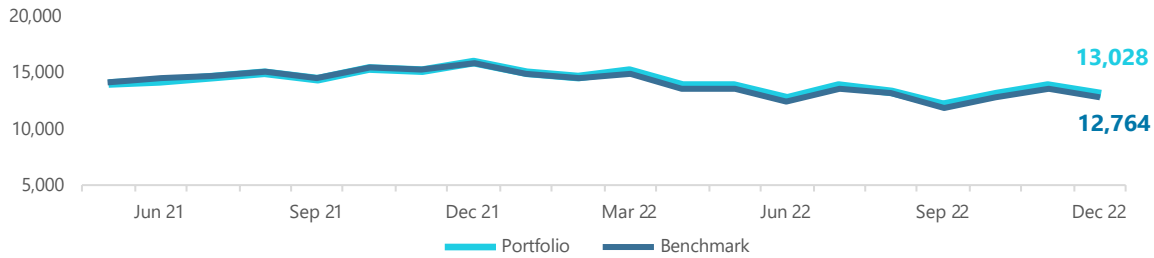
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

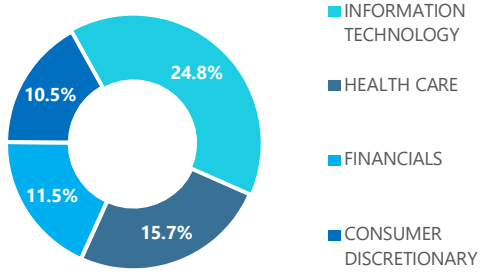
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
JPMAM Strategic Beta US	**3,997.8**	**7.6%**	**-18.0%**	**--**	**--**
MSCI USA IMI Gross		7.2%	-19.2%	--	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

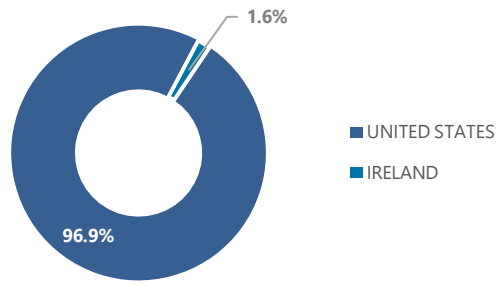
Universe data: U.S. Equities Total Large Cap	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
JPMAM Strategic Beta US	**7.6%**	**51**	**-17.9%**	**46**	**--**	**--**	**--**	**--**
Median	7.6%		-18.1%		--		--	

Growth of $10,000



Top Exposures (% of assets)[2]





Growth Risk Analysis – Global Equity
JPMorgan Strategic Beta US

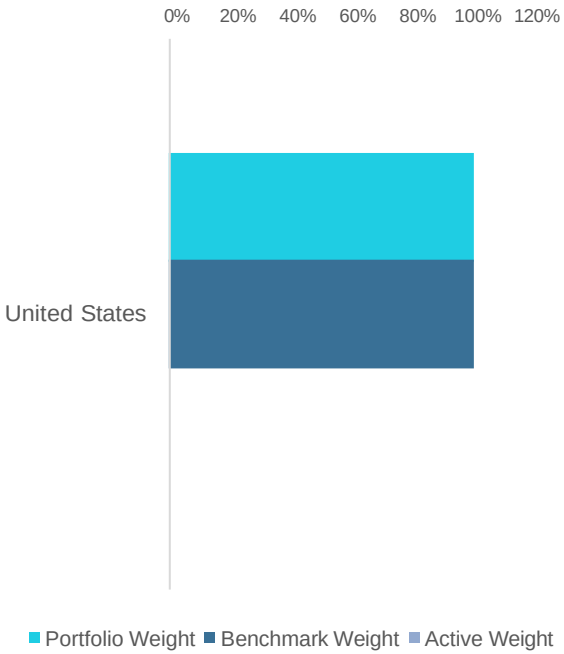
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**20.40**
Benchmark Risk	20.61
Active Risk	0.63
Portfolio Beta	0.99

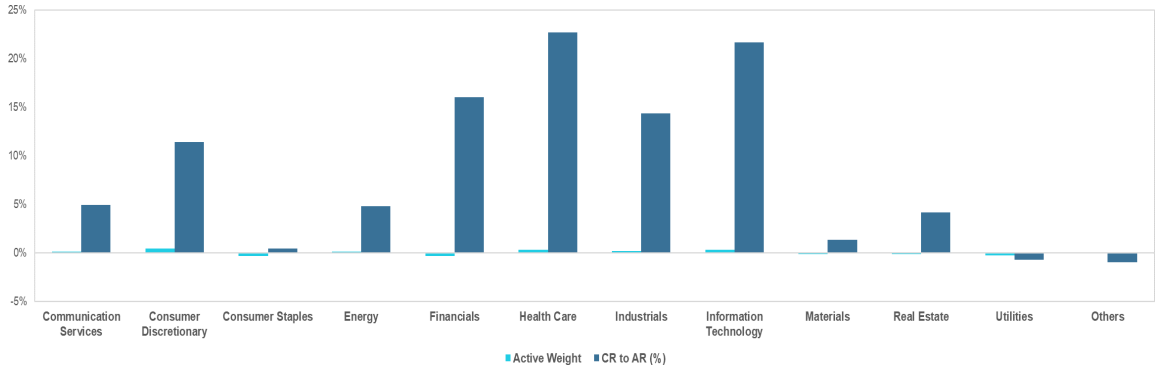
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
JPMORGAN CHASE & CO	0.01%	1.04%	-1.03%	27.95	8.55	-0.122
MONGODB INC	0.00%	0.04%	-0.04%	67.54	1.61	-0.357
SNOWFLAKE INC	0.05%	0.08%	-0.04%	57.62	1.46	-0.306
CLOUDFLARE INC	0.00%	0.03%	-0.03%	67.96	1.16	-0.343
OKTA INC	0.00%	0.03%	-0.03%	61.20	1.14	-0.334
WARNER BROS DISCOVERY INC	0.02%	0.06%	-0.03%	55.81	1.06	-0.267
TWILIO INC	0.00%	0.02%	-0.02%	60.21	0.98	-0.346
DATADOG INC	0.02%	0.05%	-0.03%	54.27	0.94	-0.272
DOORDASH INC	0.00%	0.03%	-0.03%	57.11	0.92	-0.264
HUBSPOT INC	0.00%	0.03%	-0.03%	53.05	0.91	-0.256

Portfolio Risk by GICS Sector



Growth – Global Equity
Lazard Emerging Markets

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to provide long-term capital appreciation by investing in companies trading at a discount to their estimated net asset value, sum of the parts valuation, and/or underlying investments/businesses. The strategy may be suited to investors looking to capture growth opportunities in emerging markets and increase portfolio diversification.

Inception Date: February 2013

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	34,478.0	87,692.2
No. Of Issues	49.0	0.0
Dividend Yield	2.6	3.3
Return on Equity	11.9	12.1
Price to Sales	1.5	1.1
Price to Book	1.6	1.6
PE Ratio	13.3	11.5

Top Holdings (% of assets)

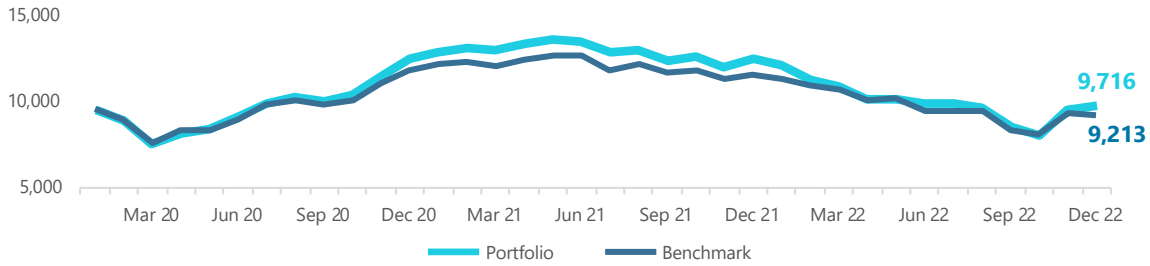
PROSUS NV	9.8%
JPMORGAN EMERGING MARKETS INVE	6.6%
CITIC SECURITIES CO LTD H	5.8%
FIDELITY CHINA SPECIAL SITUATI	5.8%
TEMPLETON EMERGING MARKETS INV	5.7%
Top 5 Holdings	**33.8%**

Performance (net)[1]

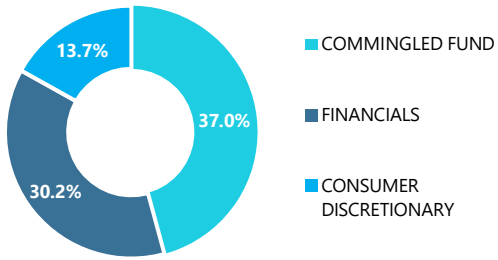
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Lazard Emerging Markets	**368.0**	**14.5%**	**-22.6%**	**-1.0%**	**0.3%**
MSCI EMERGING MARKETS		9.7%	-20.1%	-2.7%	-1.4%
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

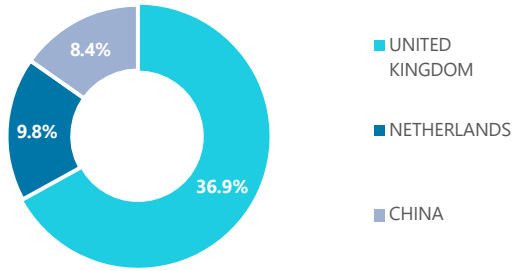
Universe data: Intl Equity Emerging Mkt Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Lazard Emerging Markets	**14.6%**	**7**	**-22.1%**	**71**	**-0.3%**	**50**	**1.0%**	**28**
Median	10.4%		-20.1%		-0.7%		0.0%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Growth Risk Analysis – Global Equity
Lazard Emerging Markets

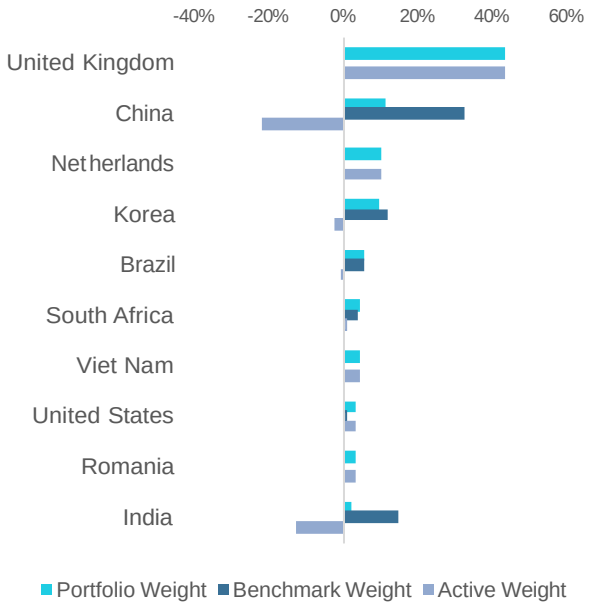
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**20.92**
Benchmark Risk	19.28
Active Risk	11.43
Portfolio Beta	0.91

Top Countries by Weight%

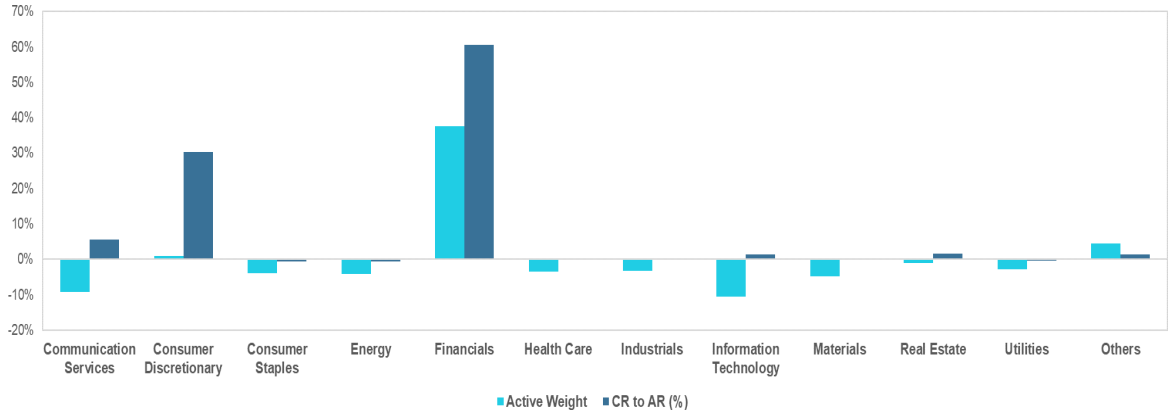


Note: Weights represent country of domicile of closed-end fund and not country of underlying fund holdings.

Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
PROSUS NV	9.83%	0.00%	9.83%	45.87	18.68	0.189
FIDELITY CHINA SPECIAL SITUATIONS PLC	5.83%	0.00%	5.83%	42.89	10.51	0.178
JPMORGAN EMERGING MK	6.67%	0.00%	6.67%	32.32	10.19	0.146
TEMPLETON EMERG MK INVSTMNT TRUST	5.69%	0.00%	5.69%	31.09	8.10	0.134
TENCENT HOLDINGS LTD	0.18%	4.24%	-4.06%	43.81	5.17	-0.174
SCHRODER ASIA PAC	2.77%	0.00%	2.77%	30.49	3.72	0.125
ASIA DRAGON TRUST PLC	2.65%	0.00%	2.65%	33.27	3.72	0.132
NASPERS	3.90%	0.57%	3.33%	48.53	3.67	0.098
FIDELITY EMERGING MARKETS LTD	2.17%	0.00%	2.17%	32.28	3.10	0.135
ALIBABA GROUP HOLDING LTD	0.16%	2.59%	-2.43%	51.07	3.04	-0.171

Portfolio Risk by GICS Sector



Growth – Global Equity
SSGA MSCI ACWI IMI

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to provide global equity market exposure and passive index returns. This strategy may be suited to investors looking to gain passive, global equity exposures with low tracking error.

Inception Date: January 2020

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	240,652.7	240,625.8
No. Of Issues	6,507.0	0.0
Dividend Yield	22.3	25.5
Return on Equity	23.8	23.7
Price to Sales	4.5	4.5
Price to Book	6.7	6.8
PE Ratio	17.3	17.5

Top Holdings (% of assets)

APPLE INC	3.2%
MICROSOFT CORP	2.6%
AMAZON.COM INC	1.2%
ALPHABET INC CL C	0.8%
ALPHABET INC CL A	0.8%
Top 5 Holdings	**8.6%**

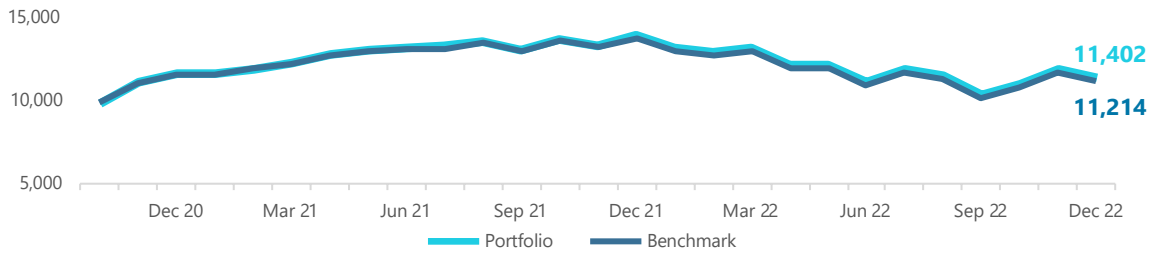
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

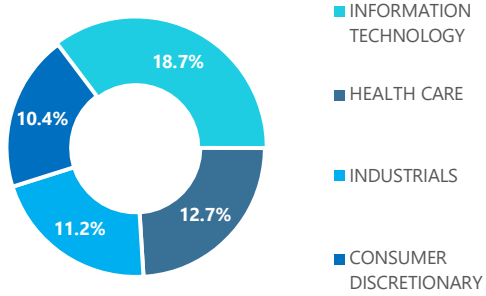
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
SSGA MSCI ACWI IMI	**14,270.2**	**10.1%**	**-17.9%**	**4.5%**	**--**
MSCI ACWI IMI Net		9.8%	-18.4%	3.9%	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

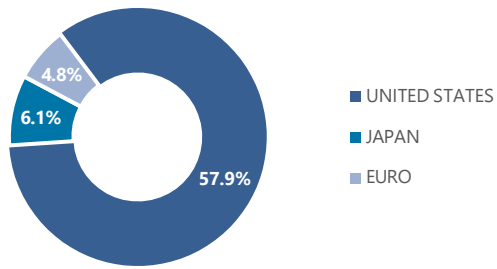
Universe data: Global Equity Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
SSGA MSCI ACWI IMI	**10.1%**	**51**	**-17.9%**	**73**	**4.5%**	**34**	**--**	**--**
Median	10.1%		-14.0%		3.5%		--	

Growth of $10,000



Top Exposures (% of assets)[2]





Growth Risk Analysis – Global Equity
SSGA MSCI ACWI IMI

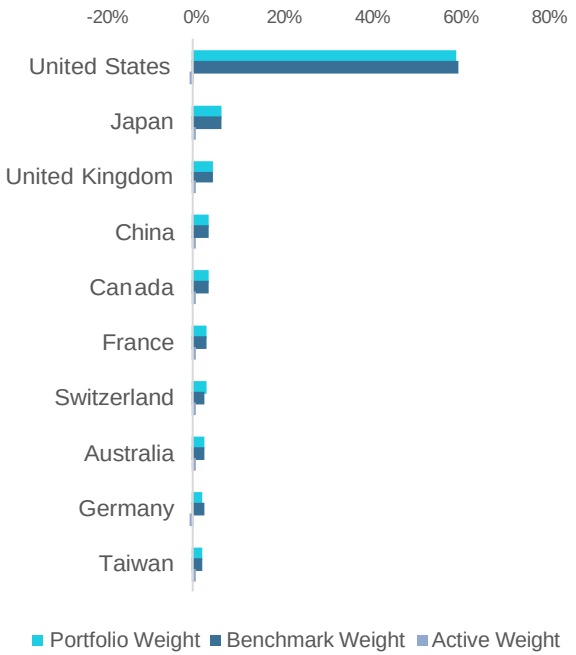
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**18.88**
Benchmark Risk	18.89
Active Risk	0.19
Portfolio Beta	1.00

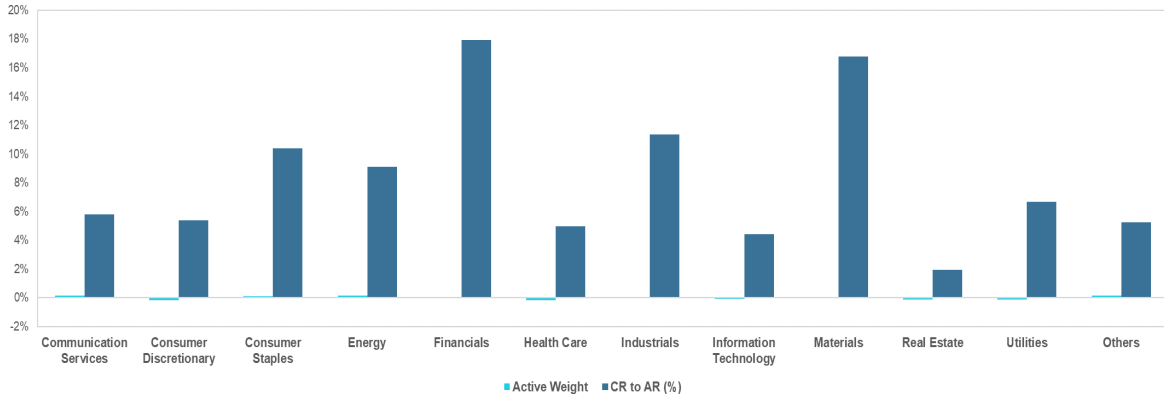
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
NK LUKOIL PAO	0.05%	0.00%	0.05%	71.21	4.84	0.193
RELIANCE INDUSTRIES LTD	0.00%	0.15%	-0.14%	29.41	4.64	-0.068
HOUSING DEVELOPMENT FINANCE CORP	0.00%	0.09%	-0.08%	31.06	3.55	-0.086
ASML HOLDING	0.33%	0.00%	0.33%	42.30	2.49	0.006
AL RAJHI BANK	0.00%	0.06%	-0.06%	28.37	2.34	-0.080
ICICI BANK LTD	0.00%	0.09%	-0.09%	29.17	2.27	-0.058
BAJAJ FINANCE LTD	0.00%	0.03%	-0.03%	37.76	2.08	-0.124
AXIS BANK LTD	0.00%	0.04%	-0.04%	35.36	1.98	-0.102
SAUDI NATIONAL BANK SJSC	0.00%	0.05%	-0.05%	30.37	1.80	-0.082
ADANI ENTERPRISES LTD	0.00%	0.02%	-0.02%	43.63	1.72	-0.165

Portfolio Risk by GICS Sector



Growth – Global Equity
Systematic US Small Cap Value

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Seeks to identify high quality small cap companies capable of generating high rates of return with attractive valuations. The strategy may be suited for investors looking to increase U.S. small cap exposure with defensive characteristics.

Inception Date: July 2018

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	3,971.1	2,735.4
No. Of Issues	152.0	0.0
Dividend Yield	3.5	1.4
Return on Equity	17.7	11.9
Price to Sales	1.9	13.0
Price to Book	2.3	4.8
PE Ratio	13.2	29.0

Top Holdings (% of assets)

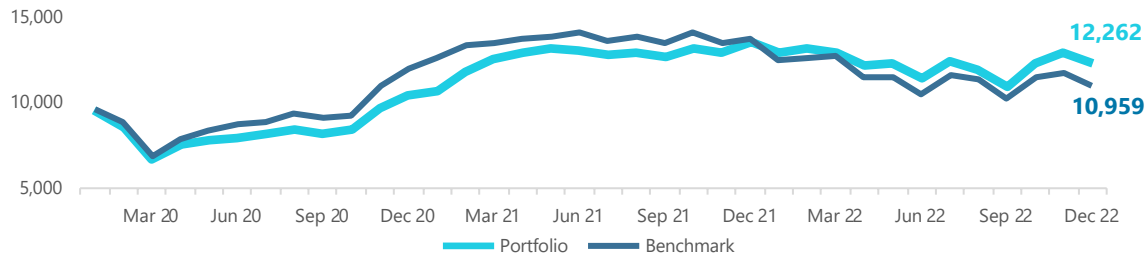
FIRST CITIZENS BCSHS CL A	3.0%
MAGNOLIA OIL + GAS CORP A	2.1%
CROSS COUNTRY HEALTHCARE INC	1.8%
EMCOR GROUP INC	1.7%
NORTHWESTERN CORP	1.6%
Top 5 Holdings	**10.1%**

Performance (net)[1]

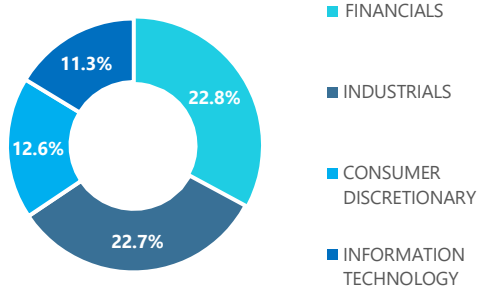
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Systematic US Small Cap Value	**186.4**	**11.8%**	**-9.9%**	**7.0%**	**--**
RUSSELL 2000		6.2%	-20.4%	3.1%	--
Growth Policy Benchmark		4.0%	-17.0%	5.2%	--

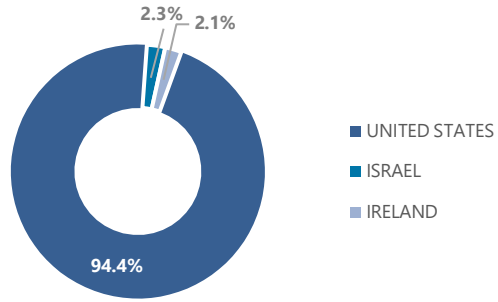
Universe data: US Equity Funds - Small Cap	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Systematic US Small Cap Value	**12.0%**	**18**	**-9.5%**	**20**	**7.6%**	**26**	**--**	**--**
Median	9.9%		-13.9%		6.6%		--	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Growth Risk Analysis – Global Equity Systematic US Small Cap Value

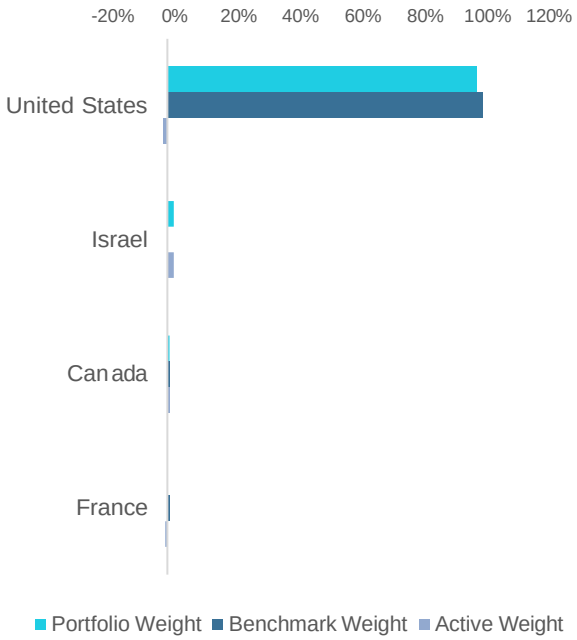
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Risk Summary

	Value
Total Risk	**22.49**
Benchmark Risk	25.36
Active Risk	5.89
Portfolio Beta	0.87

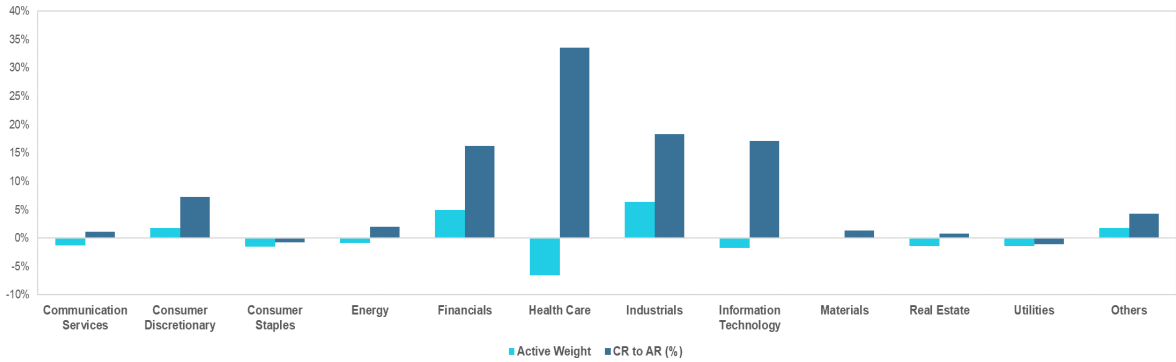
Top Countries by Weight%



Top 10 Assets by Contribution to Active Risk

Asset	Weight			Total Risk	%CR to Active TR	MC to Active TR
	Portfolio	Benchmark	Active			
FIRST CITIZENS BANCSHARES INC NRTH	2.97%	0.00%	2.97%	33.21	5.34	-0.040
NORTHWESTERN CORP	1.64%	0.15%	1.49%	23.94	2.94	-0.030
WASHINGTON FEDERAL INC	1.33%	0.10%	1.23%	30.41	2.48	-0.027
CROSS COUNTRY HEALTHCARE INC	1.76%	0.04%	1.72%	56.33	2.03	-0.077
WEBSTER FINANCIAL CORP	1.33%	0.00%	1.33%	33.76	1.98	-0.058
CURTISS-WRIGHT CORP	1.23%	0.00%	1.23%	26.37	1.98	-0.052
EMCOR GROUP INC	1.67%	0.31%	1.36%	25.76	1.89	-0.064
TRUSTCO BANK CORP N Y	0.98%	0.03%	0.95%	26.15	1.86	-0.030
EVEREST RE GROUP LTD	1.15%	0.00%	1.15%	28.44	1.85	-0.052
LAKELAND BANCORP INC	0.92%	0.05%	0.87%	27.44	1.79	-0.026

Portfolio Risk by GICS Sector



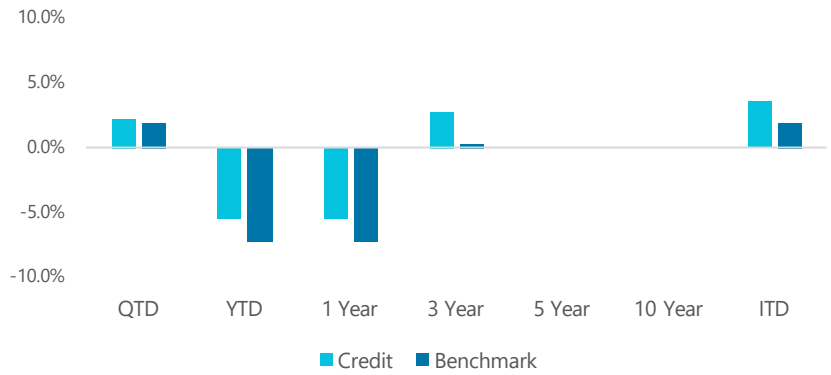
credit

Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Performance (net)

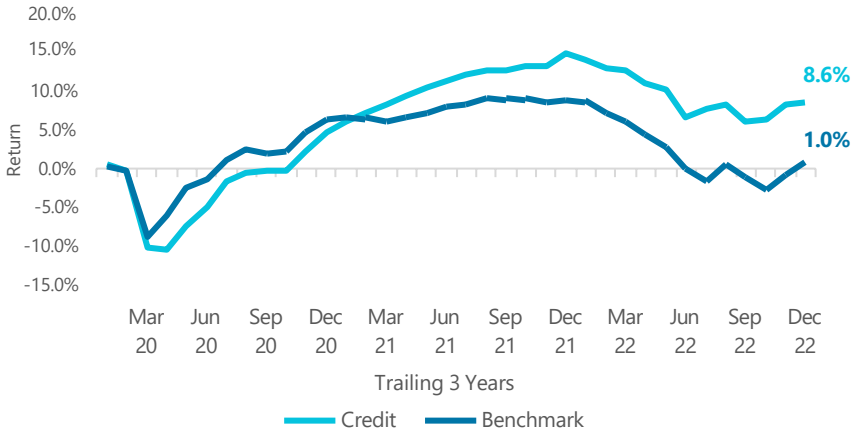


	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Credit	**2.2%**	**-5.5%**	**-5.5%**	**2.8%**	**--**	**--**	**3.6%**
Benchmark	1.9%	-7.4%	-7.4%	0.3%	--	--	2.0%
Excess	0.3%	1.9%	1.9%	2.5%	--	--	1.6%

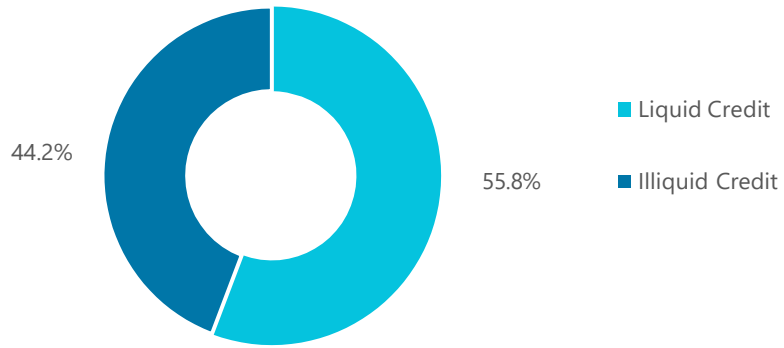
Functional Category

	QTD	FYTD	1 Year	3 Year
Liquid Credit	**3.9%**	**2.8%**	**-8.4%**	**--**
Liquid Credit Policy Benchmark	4.1%	3.4%	-8.0%	--
Excess	-0.2%	-0.7%	-0.5%	--
Illiquid Credit	**-0.1%**	**-0.1%**	**-0.8%**	**10.3%**
Illiquid Credit Policy Benchmark	0.7%	-0.6%	-5.5%	1.5%
Excess	-0.8%	0.5%	4.7%	8.8%

Cumulative Return



Exposure

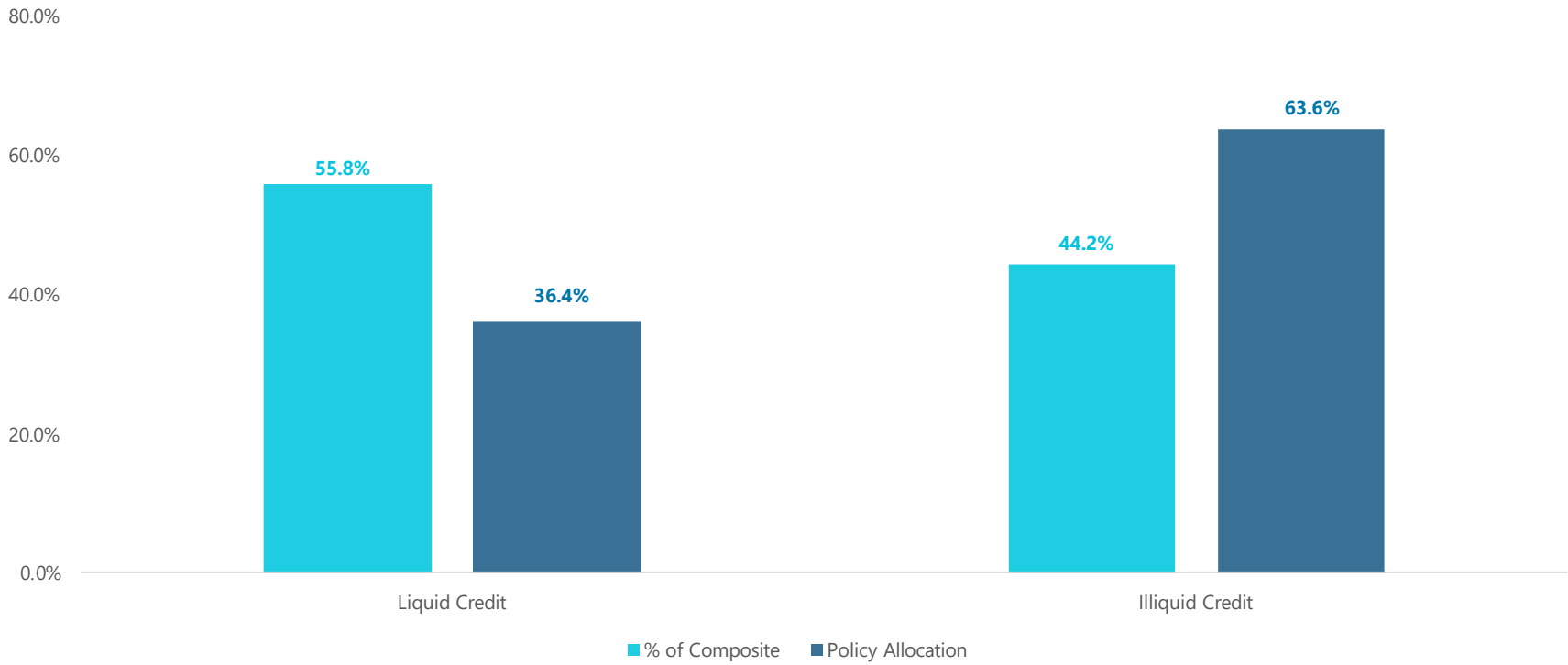


Asset Allocation

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Actual vs. Policy



	Ending Market Value (mm)	% of Composite	Policy Allocation	Over / Under (%)	Over / Under (mm)
Credit	**8,446**	**100.0%**	**100.0%**		
Liquid Credit	4,709	55.8%	36.4%	19.4%	1,638
Illiquid Credit	3,736	44.2%	63.6%	-19.4%	-1,638

Contribution to Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Contribution to Return

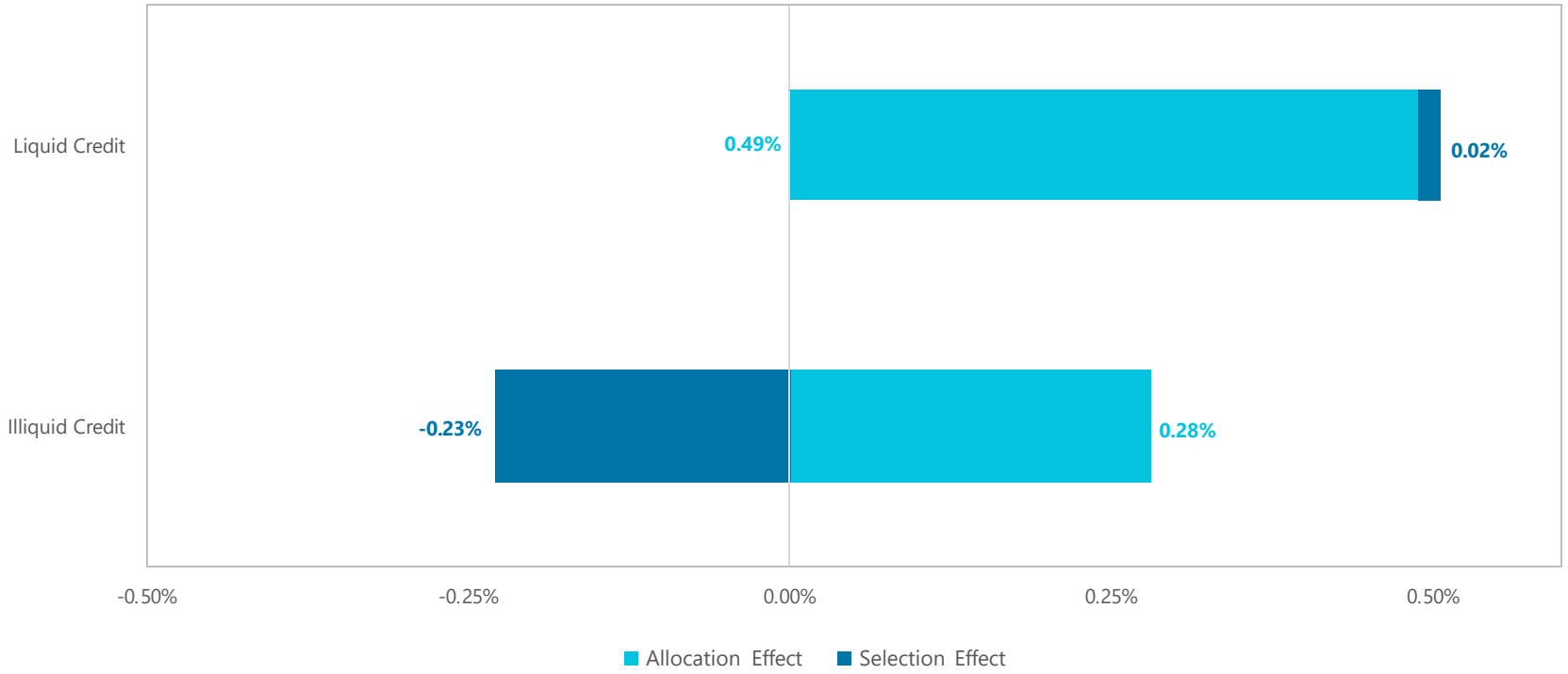
Functional Category		Contributors		Detractors	
Liquid Credit	0.26%	Credit Suisse Bank Loans	0.06%	Beach Point - Fund III	-0.01%
Illiquid Credit	0.00%	abrdn	0.05%	Napier Park	-0.01%
Credit	0.26%	Ashmore Investment Management	0.04%		
		BlackRock HY ETF	0.04%		
		Pinebridge Investments	0.03%		

Return Attribution

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Performance Attribution[1]



	Ending Market Value (mm)	% of Composite	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
Credit	**8,446**	**100.0%**	**100.0%**	**2.2%**	**1.9%**	**0.77%**	**-0.21%**	**0.28%**
Liquid Credit	4,709	55.8%	36.4%	3.9%	4.1%	0.49%	0.02%	0.37%
Illiquid Credit	3,736	44.2%	63.6%	-0.1%	0.7%	0.28%	-0.23%	-0.09%

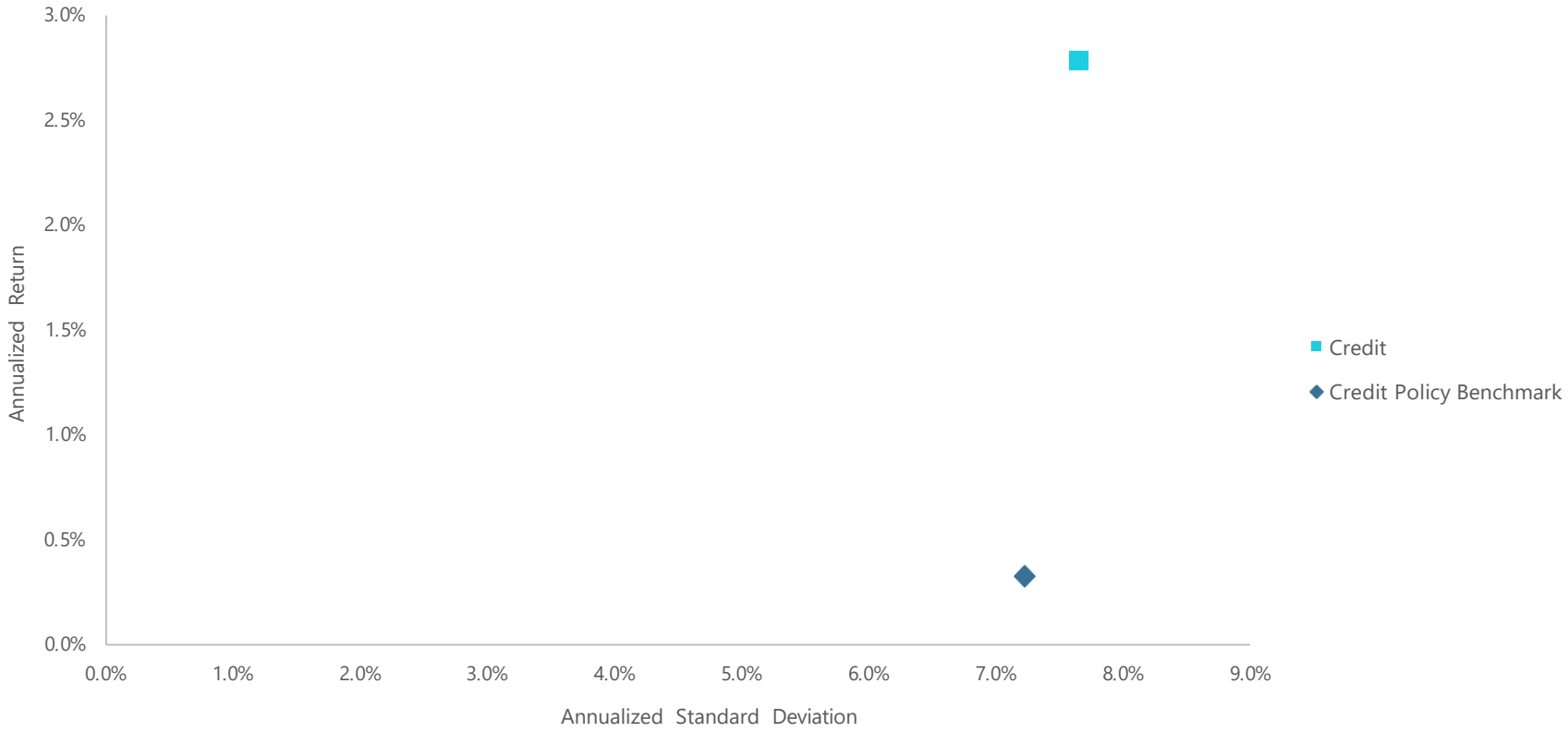
[1] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Credit	**2.8%**	**7.7%**				
Credit Policy Benchmark	0.3%	7.2%	0.33	0.73	0.95	3.6%

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns

	% of Composite	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Credit	**100.0%**	**8,446**	**7,883**	**2.2%**	**-5.5%**	**-5.5%**	**2.8%**	**--**	**--**	**3.6%**	**Apr-2019**
Credit Policy Benchmark				1.9%	-7.4%	-7.4%	0.3%	--	--	2.0%	
Liquid Credit	**55.8%**	**4,709**	**4,533**	**3.9%**	**-8.4%**	**-8.4%**	**--**	**--**	**--**	**-6.6%**	**Oct-2021**
Liquid Credit Policy Benchmark				4.1%	-8.0%	-8.0%	--	--	--	-6.2%	
abrdn	4.4%	373	340	9.6%	-15.9%	-15.9%	-5.2%	-1.9%	--	-0.9%	Jul-2017
Ashmore Investment Management	4.0%	341	311	9.6%	-17.6%	-17.6%	-7.4%	-3.6%	--	-2.4%	Jun-2017
Bain Capital	4.9%	417	407	2.0%	-1.4%	-1.4%	3.2%	3.6%	--	3.5%	Jun-2014
Beach Point	3.3%	281	269	4.3%	-11.5%	-11.5%	-0.7%	2.1%	--	3.9%	Mar-2014
BlackRock HY ETF	6.9%	579	553	4.7%	-10.9%	-10.9%	--	--	--	-0.5%	Feb-2020
Brigade Cap Mgmt	7.4%	624	616	1.3%	-12.0%	-12.0%	1.0%	2.2%	3.7%	5.6%	Jul-2010
Credit Suisse Bank Loans	13.7%	1,154	1,115	3.5%	-0.4%	-0.4%	--	--	--	6.3%	Apr-2020
Crescent Capital	5.8%	491	489	0.5%	-5.6%	-5.6%	2.4%	3.3%	--	3.1%	May-2014
Pinebridge Investments	5.3%	450	432	4.2%	-11.4%	-11.4%	--	--	--	-8.1%	Sep-2021
Illiquid Credit	**44.2%**	**3,736**	**3,350**	**-0.1%**	**-0.8%**	**-0.8%**	**10.3%**	**--**	**--**	**9.3%**	**Apr-2019**
Illiquid Credit Policy Benchmark				0.7%	-5.5%	-5.5%	1.5%	--	--	3.7%	
Beach Point - Fund II	0.1%	13	16	--	--	--	--	--	--	5.1%	Jun-2014
Beach Point - Fund III	1.8%	154	162	-4.4%	-11.9%	-11.9%	11.0%	9.9%	--	10.0%	Jun-2017
BlackRock/Tennenbaum	7.7%	647	640	1.2%	5.5%	5.5%	7.0%	7.1%	--	7.1%	Nov-2014
Grosvenor OPCRD 2 HFOF	0.3%	23	29	--	--	--	--	--	--	--	Mar-2016
Lake Cottage	2.8%	237	0	--	--	--	--	--	--	--	Nov-2022
Lake Vineyard	4.3%	363	268	0.5%	--	--	--	--	--	-1.1%	Apr-2022
Magnetar	10.7%	904	826	-0.2%	-1.1%	-1.1%	--	--	--	18.1%	Aug-2020
Napier Park	9.5%	800	806	-0.7%	-5.5%	-5.5%	--	--	--	14.9%	Apr-2020
PIMCO Tac Opps	3.2%	273	275	-0.9%	-6.4%	-6.4%	5.5%	--	--	5.3%	Nov-2018
Private Equity - Credit	2.6%	215	216	4.2%	12.8%	12.8%	17.4%	--	--	13.7%	Jan-2019
Real Estate - Credit	1.0%	83	112	3.2%	11.1%	11.1%	10.0%	9.7%	8.8%	9.0%	Oct-2011
Stable Asset Management – IC	0.3%	23	0	--	--	--	--	--	--	0.0%	Nov-2022

Liquid Credit
Risk Summary

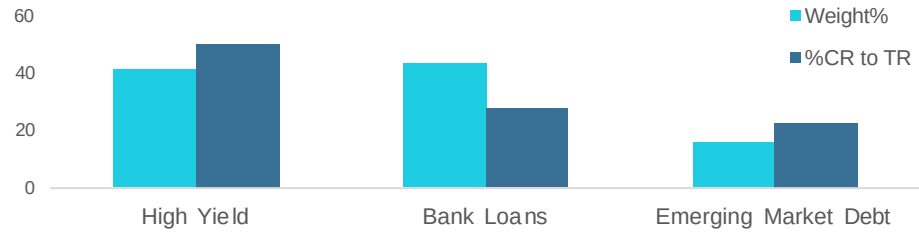
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**6.13**
Benchmark Risk	5.61
Active Risk	0.72
Portfolio Beta	1.09
Cont. to Eff. Duration	2.77
Convexity	0.13
Yield to Worst (%)	8.69
OAS to Swap (bp)	454

Contribution to Risk

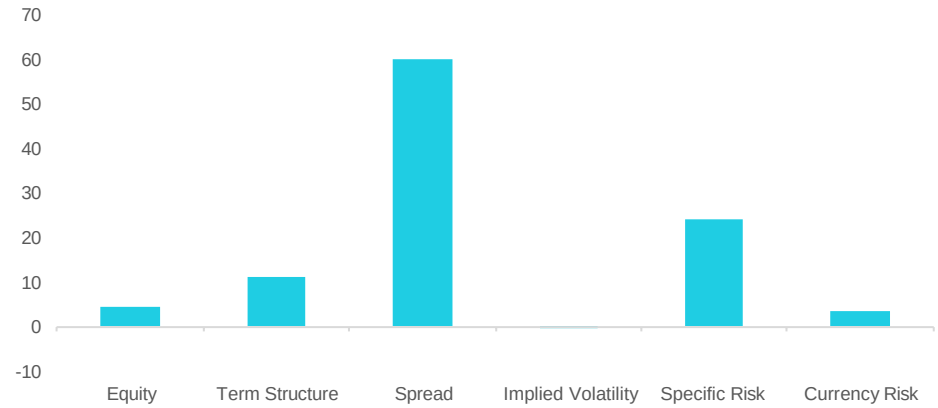


	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Liquid Credit	**4,577**	**100.00**	**6.13**	**6.13**	**100.00**
High Yield	1,888	41.25	7.67	3.06	49.97
Bank Loans	1,975	43.15	4.51	1.70	27.78
Emerging Market Debt	714	15.61	10.01	1.36	22.25

Risk Decomposition

	Portfolio		Active	
Risk Source	Risk Contribution	%Risk	Risk Contribution	%Risk
Total Risk	**6.13**	**100.00**	**0.72**	**100.00**
Local Market Risk	5.87	95.78	0.70	96.39
Common Factor Risk	5.85	95.34	0.52	72.17
Specific Risk	0.03	0.43	0.18	24.22
Currency Risk	0.26	4.22	0.03	3.61

Active Risk from Common Factors

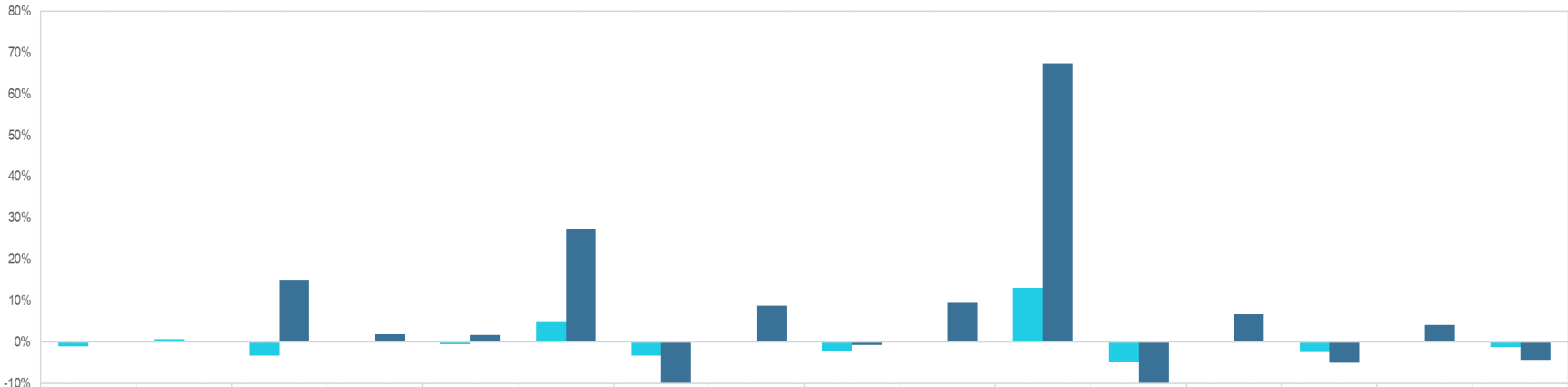


Liquid Credit Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Allocation By Bond Sector



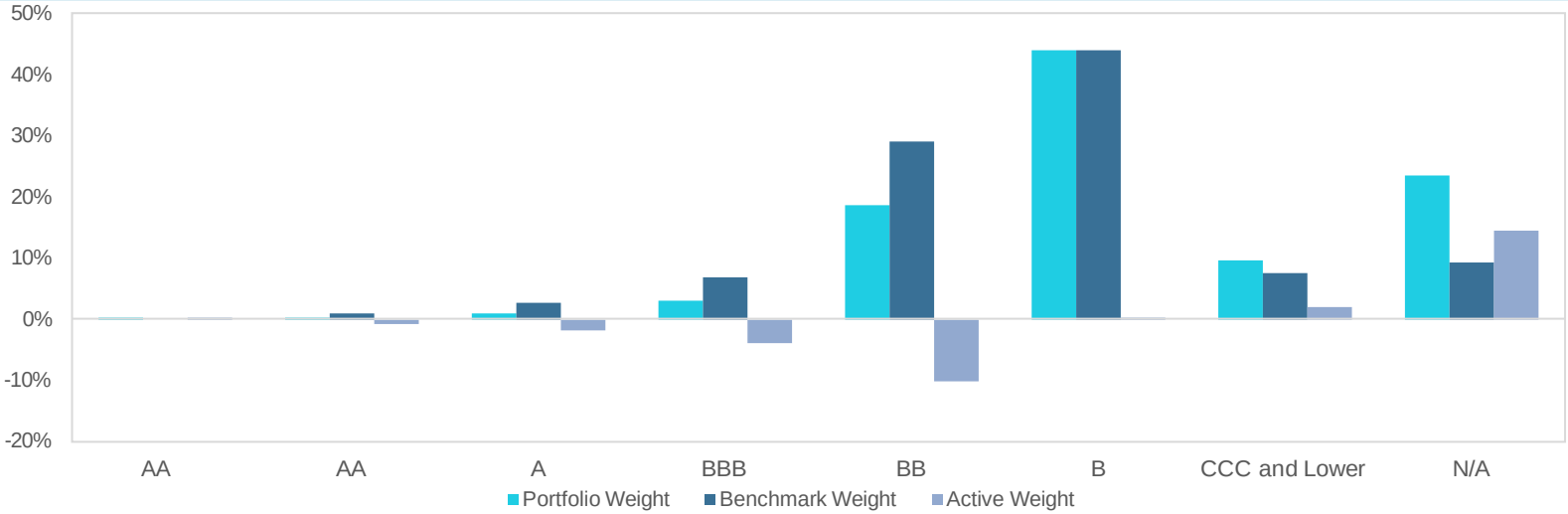
	Agency	Collateralized Loan Obligation	Consumer Discretionary	Consumer Staples	Energy	Financial	Government	Health Care	Industrial	Materials	Other	Sovereign	Technology	Telecom	Transportation	Utility
Active Weight	-1.01%	0.71%	-3.19%	0.03%	-0.55%	4.82%	-3.24%	0.08%	-2.24%	0.01%	13.09%	-4.80%	0.26%	-2.36%	-0.20%	-1.26%
Active Risk CR	0.19%	0.33%	14.93%	1.99%	1.72%	27.32%	-18.17%	8.90%	-0.60%	9.51%	67.40%	-14.58%	6.71%	-5.06%	4.15%	-4.34%

Liquid Credit Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Allocation By Moody's Rating



	Weight%						
Rating	Portfolio	Benchmark	Active	Total Risk	Active Risk CR	% of Active TR	CR to Effective Duration
Credit	**100.00%**	**100.00%**	**0.00%**	**6.13**	**0.72**	**100.00%**	**2.77**
AAA	0.12%	0.00%	0.12%	16.08	0.00	-0.6%	0.02
AA	0.28%	0.97%	-0.69%	11.50	0.03	3.6%	0.03
A	0.76%	2.55%	-1.78%	11.82	0.05	7.1%	0.10
BBB	2.96%	6.99%	-4.03%	7.57	0.07	10.0%	0.19
BB	18.79%	29.00%	-10.21%	6.10	0.25	34.5%	0.74
B	44.16%	43.90%	0.26%	6.15	0.32	43.7%	0.74
CCC and Lower	9.49%	7.52%	1.97%	11.52	0.11	15.3%	0.21
N/A	23.45%	9.08%	14.36%	4.92	-0.10	-13.5%	0.73

Credit – Liquid Credit abrdn

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

An emerging market debt strategy that invests in sovereigns, quasi-sovereigns, and corporate bonds denominated in US Dollar or local currencies.

Inception Date: July 2017

Performance (net)[1]

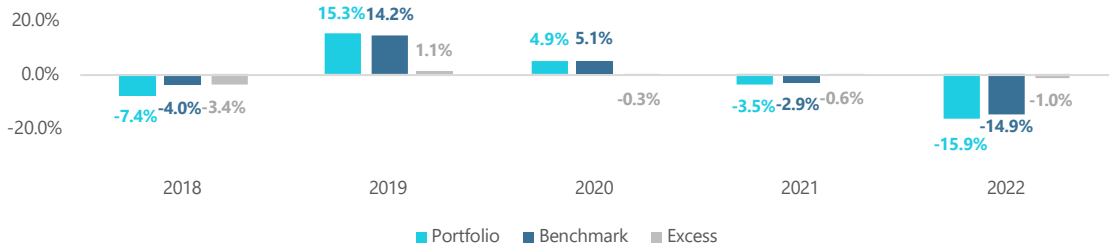
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
abrdn	**372.8**	**9.6%**	**-15.9%**	**-5.2%**	**-1.9%**
EMD Custom Benchmark		7.3%	-14.9%	-4.6%	-1.0%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

Universe data: US Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
abrdn	**9.7%**	**3**	**-15.6%**	**87**	**-4.9%**	**91**	**-1.5%**	**95**
Median	1.7%		-8.1%		-0.7%		1.0%	

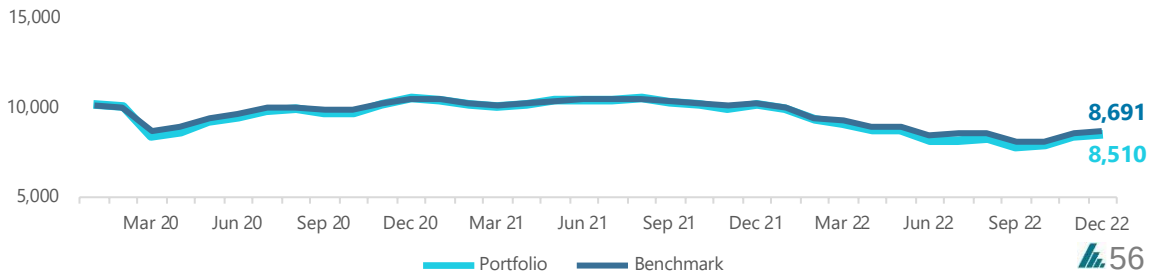
Risk Statistics (since inception)

Standard Deviation	11.3%
Benchmark Standard Deviation	9.6%
Sharpe Ratio	-0.14
Information Ratio	-0.29
Beta	1.16
Tracking Error	2.7%

Calendar Year Returns



Growth of $10,000



Note: Commingled fund account with no position-level transparency.

[1] Univ erse data is gross-of-fees.

Credit Risk Analysis – Liquid Credit abrdn

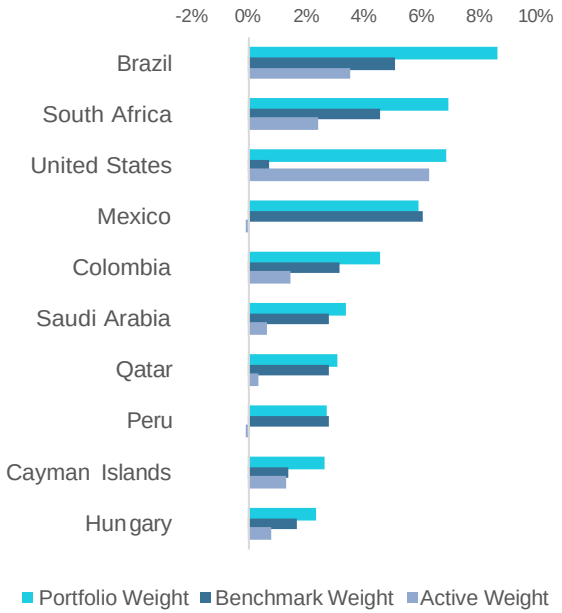
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

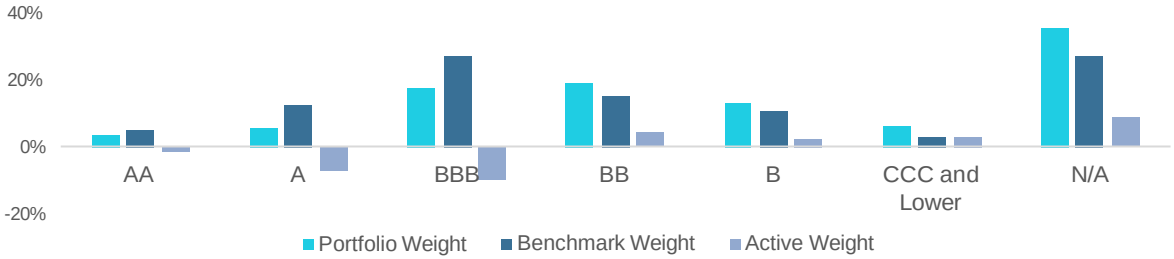
Portfolio Risk Summary

	Value
Total Risk	**10.36**
Benchmark Risk	7.73
Active Risk	3.58
Portfolio Beta	1.29
Cont. to Eff. Duration	5.73
Yield to Worst (%)	9.49
OAS to Swap (bp)	382

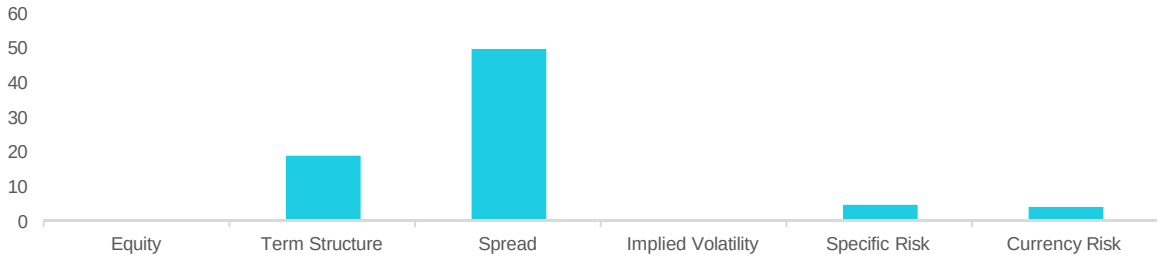
Top Countries by Weight%



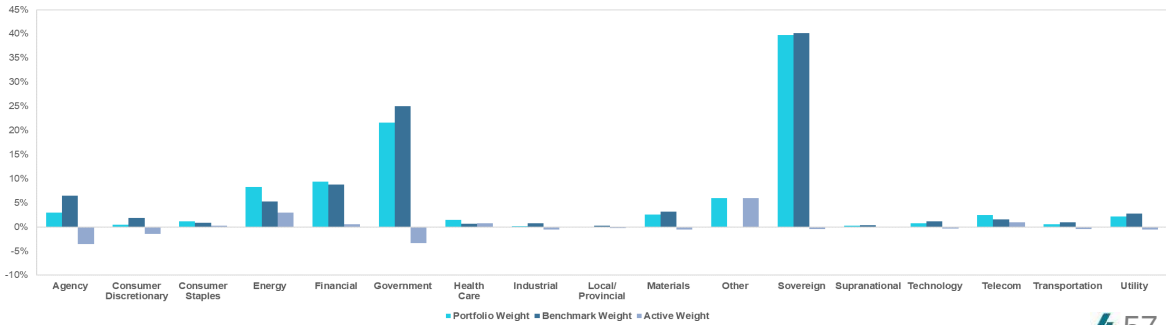
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit Ashmore

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

A value-driven emerging market debt strategy that applies a macro, top-down approach to build a well-diversified portfolio that adds value through asset rotation, security selection, and currency positioning utilizing a committee driven, systematic risk mitigating process.

Inception Date: June 2017

Performance (net)[1]

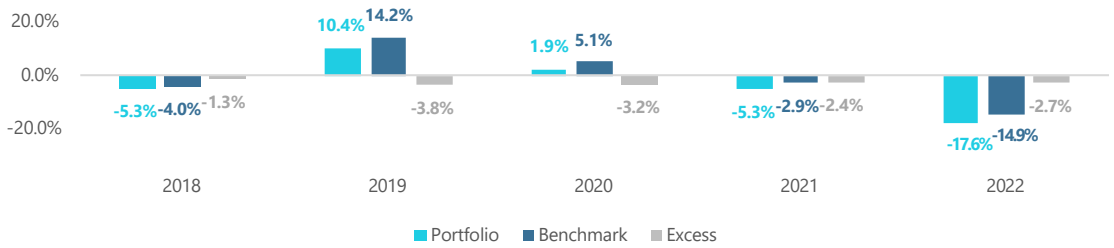
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Ashmore Investment Management	**341.2**	**9.6%**	**-17.6%**	**-7.4%**	**-3.6%**
EMD Custom Benchmark		7.3%	-14.9%	-4.6%	-1.0%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

Universe data: US Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Ashmore Investment Management	**9.8%**	**3**	**-17.6%**	**88**	**-6.9%**	**97**	**-3.1%**	**97**
Median	1.7%		-8.1%		-0.7%		1.0%	

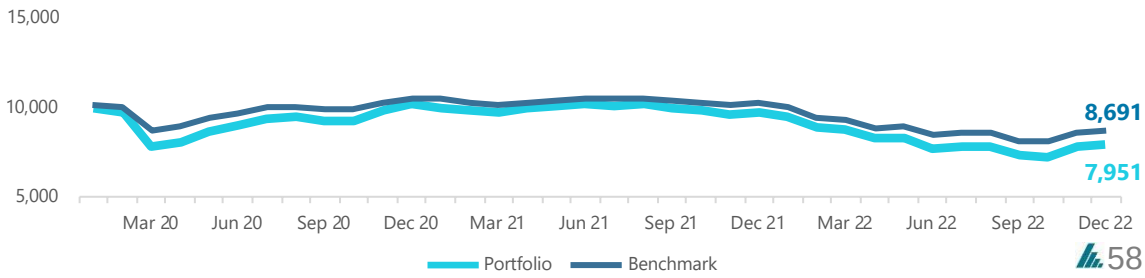
Risk Statistics (since inception)

Standard Deviation	13.4%
Benchmark Standard Deviation	9.6%
Sharpe Ratio	-0.20
Information Ratio	-0.47
Beta	1.37
Tracking Error	4.5%

Calendar Year Returns



Growth of $10,000



Note: Commingled fund account with no position-level transparency.

[1] Univ erse data is gross-of-fees.

Credit Risk Analysis – Liquid Credit Ashmore

for the quarter ended December 31, 2022

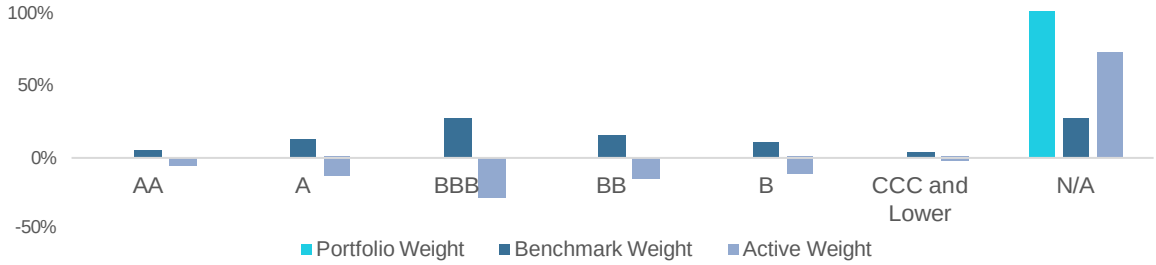
Los Angeles County Employees Retirement Association

Portfolio Risk Summary

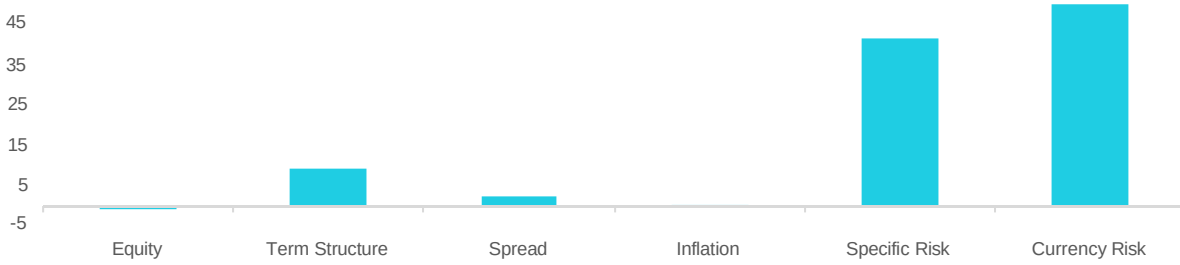
	Value
Total Risk	**10.56**
Benchmark Risk	7.73
Active Risk	5.41
Portfolio Beta	1.19
Cont. to Eff. Duration	5.83
Yield to Worst (%)	0.00
OAS to Sw ap (bp)	-432

Top Countries by Weight%

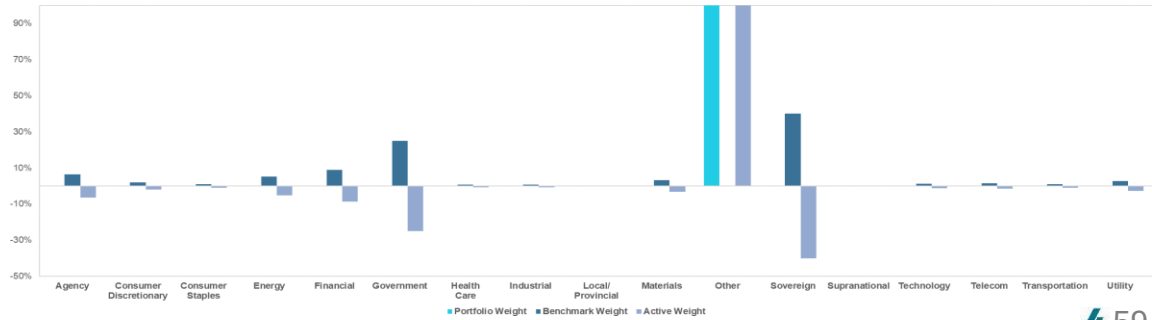
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit
Bain Capital

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

A long-only strategy designed to provide exposure to senior secured, floating-rate bank loans. The strategy takes a fundamental, active, and global approach to investing, capitalizing on opportunities in an inefficient asset class. The return objective is to outperform the Index through strong credit selection and active portfolio management.

Inception Date: June 2014

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	546.0	0.0
Effective Duration	0.2	4.0
Convexity	0.0	0.0
Coupon Rate	7.4	5.8
Yield to Maturity	8.1	8.7
Current Yield	7.8	6.7
Rating – Moody's	B-2	B-1
Rating – S & P	B-2	B+

Top Holdings (% of assets)

AQGEN ISLAND HOLDINGS, INC.	0.9%
CPS GROUP HOLDINGS INC	0.9%
NAVICURE INC	0.7%
CHAMBER BIDCO LIMITED	0.6%
TEI HOLDINGS INC	0.5%
Top 5 Holdings	**3.7%**

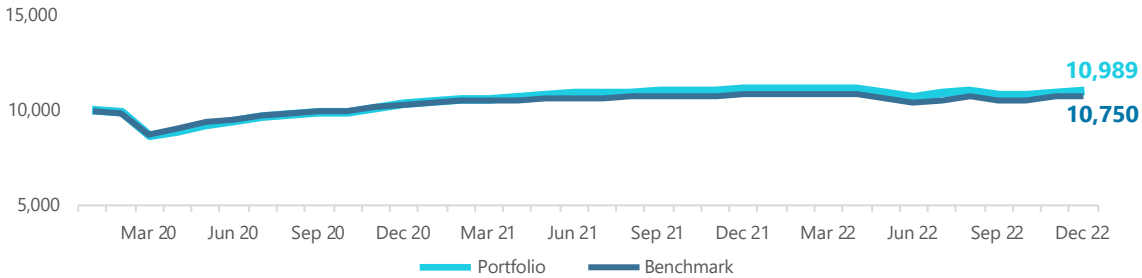
[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

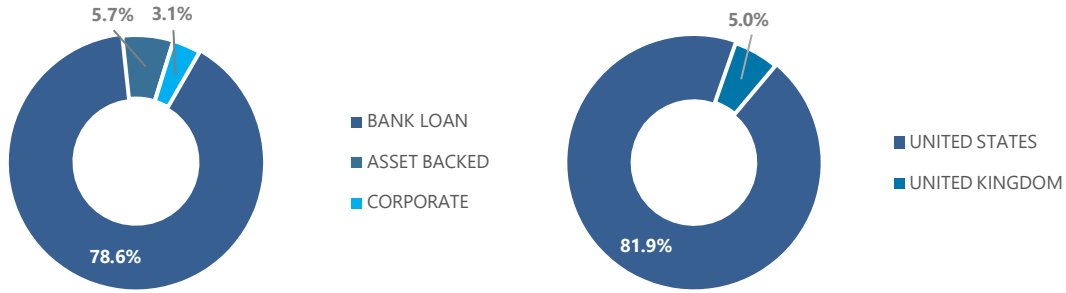
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Bain Capital	**416.7**	**2.0%**	**-1.4%**	**3.2%**	**3.6%**
Bank Loans Custom Benchmark		2.3%	-1.1%	2.4%	3.5%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

Universe data: U.S. Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Bain Capital	**2.1%**	**36**	**-0.8%**	**32**	**3.8%**	**20**	**4.2%**	**14**
Median	1.7%		-8.1%		-0.7%		1.0%	

Growth of $10,000



Top Exposures (% of assets)[2]



Credit Risk Analysis – Liquid Credit
Bain Capital

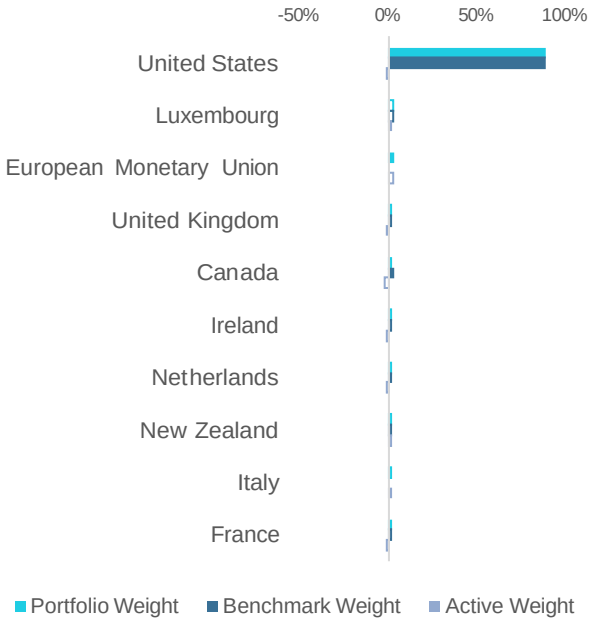
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

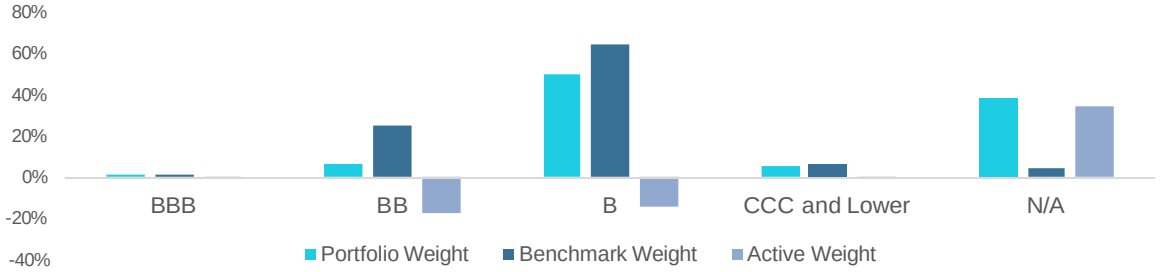
Portfolio Risk Summary

	Value
Total Risk	**3.38**
Benchmark Risk	4.69
Active Risk	1.52
Portfolio Beta	0.71
Cont. to Eff. Duration	0.44
Yield to Worst (%)	7.34
OAS to Swap (bp)	474

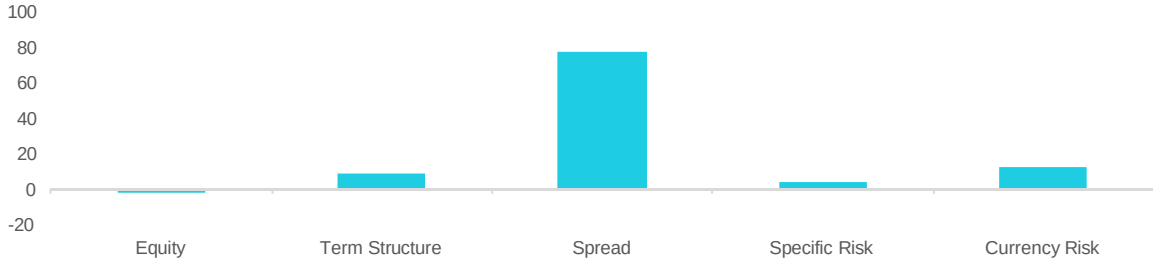
Top Countries by Weight%



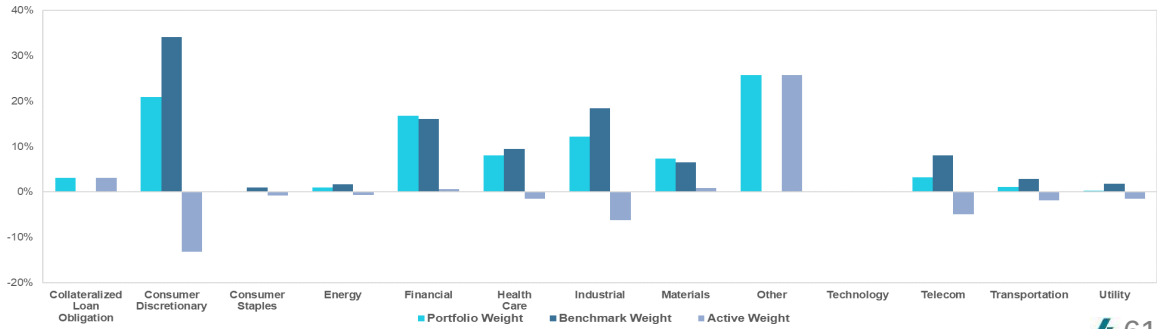
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit Beach Point

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

A fundamental, value oriented high yield bond strategy that utilizes legal skills to identify market anomalies in bond covenants and indentures. The primary investment goal is to generate superior returns while controlling risk to minimize the possibility of capital impairment.

Inception Date: March 2014

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	266.0	0.0
Effective Duration	3.9	4.0
Convexity	0.1	0.0
Coupon Rate	5.8	5.8
Yield to Maturity	9.2	8.7
Current Yield	6.9	6.7
Rating – Moody's	B-2	B-1
Rating – S & P	B	B+

Top Holdings (% of assets)

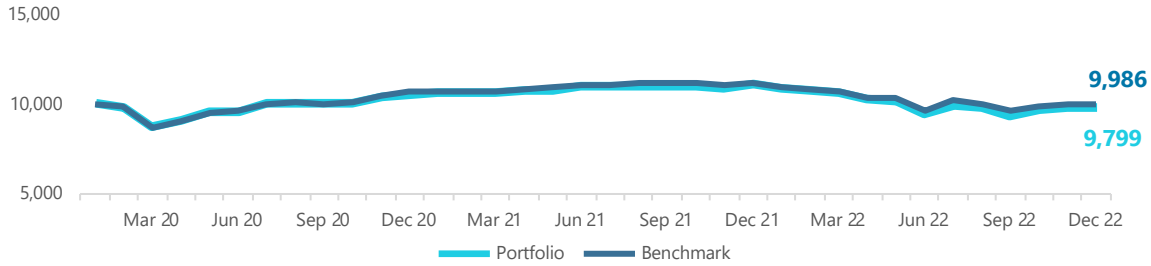
AMERICAN GREETINGS CORP	1.8%
DEALER TIRE LLC/DT ISSR	1.5%
COMPASS GROUP DIVERSIFIE	1.4%
ACRISURE LLC / FIN INC	1.3%
MPH ACQUISITION HOLDINGS	1.2%
Top 5 Holdings	**7.1%**

Performance (net)[1]

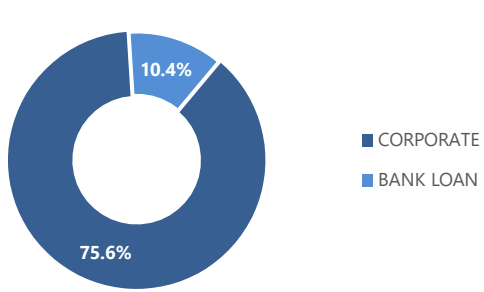
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Beach Point	**280.7**	**4.3%**	**-11.5%**	**-0.7%**	**2.1%**
Beachpoint Custom Benchmark		4.2%	-11.2%	0.0%	2.0%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

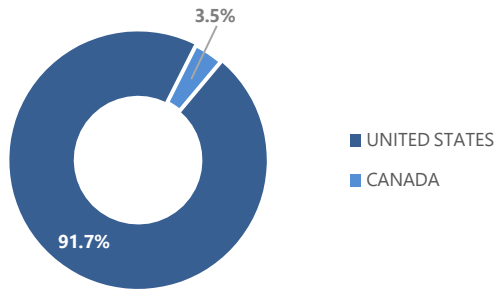
Universe data: US Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Beach Point	**4.5%**	**12**	**-11.2%**	**62**	**-0.2%**	**47**	**2.6%**	**19**
Median	1.2%		-8.1%		-0.7%		1.0%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Credit Risk Analysis – Liquid Credit Beach Point

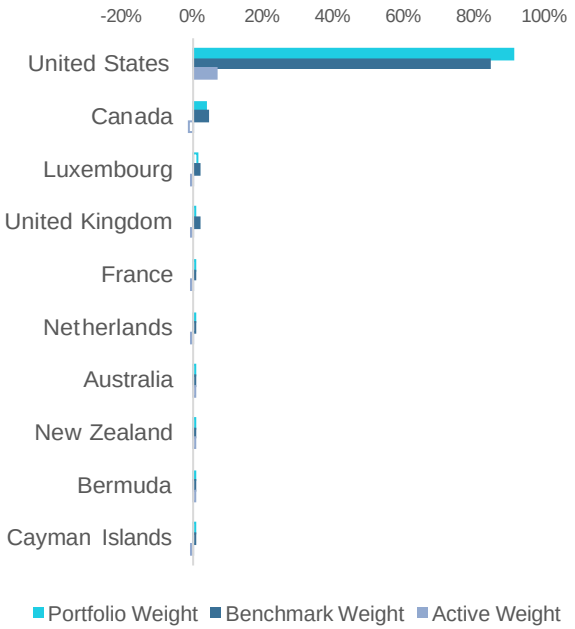
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

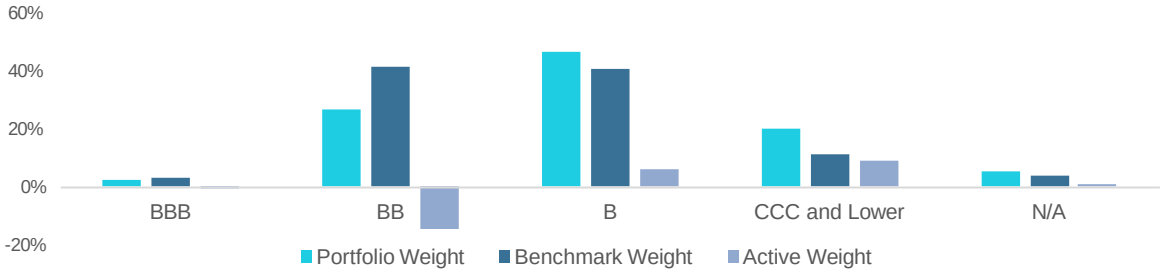
Portfolio Risk Summary

	Value
Total Risk	**8.05**
Benchmark Risk	7.04
Active Risk	1.46
Portfolio Beta	1.13
Cont. to Eff. Duration	3.97
Yield to Worst (%)	8.70
OAS to Swap (bp)	456

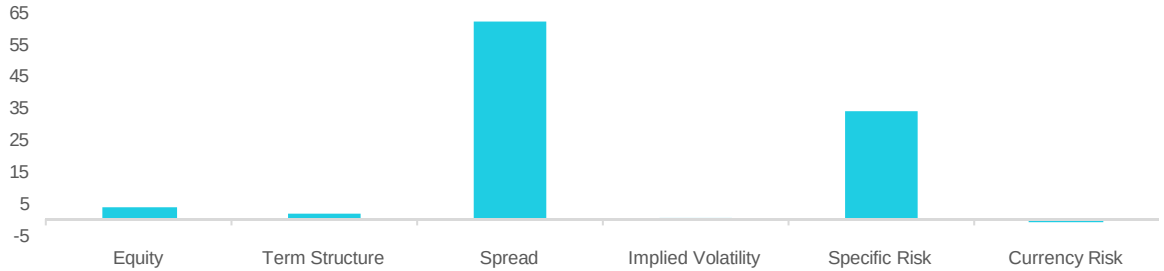
Top Countries by Weight%



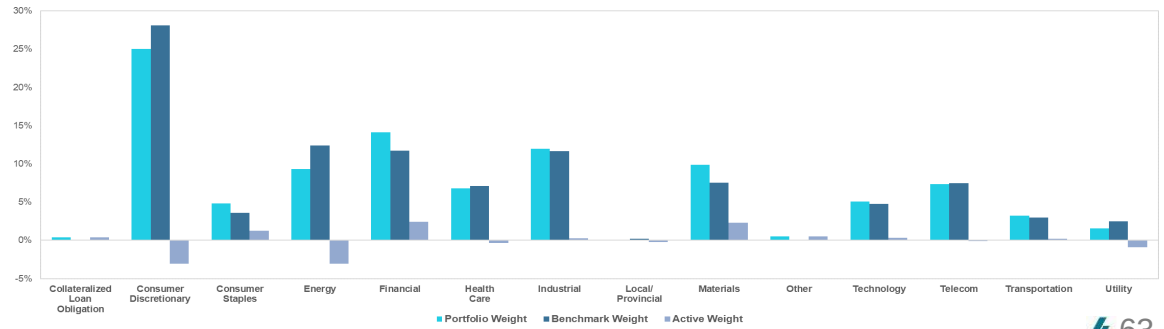
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit
Brigade Capital

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

A strategy that focuses on identifying attractive companies w ithin the high yield bond marketplace. The strategy invests in companies that have a lower likelihood of default or are better able to recover from economic downturns because of their substantial asset value relative to debt.

Inception Date: July 2010

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	337.0	0.0
Effective Duration	4.0	4.0
Convexity	0.3	0.0
Coupon Rate	6.6	5.8
Yield to Maturity	11.9	8.7
Current Yield	8.5	6.7
Rating – Moody's	B-1	B-1
Rating – S & P	B+	B+

Top Holdings (% of assets)

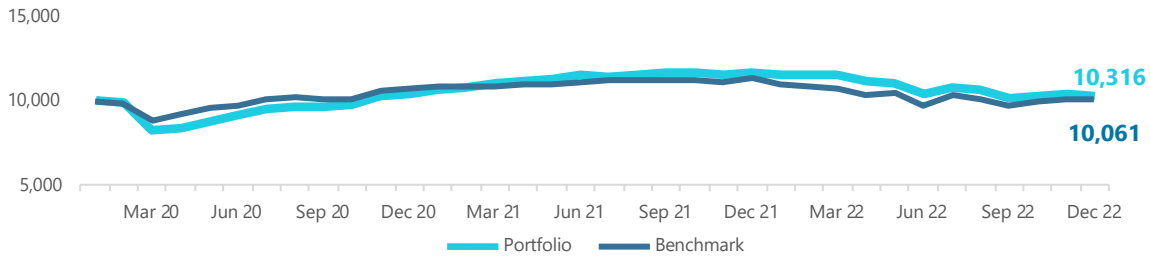
EPIC Y GRADE SERVICES, LP	2.0%
CORNERSTONE CHEMICAL CO	2.0%
RAIN CII CARBON LLC/CII	1.2%
BAFFINLAND IRON CORP/LP	1.2%
LIFESCAN GLOBAL CORP	1.1%
Top 5 Holdings	**7.4%**

Performance (net)[1]

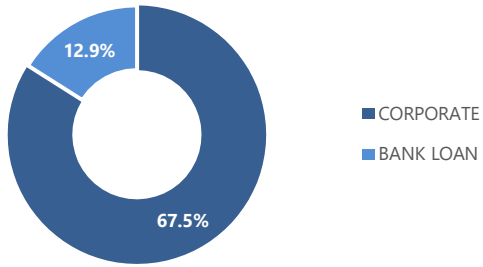
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Brigade Cap Mgmt	**624.1**	**1.3%**	**-12.0%**	**1.0%**	**2.2%**
Brigade Custom Benchmark		4.2%	-11.2%	0.2%	2.3%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

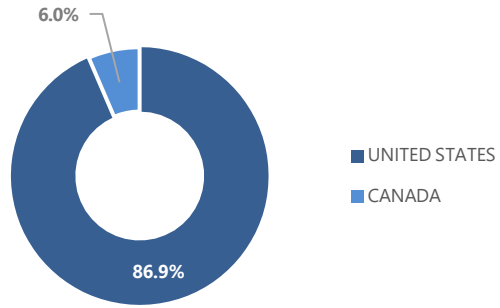
Universe data: US Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Brigade Cap Mgmt	**1.4%**	**57**	**-11.7%**	**66**	**1.5%**	**26**	**2.8%**	**19**
Median	1.7%		-8.1%		-0.7%		1.0%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Credit Risk Analysis – Liquid Credit Brigade Capital

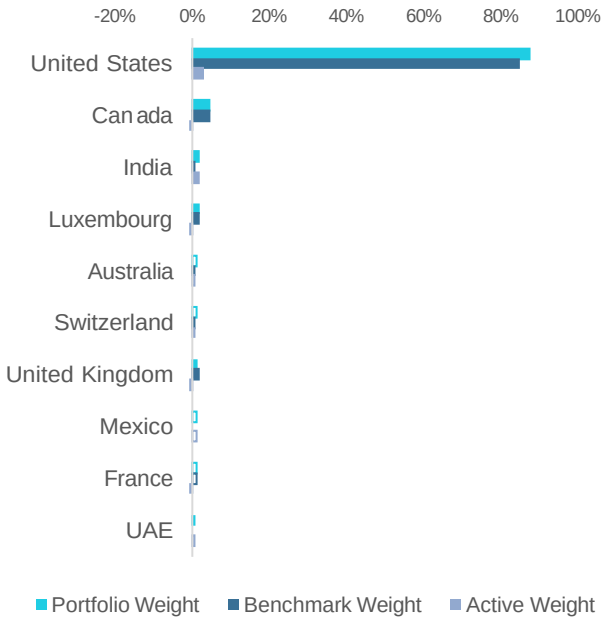
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

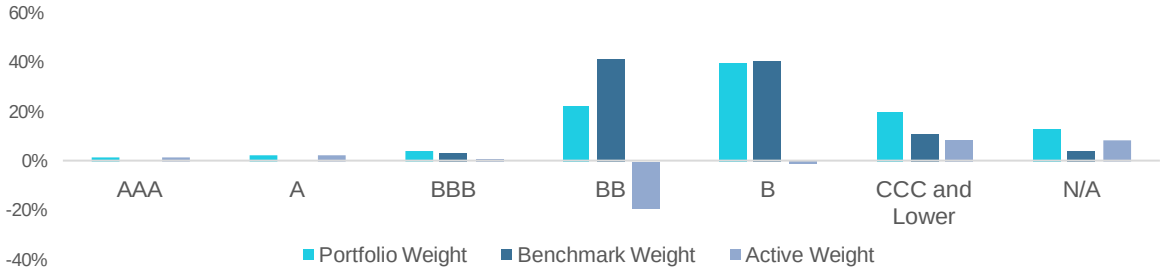
Portfolio Risk Summary

	Value
Total Risk	**8.77**
Benchmark Risk	7.04
Active Risk	2.42
Portfolio Beta	1.22
Cont. to Eff. Duration	4.07
Yield to Worst (%)	9.65
OAS to Sw ap (bp)	554

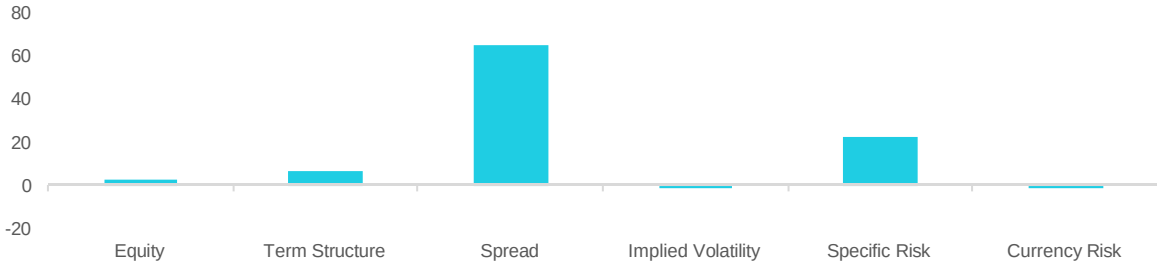
Top Countries by Weight%



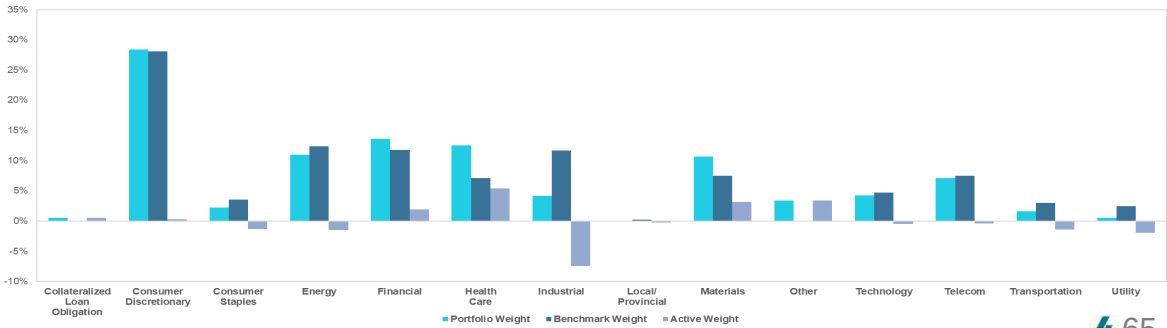
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit
Credit Suisse

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

A bank loan strategy that invests in senior floating rate loans w hose primary performance objective is to generate alpha w hile mitigating loss, utilizing bottom-up, fundamental credit analysis emphasizing a relative value approach.

Inception Date: April 2020

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	506.0	0.0
Effective Duration	0.2	4.0
Convexity	0.0	0.0
Coupon Rate	7.9	5.8
Yield to Maturity	9.0	8.7
Current Yield	8.4	6.7
Rating – Moody's	B-2	B-1
Rating – S & P	B	B+

Top Holdings (% of assets)

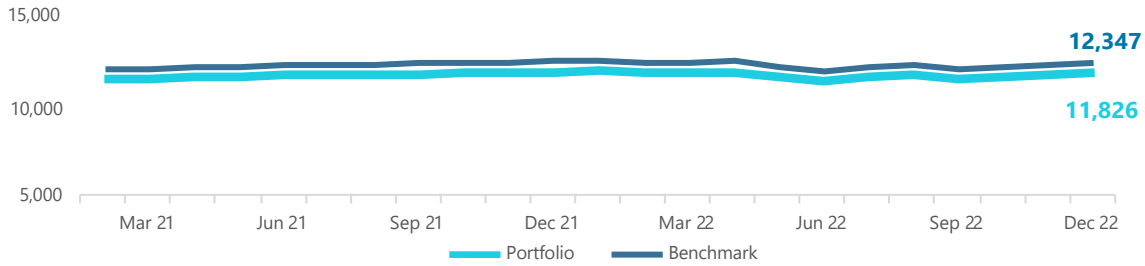
OPEN TEXT CORP	1.1%
ABG INTERMEDIATE HOLDGS 2 LLC	0.8%
HYLAND SOFTWARE INC	0.8%
FINASTRA USA, INC.	0.7%
NFP CORP	0.7%
Top 5 Holdings	**4.2%**

Performance (net)[1]

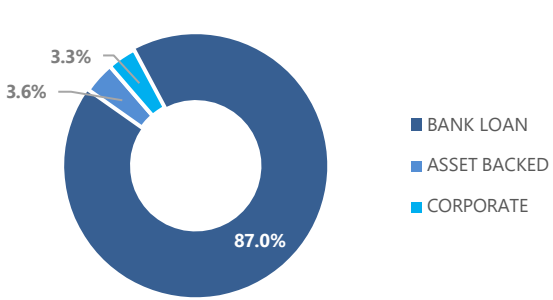
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Credit Suisse Bank Loans	**1,154.1**	**3.5%**	**-0.4%**	**--**	**--**
CS Leveraged Loan Index		2.3%	-1.1%	--	--
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

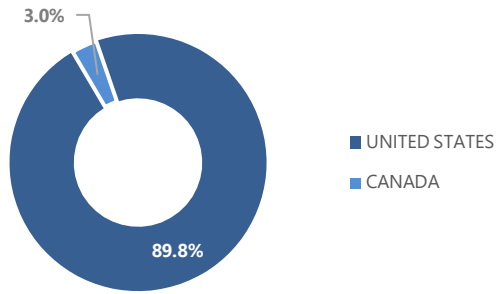
Universe data: US Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Credit Suisse Bank Loans	**3.5%**	**18**	**-0.2%**	**31**	**--**	**--**	**--**	**--**
Median	1.7%		-8.1%		--		--	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Credit Risk Analysis – Liquid Credit
Credit Suisse

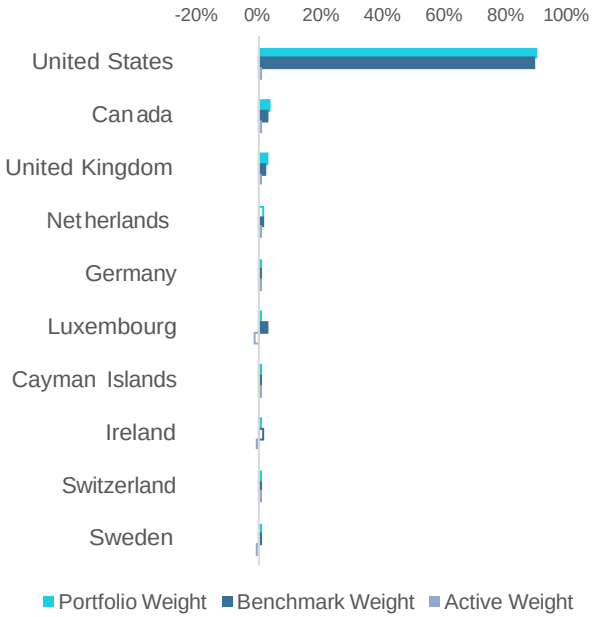
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

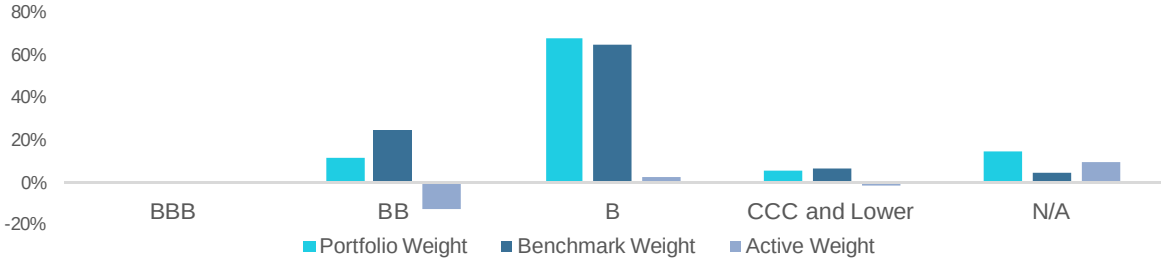
Portfolio Risk Summary

	Value
Total Risk	**4.24**
Benchmark Risk	4.69
Active Risk	0.75
Portfolio Beta	0.90
Cont. to Eff. Duration	0.44
Yield to Worst (%)	5.83
OAS to Swap (bp)	474

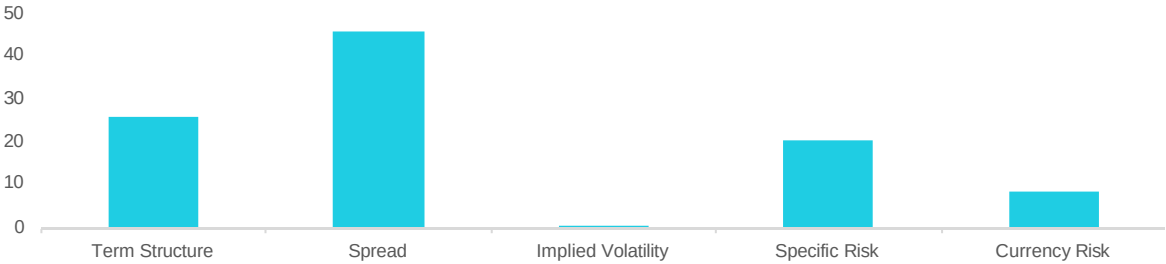
Top Countries by Weight%



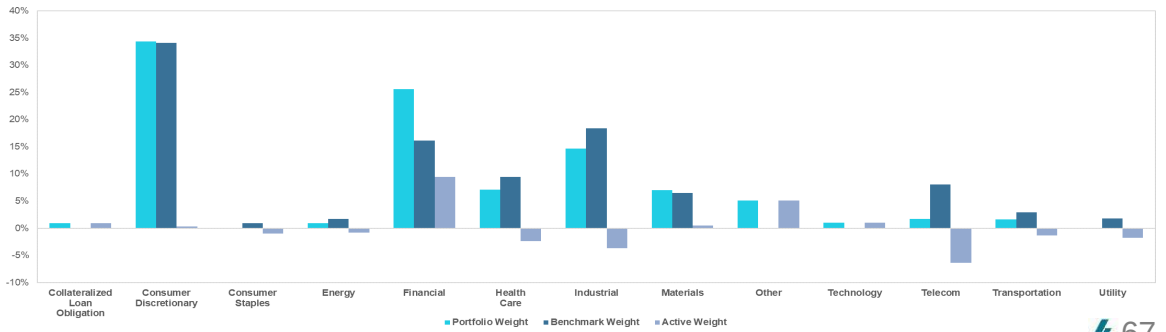
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit
Crescent Capital

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

A bank loan strategy that invests in privately negotiated, below investment grade, secured corporate debt. The primary target is U.S. based middle market companies whose EBITDA falls betw een $31M to $100M. The strategy's bottom-up credit research process emphasizes high current income and principal preservation.

Inception Date: May 2014

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	136.0	0.0
Effective Duration	0.3	4.0
Convexity	0.0	0.0
Coupon Rate	9.2	5.8
Yield to Maturity	11.3	8.7
Current Yield	10.1	6.7
Rating – Moody's	B-2	B-1
Rating – S & P	B-	B+

Top Holdings (% of assets)

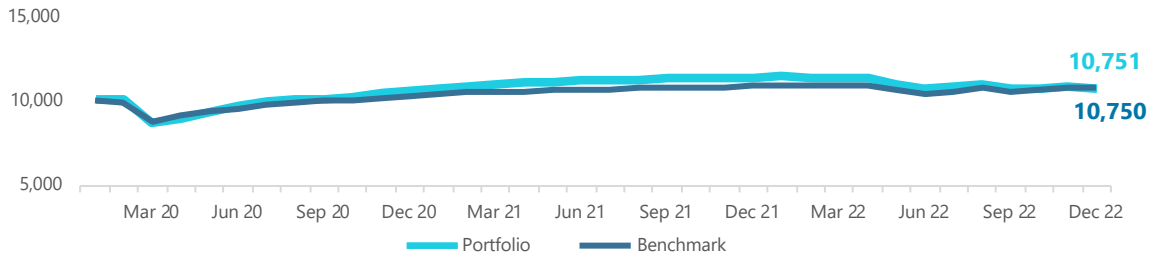
THE KNOT WORLDWIDE INC	2.0%
MAGNATE WORLDWIDE LLC	1.9%
EVERGREEN ACQCO 1 LP	1.8%
CTC HOLDINGS LP	1.7%
AIT WORLDWIDE LOGISTICS INC	1.6%
Top 5 Holdings	**9.0%**

Performance (net)[1]

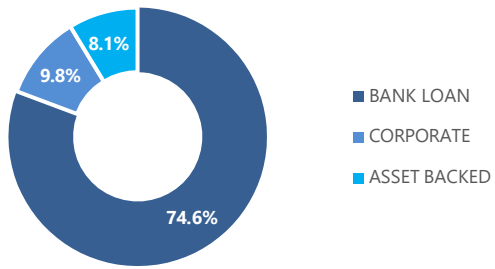
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Crescent Capital	**490.9**	**0.5%**	**-5.6%**	**2.4%**	**3.3%**
Bank Loans Custom Benchmark		2.3%	-1.1%	2.4%	3.5%
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

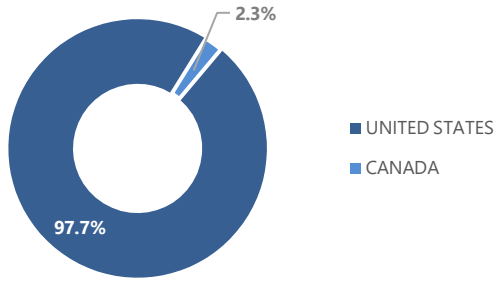
Universe data: U.S. Fixed Income Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Crescent Capital	**0.6%**	**75**	**-5.2%**	**43**	**2.9%**	**21**	**3.8%**	**14**
Median	1.7%		-8.1%		-0.7%		1.0%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Credit Risk Analysis – Liquid Credit
Crescent Capital

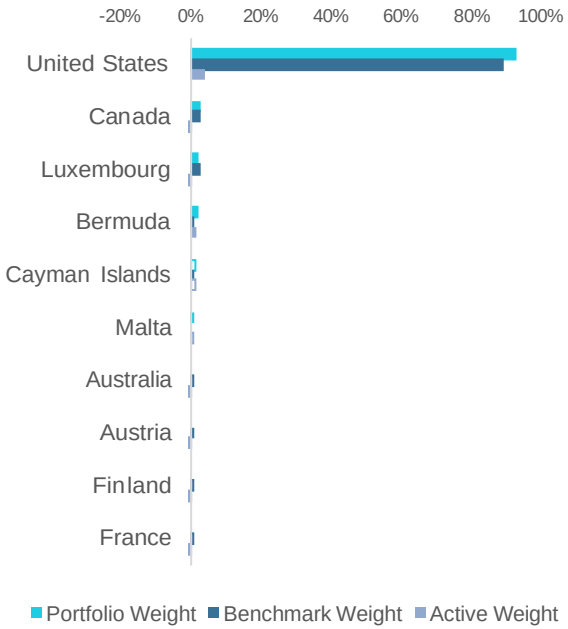
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

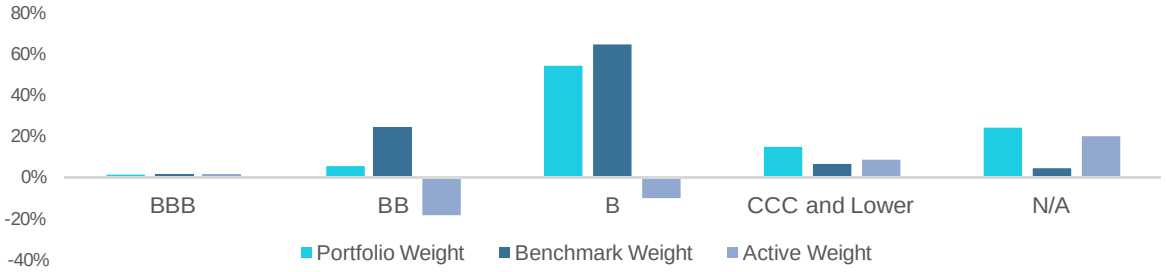
Portfolio Risk Summary

	Value
Total Risk	**6.16**
Benchmark Risk	4.69
Active Risk	1.93
Portfolio Beta	1.28
Cont. to Eff. Duration	0.54
Yield to Worst (%)	7.29
OAS to Swap (bp)	600

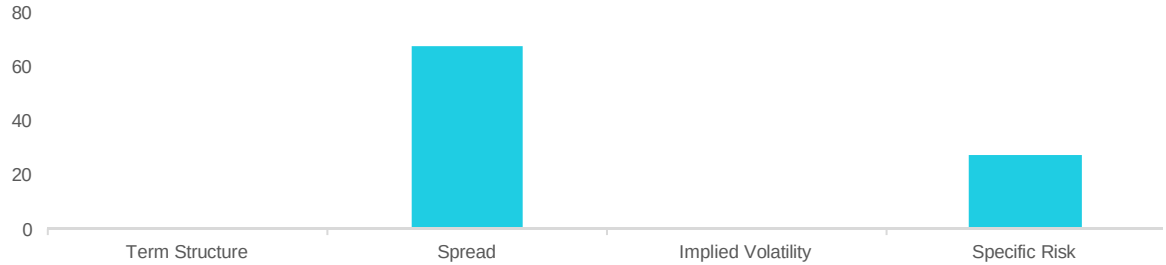
Top Countries by Weight%



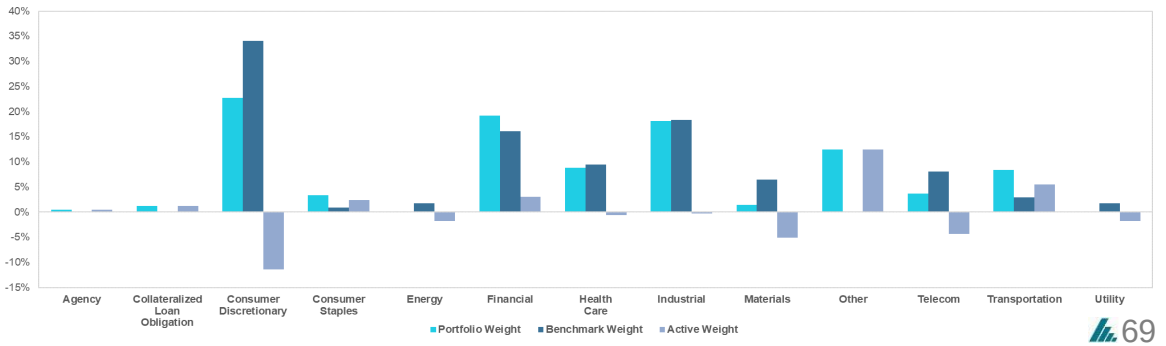
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Credit – Liquid Credit Pinebridge

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Active manager of a broadly diversified portfolio primarily of U.S. dollar denominated high yield securities.

Inception Date: August 2021

Performance (net)[1]

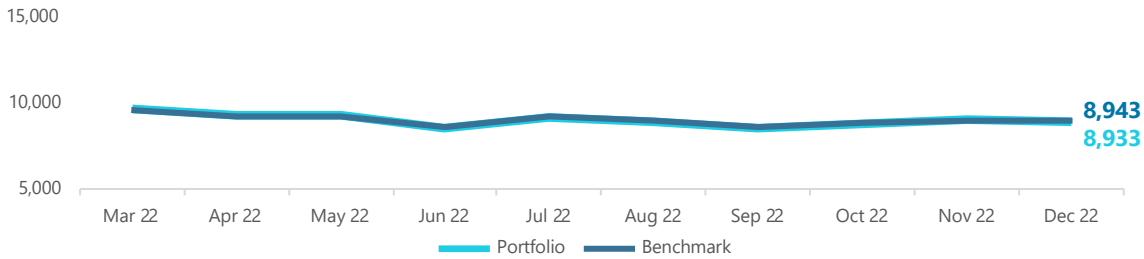
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Pinebridge Investments	**449.6**	**4.2%**	**-11.4%**	**--**	**--**
BBG BARC US Corp HY Idx		4.2%	-11.2%	--	--
Credit Policy Benchmark		1.9%	-7.4%	0.3%	--

Universe data: US Fixed Income Pools	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Pinebridge Investments	**4.3%**	**13**	**-11.1%**	**62**	**--**	**--**	**--**	**--**
Median	1.7%		-8.1%		--		--	

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	224.0	0.0
Effective Duration	4.1	4.0
Convexity	0.0	0.0
Coupon Rate	5.6	5.8
Yield to Maturity	8.6	8.7
Current Yield	6.5	6.7
Rating – Moody's	B-1	B-1
Rating – S & P	B+	B+

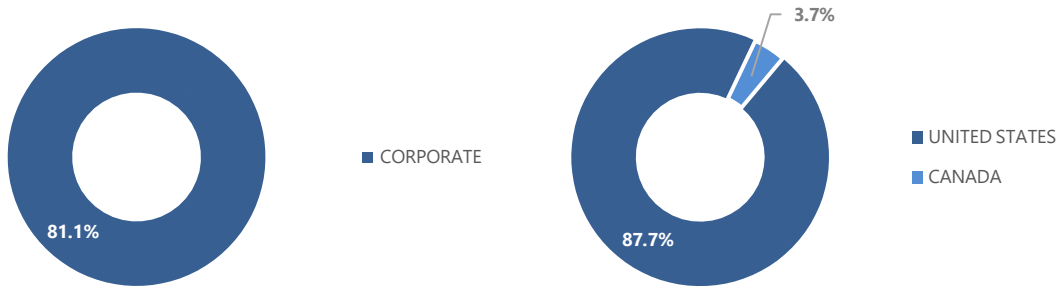
Growth of $10,000



Top Holdings (% of assets)

AMERICAN AIRLINES INC	1.2%
OCCIDENTAL PETROLEUM COR	1.0%
ALTICE FINANCING SA	0.9%
CCO HLDGS LLC/CAP CORP	0.9%
HOLLY NRG PRTNR/FIN CORP	0.7%
Top 5 Holdings	**4.7%**

Top Exposures (% of assets)



[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Credit Risk Analysis – Liquid Credit Pinebridge

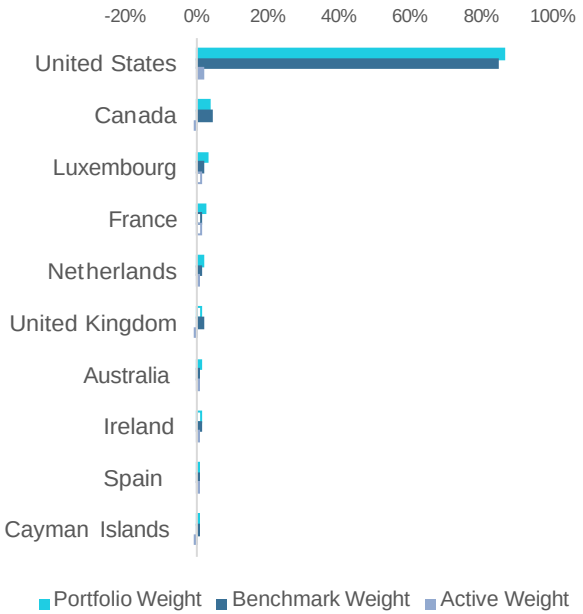
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

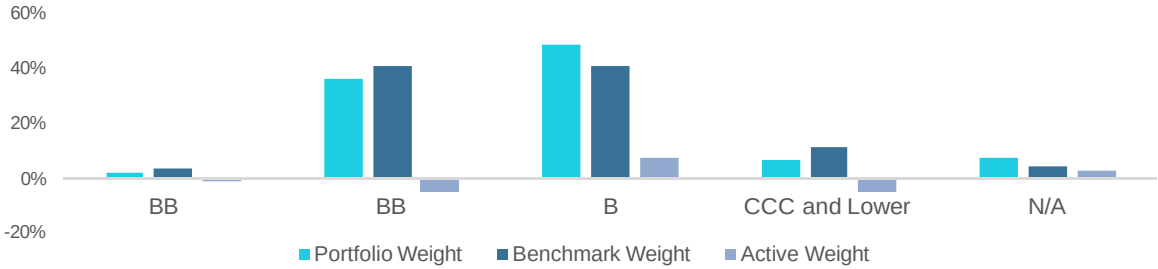
Portfolio Risk Summary

	Value
Total Risk	**7.06**
Benchmark Risk	7.04
Active Risk	0.70
Portfolio Beta	1.00
Cont. to Eff. Duration	4.02
Yield to Worst (%)	8.31
OAS to Swap (bp)	398

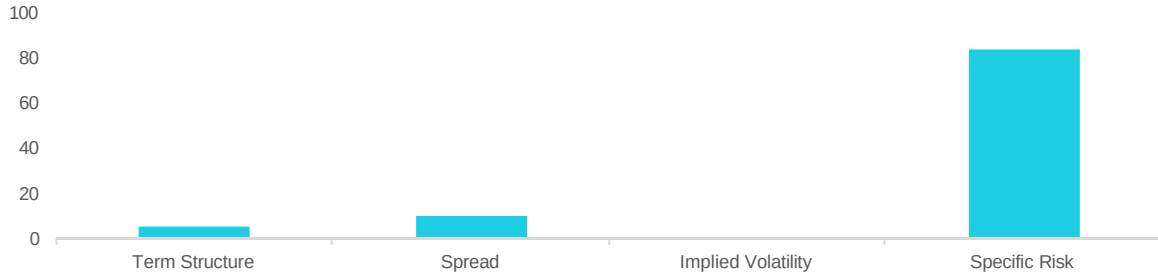
Top Countries by Weight%



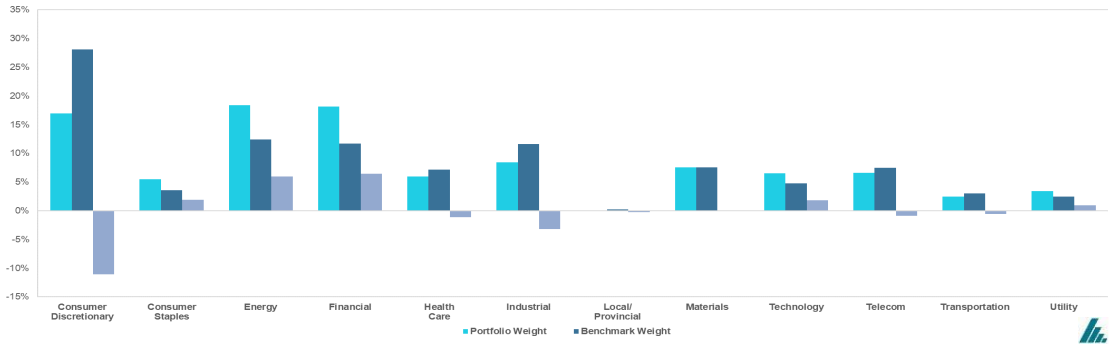
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



LACERA

Los Angeles County Employees Retirement Association

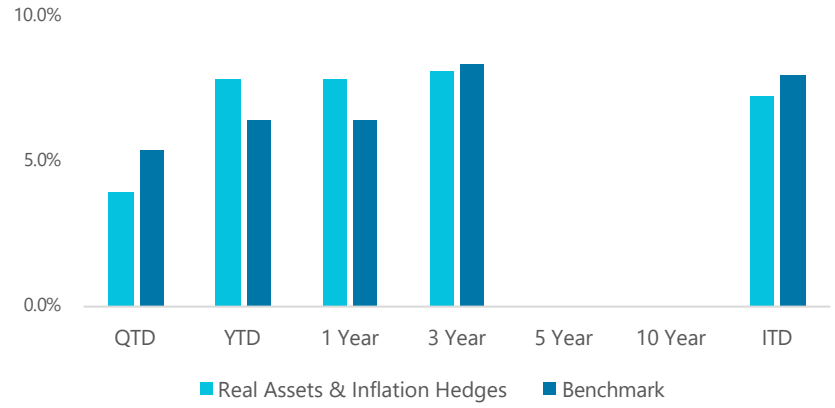
real assets & inflation hedges

Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Performance (net)

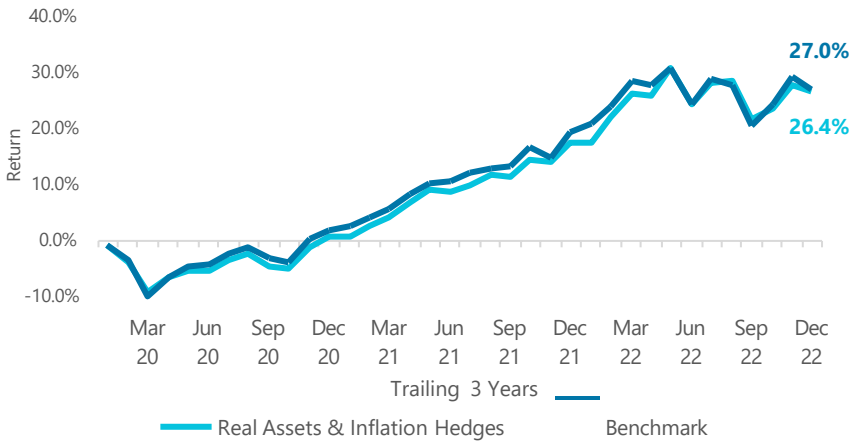


	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Real Assets & Inflation Hedges	**3.9%**	**7.8%**	**7.8%**	**8.1%**	**--**	**--**	**7.2%**
Benchmark	5.4%	6.4%	6.4%	8.3%	--	--	8.0%
Excess	-1.4%	1.4%	1.4%	-0.2%	--	--	-0.8%

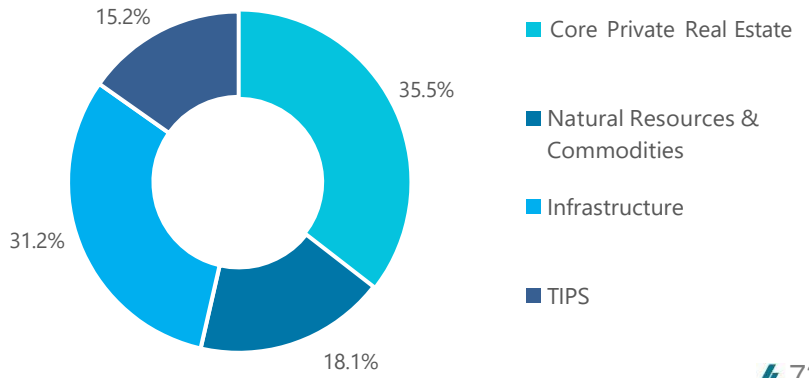
Functional Category

	QTD	FYTD	1 Year	3 Year
Core Private Real Estate	**1.7%**	**6.8%**	**23.7%**	**11.3%**
Core Private RE Policy Benchmark	0.3%	4.9%	21.0%	11.7%
Excess	1.4%	1.9%	2.8%	-0.4%
Natural Resources & Commodities	**4.4%**	**0.8%**	**12.3%**	**11.8%**
Nat Res & Comm Policy Benchmark	12.0%	7.0%	12.0%	12.9%
Excess	-7.6%	-6.1%	0.2%	-1.1%
Infrastructure	**7.2%**	**-1.0%**	**-4.6%**	**4.9%**
DJ Brookfield Global Infra Comp	9.4%	-1.8%	-4.9%	1.1%
Excess	-2.2%	0.8%	0.3%	3.8%
TIPS	**2.1%**	**-3.6%**	**-11.9%**	**1.1%**
Bloomberg U.S. Treasury: U.S. TIPS	2.0%	-3.2%	-11.8%	1.2%
Excess	0.1%	-0.4%	0.0%	-0.1%

Cumulative Return



Exposure

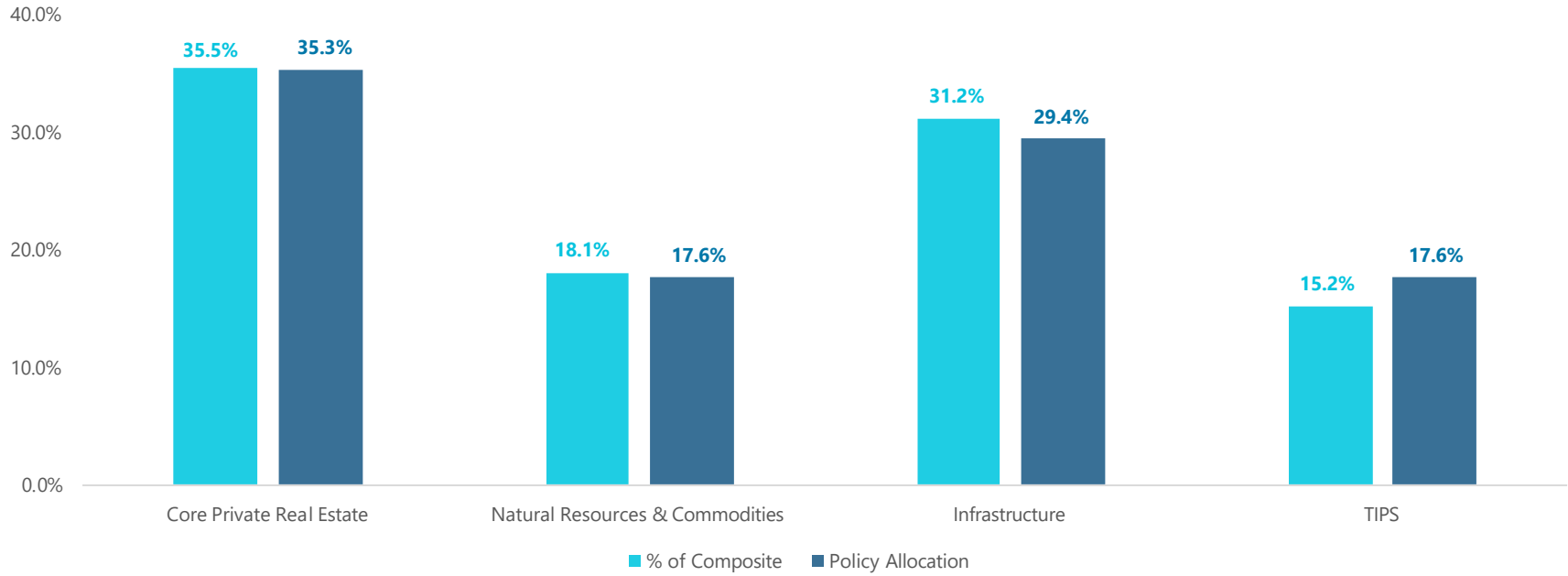


Asset Allocation

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Actual vs. Policy



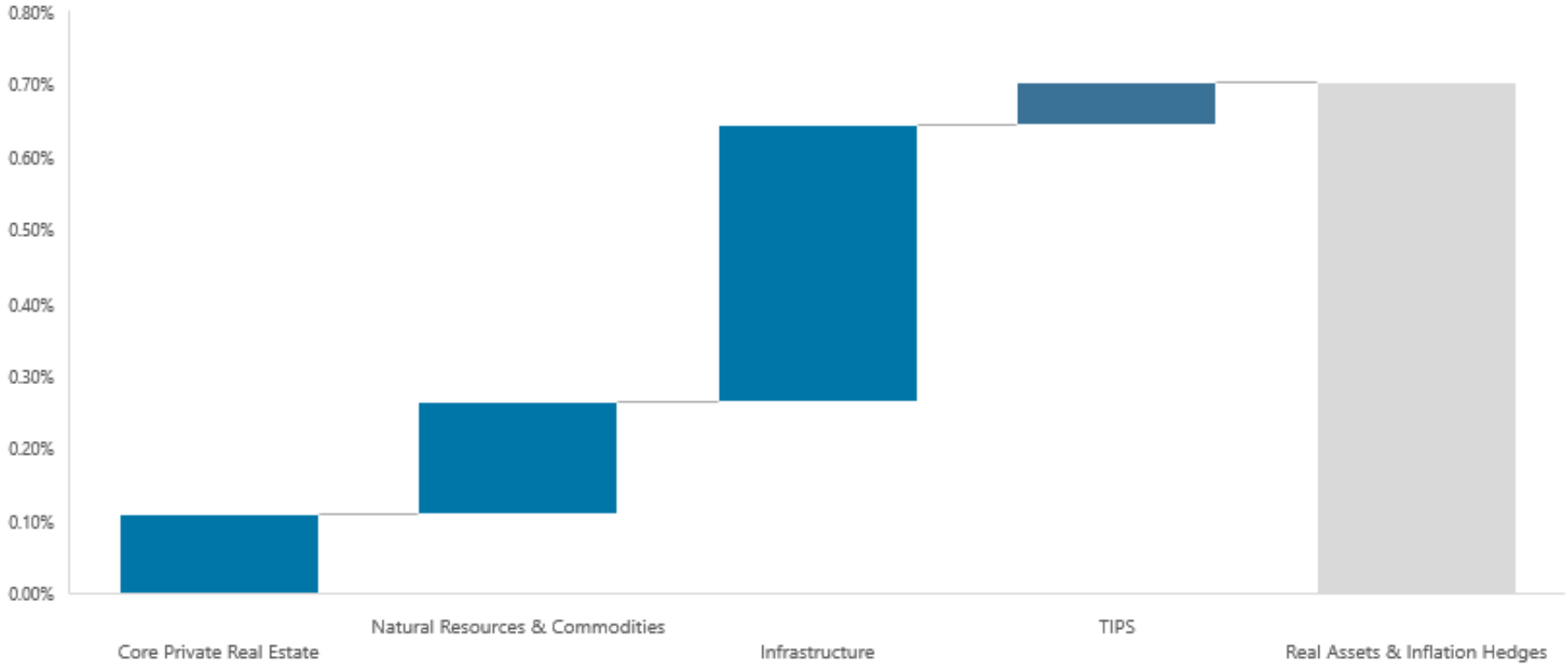
	Ending Market Value (mm)	% of Composite	Policy Allocation	Over / Under (%)	Over / Under (mm)
Real Assets & Inflation Hedges	**12,222**	**100.0%**	**100.0%**		
Core Private Real Estate	4,339	35.5%	35.3%	0.2%	25
Natural Resources & Commodities	2,210	18.1%	17.6%	0.4%	54
Infrastructure	3,812	31.2%	29.4%	1.8%	217
TIPS	1,861	15.2%	17.6%	-2.4%	-296

Contribution to Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Contribution to Return



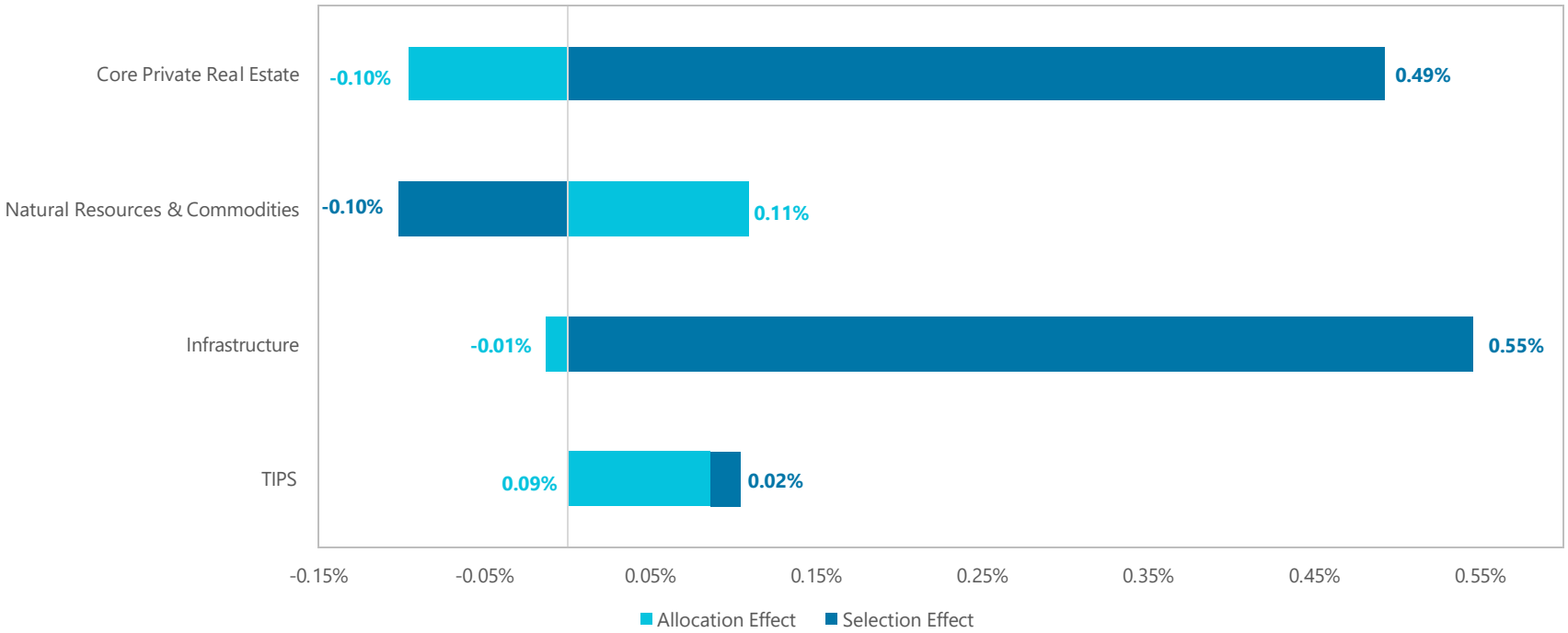
Functional Category		Contributors		Detractors
Core Private Real Estate	0.11%	DWS Infrastructure	0.33%	
Natural Resources & Commodities	0.15%	DWS Natural Resources	0.13%	
Infrastructure	0.38%	Real Estate - Real Assets	0.11%	
TIPS	0.06%	BlackRock TIPS	0.06%	
Real Assets & Inflation Hedges	0.70%	DIF Infrastructure VI	0.02%	

Return Attribution

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

QTD Performance Attribution[1]



	Ending Market Value (mm)	% of Composite	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
Real Assets & Inflation Hedges	**12,222**	**100.0%**	**100.0%**	**3.9%**	**5.4%**	**0.09%**	**0.95%**	**-1.44%**
Core Private Real Estate	4,339	35.5%	35.3%	1.7%	0.3%	-0.10%	0.49%	0.41%
Natural Resources & Commodities	2,210	18.1%	17.6%	4.4%	12.0%	0.11%	-0.10%	-1.33%
Infrastructure	3,812	31.2%	29.4%	7.2%	9.4%	-0.01%	0.55%	-0.62%
TIPS	1,861	15.2%	17.6%	2.1%	2.0%	0.09%	0.02%	0.10%

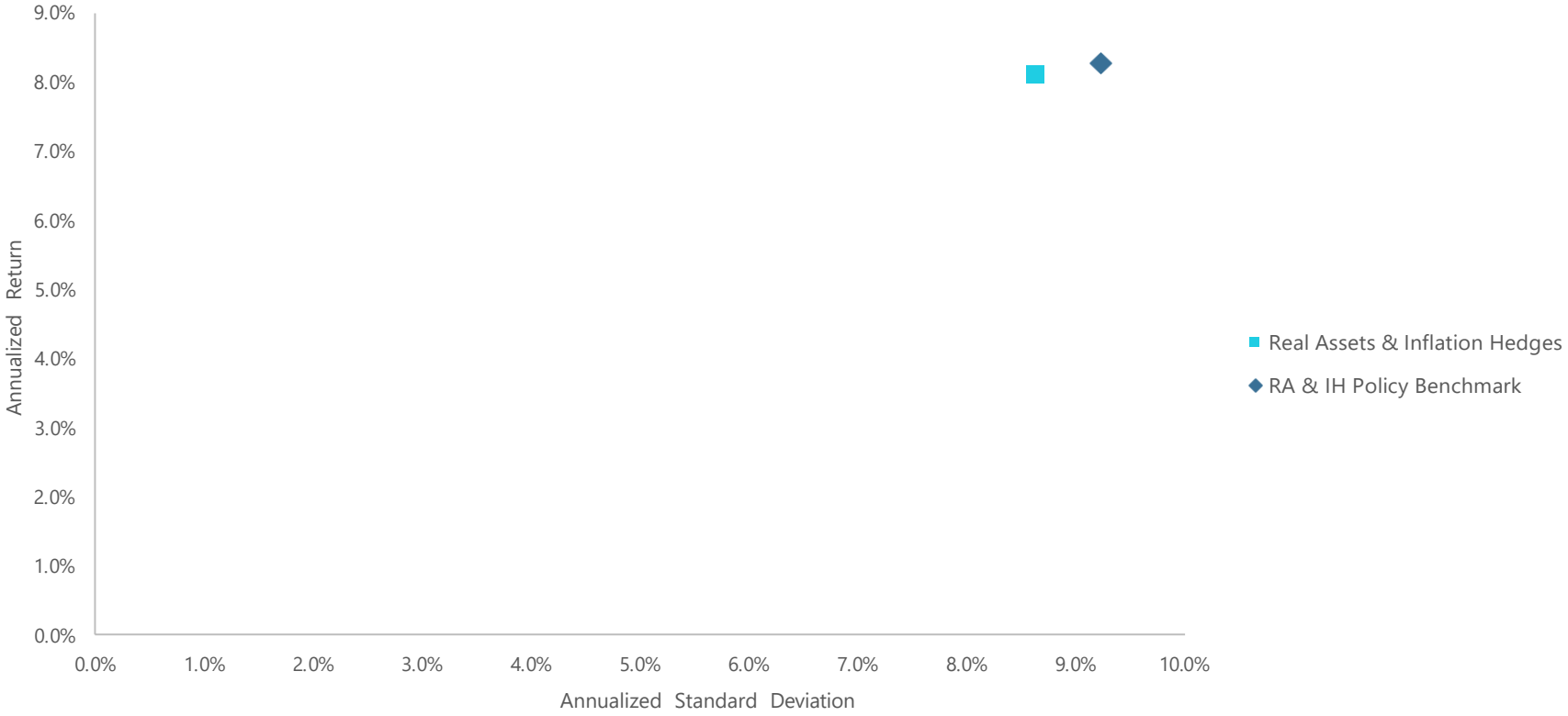
[1] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Real Assets & Inflation Hedges	**8.1%**	**8.6%**				
RA & IH Policy Benchmark	8.3%	9.2%	0.88	(0.02)	0.90	2.6%

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns[1]

	% of Composite	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Real Assets & Inflation Hedges	**100.0%**	**12,222**	**12,075**	**3.9%**	**7.8%**	**7.8%**	**8.1%**	**--**	**--**	**7.2%**	**Apr-2019**
RA & IH Policy Benchmark				5.4%	6.4%	6.4%	8.3%	--	--	8.0%	
Core Private Real Estate	**35.5%**	**4,339**	**4,471**	**1.7%**	**23.7%**	**23.7%**	**11.3%**	**9.1%**	**9.1%**	**7.4%**	**Oct-1985**
Core Private RE Policy Benchmark				0.3%	21.0%	21.0%	11.7%	9.7%	10.4%	7.2%	
Natural Resources & Commodities	**18.1%**	**2,210**	**2,476**	**4.4%**	**12.3%**	**12.3%**	**11.8%**	**6.3%**	**-0.6%**	**-0.9%**	**Jul-2007**
Nat Res & Comm Policy Benchmark				12.0%	12.0%	12.0%	12.9%	6.9%	-1.1%	-1.7%	
Cibus Co-Invest V	0.1%	15	0	--	--	--	--	--	--	0.0%	Oct-2022
Cibus Enterprise II	0.0%	4	4	-4.9%	--	--	--	--	--	-11.5%	Jun-2022
Cibus Fund II	0.1%	16	17	-6.1%	--	--	--	--	--	-12.0%	Jun-2022
Credit Suisse Commodity	2.6%	312	434	1.4%	17.0%	17.0%	14.0%	7.0%	-0.7%	-2.0%	Mar-2011
DWS Natural Resources	5.5%	671	663	13.1%	9.1%	9.1%	12.0%	--	--	13.3%	Jun-2019
HiTecVision New Energy	0.5%	67	59	13.7%	--	--	--	--	--	8.4%	Sep-2022
Neuberger Berman/Gresham	3.0%	366	486	1.2%	17.0%	17.0%	12.0%	6.5%	-0.6%	-0.6%	Jul-2007
Orion Mine Finance Fund III	1.0%	122	116	2.3%	5.4%	5.4%	--	--	--	6.4%	Sep-2021
Orion Mining Royalty Fund I	0.2%	20	18	-7.6%	-11.4%	-11.4%	--	--	--	-1.2%	Sep-2021
PIMCO Commodity Plus	0.2%	22	121	--	--	--	--	--	--	--	Jul-2007
Private Equity - Real Assets	0.7%	82	82	1.8%	11.0%	11.0%	-5.6%	--	--	-8.7%	Jan-2019
TIAA-CREF Global Agriculture I	2.1%	256	205	-0.9%	12.5%	12.5%	--	--	--	12.5%	Dec-2021
TIAA-CREF Global Agriculture II	2.1%	257	271	0.2%	9.8%	9.8%	--	--	--	9.8%	Dec-2021
Infrastructure	**31.2%**	**3,812**	**3,305**	**7.2%**	**-4.6%**	**-4.6%**	**4.9%**	**--**	**--**	**7.3%**	**Jun-2019**
DJ Brookfield Global Infra Comp				9.4%	-4.9%	-4.9%	1.1%	--	--	3.5%	
Antin Mid Cap	0.3%	38	25	12.5%	-10.9%	-10.9%	--	--	--	-9.9%	Dec-2021
Axium Infrastructure	2.1%	254	194	1.9%	2.4%	2.4%	--	--	--	2.2%	Dec-2021
Axium Infrastructure Canada	0.5%	59	0	1.4%	-100.0%	-100.0%	--	--	--	-100.0%	Nov-2021
DIF CIF III	0.3%	40	5	2.2%	--	--	--	--	--	4.2%	Jun-2022
DIF Infrastructure VI	0.8%	103	88	14.4%	13.6%	13.6%	--	--	--	23.0%	Mar-2021
DWS Infrastructure	22.8%	2,782	2,606	8.5%	-6.3%	-6.3%	4.6%	--	--	7.0%	Jun-2019
Grain Communications Opportunity III	0.3%	33	32	1.3%	-9.8%	-9.8%	--	--	--	-100.0%	Feb-2021
Grain Spectrum Holdings III	0.4%	48	48	-0.1%	-0.6%	-0.6%	--	--	--	-1.0%	Nov-2020
KKR DCIF	2.7%	327	200	1.1%	--	--	--	--	--	1.9%	Apr-2022
Pan-European Infrastructure Fund III	0.5%	65	58	8.7%	7.1%	7.1%	--	--	--	3.0%	Nov-2020
Partners Grp Direct Infra 2020	0.5%	63	48	5.2%	--	--	--	--	--	5.0%	Jan-2022
TIPS											
Blackrock TIPS	**15.2%**	**1,861**	**1,823**	**2.1%**	**-11.9%**	**-11.9%**	**1.1%**	**--**	**--**	**2.2%**	**May-2019**
Bloomberg U.S. Treasury: U.S. TIPS				2.0%	-11.8%	-11.8%	1.2%	--	--	2.3%	

[1] Private natural resources and infrastructure funds reflect early-stage life cycle performance.

Real Assets & Inflation Hedges Risk Summary

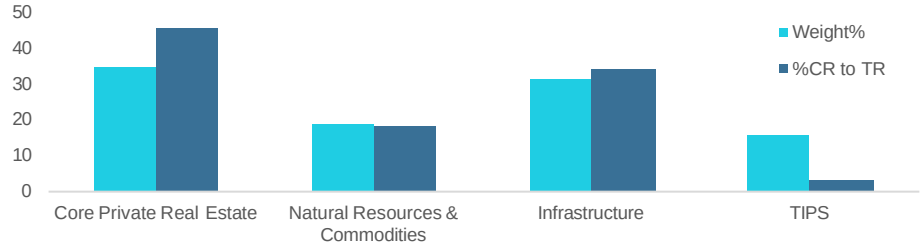
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**15.42**
Benchmark Risk	14.46
Active Risk	2.57
Portfolio Beta	1.05

Contribution to Risk

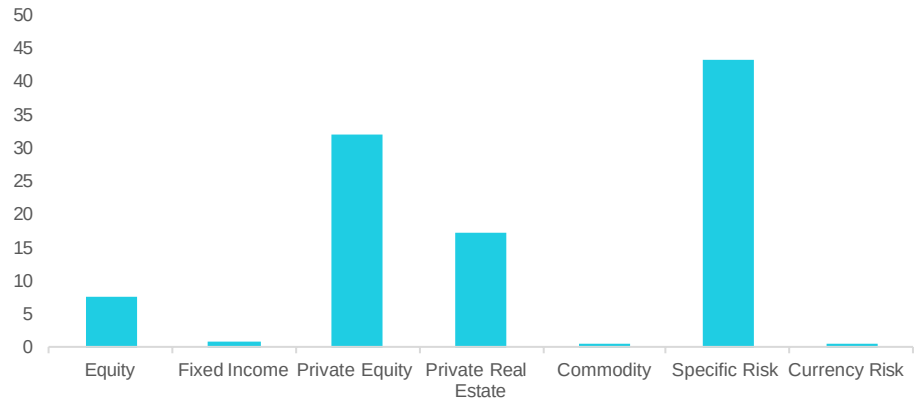


	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Real Assets & Inflation Hedges	**12,005**	**100.00**	**15.42**	**15.42**	**100.00**
Core Private Real Estate	4,184	34.86	22.86	6.99	45.34
Natural Resources & Commodities	2,235	18.62	18.45	2.73	17.68
Infrastructure	3,723	31.01	18.55	5.23	33.93
TIPS	1,862	15.51	6.62	0.47	3.04

Risk Decomposition

	Portfolio		Active	
Risk Source	Risk Contribution	%Risk	Risk Contribution	%Risk
Total Risk	**15.42**	**100.00**	**2.57**	**100.00**
Common Factor Risk	14.44	93.67	1.45	56.59
Specific Risk	0.09	0.56	1.10	42.97
Currency Risk	0.89	5.77	0.01	0.45

Active Risk from Common Factors

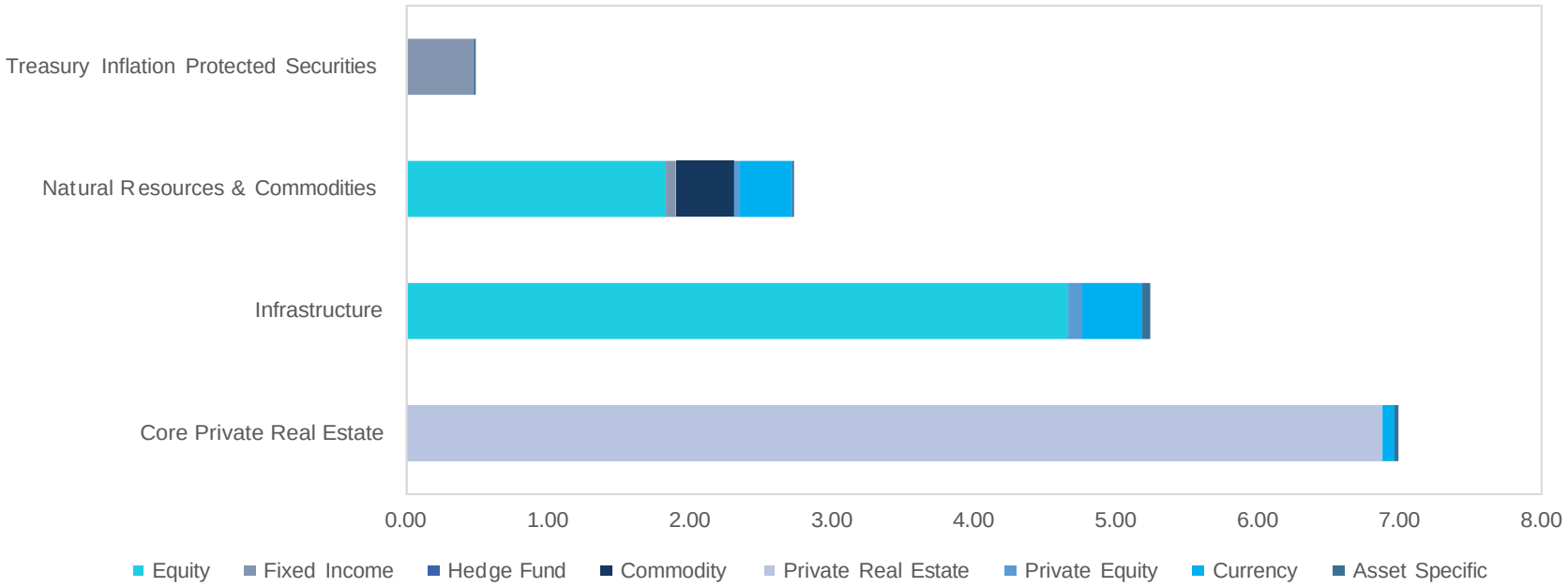


Real Assets & Inflation Hedges Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Contribution Breakdown by Risk Type



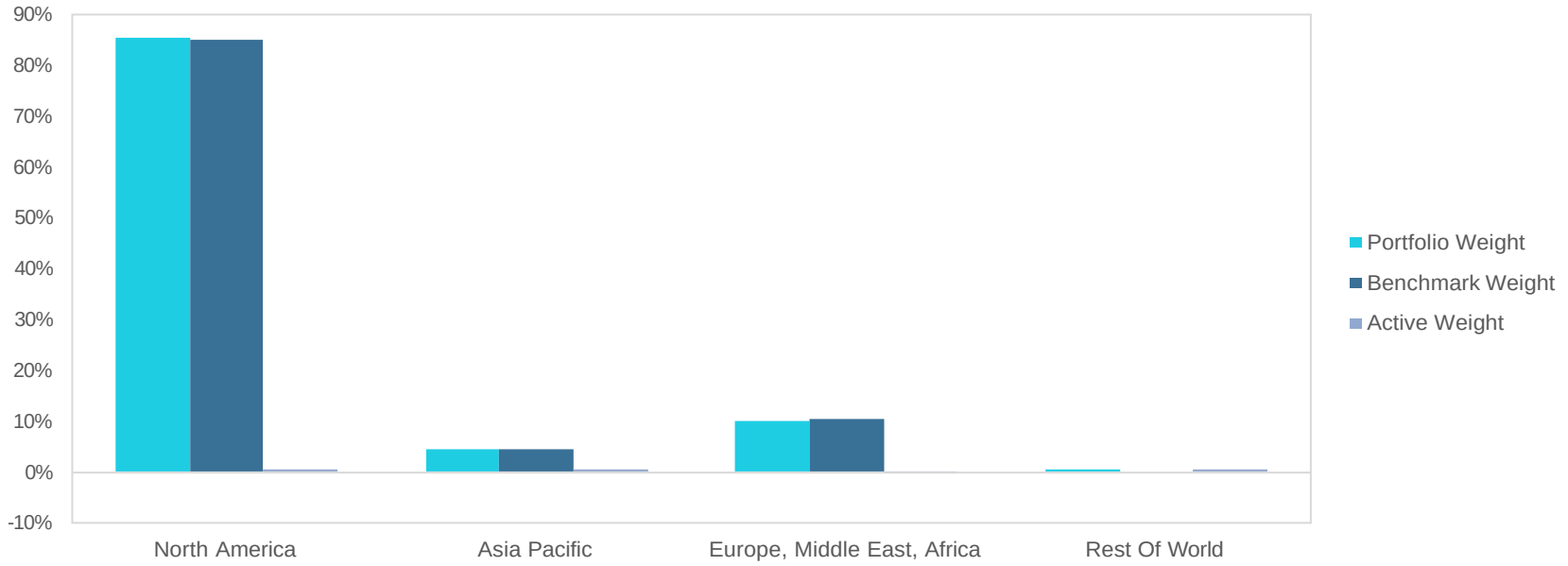
Functional Category	Port Risk Contribution	Equity	Fixed Income	Commodity	Private Real Estate	Private Equity	Currency	Asset Specific
Total Fund	**15.42**	**6.48**	**0.55**	**0.40**	**6.87**	**0.14**	**0.89**	**0.09**
Core Private Real Estate	6.99	0.00	0.00	0.00	6.87	0.00	0.08	0.04
Infrastructure	5.23	4.66	0.00	0.00	0.00	0.09	0.44	0.04
Natural Resources and Commodities	2.73	1.82	0.08	0.40	0.00	0.05	0.37	0.01
Treasury Inflation Protected Securities	0.47	0.00	0.47	0.00	0.00	0.00	0.00	0.00

Real Assets & Inflation Hedges Risk Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Portfolio Allocation By Region



Region	Weight%			Total Risk	Active Risk CR	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
Total Fund	**100.00%**	**100.00%**	**0.00%**	**15.42**	**2.57**	**100.00**	**0.03**
North America	85.40%	85.17%	0.24%	15.12	2.19	85.32	0.03
Asia Pacific	4.48%	4.42%	0.05%	17.66	0.03	1.14	0.00
Europe, Middle East, Africa	9.98%	10.41%	-0.43%	23.74	0.33	12.94	0.03
Rest Of World	0.14%	0.00%	0.14%	37.13	0.02	0.60	0.11

Real Assets & Inflation Hedges

Natural Resources & Commodities

Credit Suisse

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Seeks to provide a hedge against inflation and exposure to commodities markets such as energy, agriculture and timber, and metals and mining.

Inception Date: March 2011

Performance (net)[1]

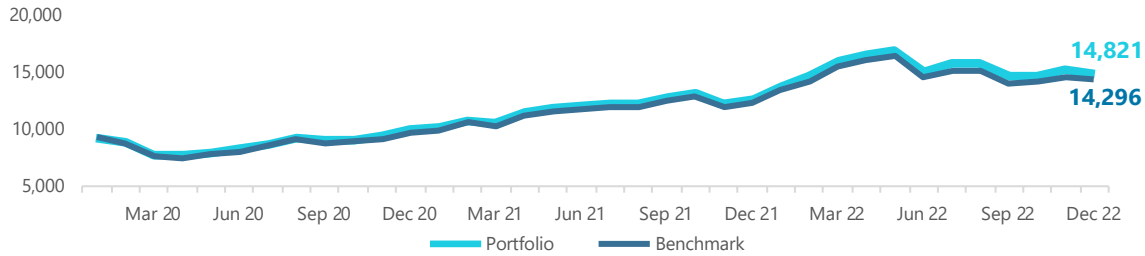
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Credit Suisse Commodity	**312.3**	**1.4%**	**17.0%**	**14.0%**	**7.0%**
Bloomberg Commodity Index Total Return		2.2%	16.1%	12.7%	6.4%
RA & IH Policy Benchmark		5.4%	6.4%	8.3%	--

Universe data: Commodity Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Credit Suisse Commodity	**1.4%**	**47**	**17.3%**	**26**	**14.3%**	**47**	**7.3%**	**59**
Median	1.2%		2.1%		13.1%		8.3%	

Risk Statistics (since inception)

Standard Deviation	15.9%
Benchmark Standard Deviation	16.2%
Sharpe Ratio	0.44
Information Ratio	0.70
Beta	0.98
Tracking Error	1.0%

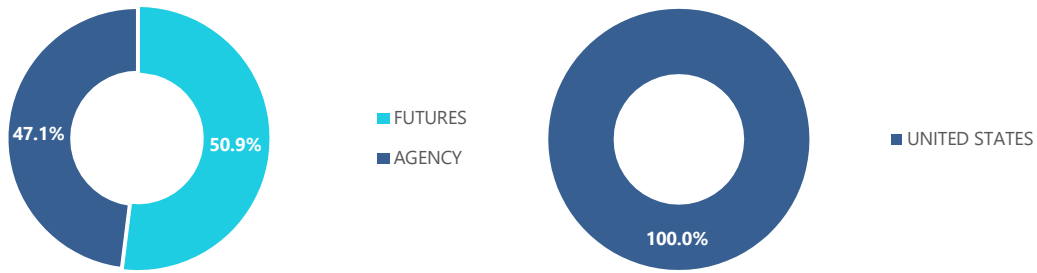
Growth of $10,000



Top Holdings (% of assets)

US TREASURY FRN	21.0%
GOLD 100 OZ FUTR FEB23	14.6%
US TREASURY FRN	13.2%
US TREASURY FRN	10.3%
FEDERAL FARM CREDIT BANK	8.9%
Top 5 Holdings	**67.9%**

Top Exposures (% of assets)[2]



[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Real Assets & Inflation Hedges Risk Analysis

Natural Resources & Commodities

Credit Suisse

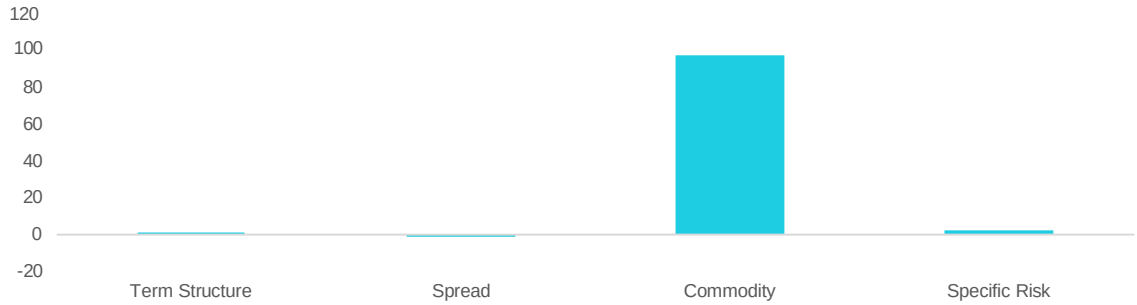
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

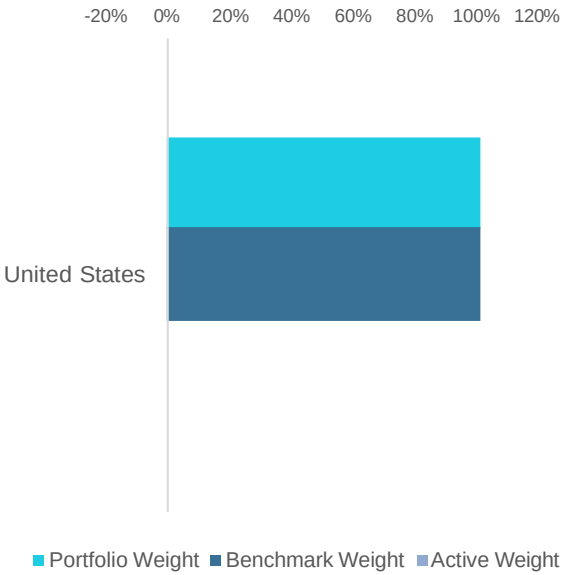
Portfolio Risk Summary

	Value
Total Risk	**15.56**
Benchmark Risk	19.65
Active Risk	7.19
Portfolio Beta	0.75

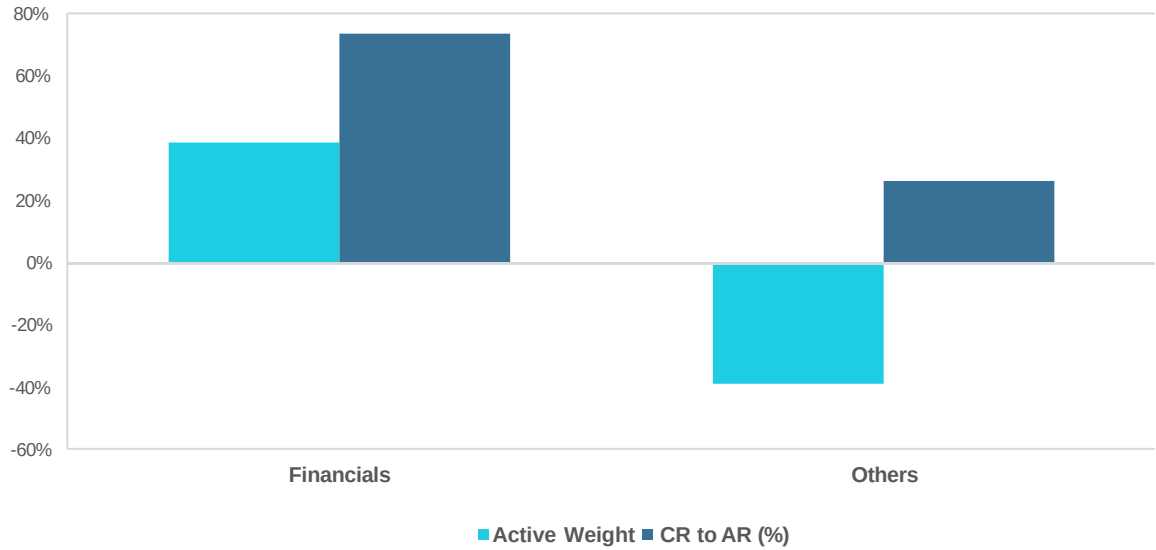
Active Risk from Common Factors



Top Countries by Weight%



Portfolio Risk by Sector



Real Assets & Inflation Hedges

Natural Resources & Commodities

DWS

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Strategy

Seeks to provide capital appreciation and a hedge to inflation. A diversified approach within infrastructure to gain exposure to infrastructure related to telecommunication, transportation, utilities, waste and energy.

Inception Date: June 2019

Risk Statistics (since inception)

Standard Deviation	24.6%
Benchmark Standard Deviation	24.6%
Sharpe Ratio	0.60
Information Ratio	-0.53
Beta	0.99
Tracking Error	4.1%

Top Holdings (% of assets)

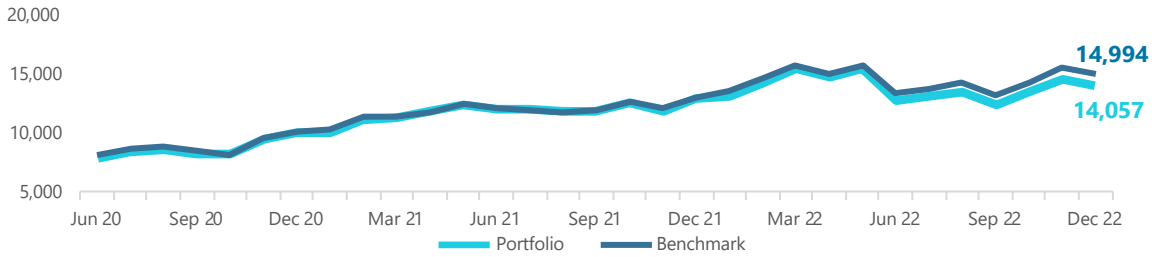
NUTRIEN LTD	9.0%
SHELL PLC	5.7%
CHEVRON CORP	5.6%
AGNICO EAGLE MINES LTD	4.9%
BUNGE LTD	4.3%
Top 5 Holdings	**29.6%**

Performance (net)[1]

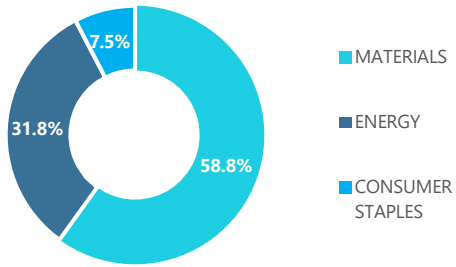
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
DWS Natural Resources	**671.1**	**13.1%**	**9.1%**	**12.0%**	**--**
S&P Glb LargeMidCap Commod & Resources		14.0%	15.5%	14.5%	--
RA & IH Policy Benchmark		5.4%	6.4%	8.3%	--

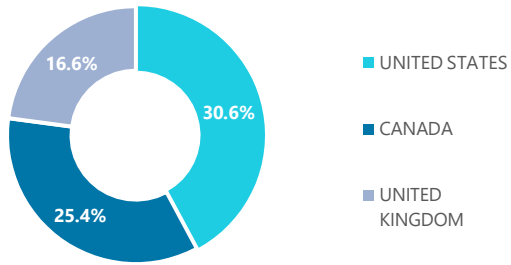
Universe data: Commodity Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
DWS Natural Resources	**13.2%**	**8**	**9.3%**	**44**	**12.2%**	**53**	**--**	**--**
Median	1.2%		2.1%		13.1%		--	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Real Assets & Inflation Hedges Risk Analysis

Natural Resources & Commodities

DWS

for the quarter ended December 31, 2022

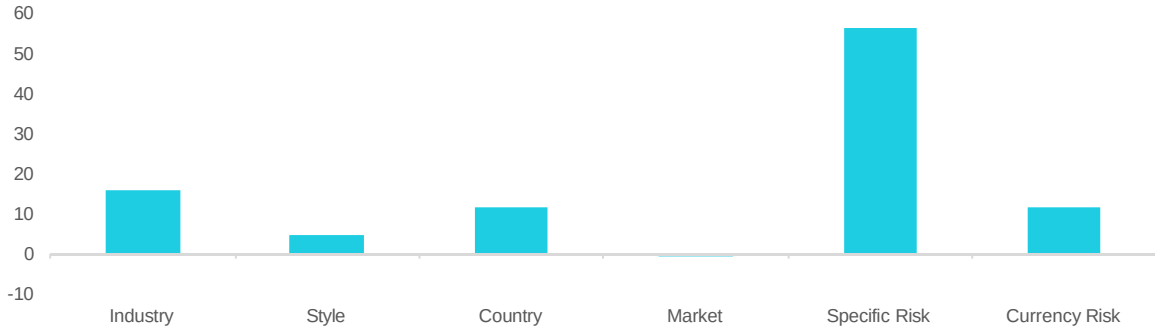
LACERA

Los Angeles County Employees Retirement Association

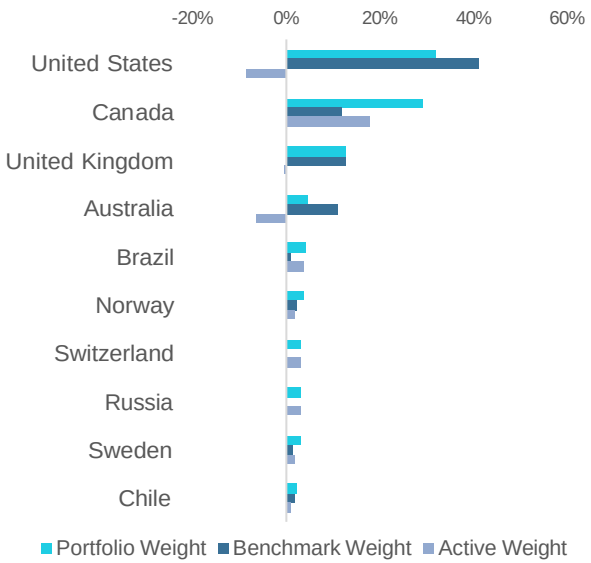
Portfolio Risk Summary

	Value
Total Risk	**24.91**
Benchmark Risk	24.08
Active Risk	5.17
Portfolio Beta	1.01

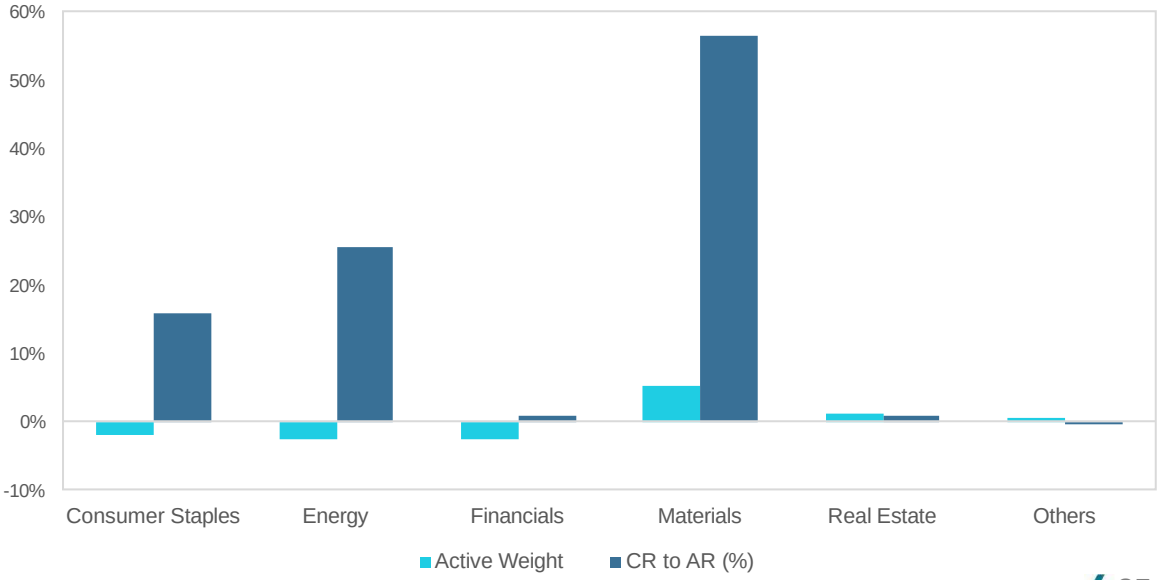
Active Risk from Common Factors



Top Countries by Weight%



Portfolio Risk by Sector



Real Assets & Inflation Hedges

Natural Resources & Commodities

Neuberger Berman / Gresham

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Strategy

Seeks to provide a hedge against inflation and exposure to commodities markets such as energy, agriculture and timber, and metals and mining. The collateral portfolio provides income w ith conservative fixed income exposure.

Inception Date: July 2007

Risk Statistics (since inception)

Standard Deviation	18.4%
Benchmark Standard Deviation	17.0%
Sharpe Ratio	0.13
Information Ratio	0.49
Beta	1.05
Tracking Error	4.9%

Top Holdings (% of assets)

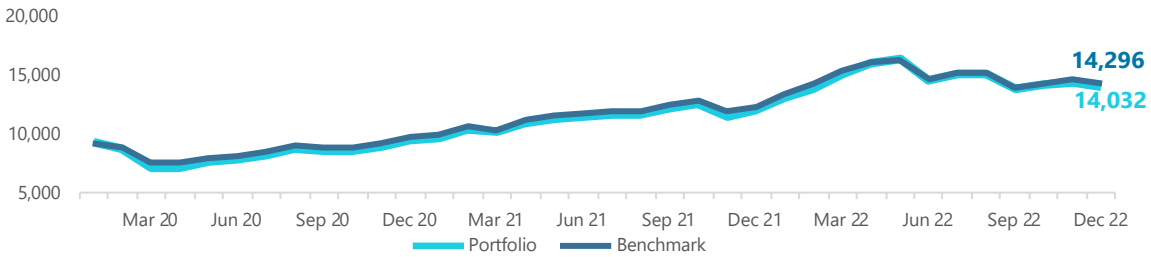
GOLD 100 OZ FUTR FEB23	11.1%
NATURAL GAS FUTR JAN23	8.2%
WTI CRUDE FUTURE JAN23	7.7%
SOYBEAN FUTURE JAN23	6.7%
BRENT CRUDE FUTR MAR23	5.5%
Top 5 Holdings	**39.3%**

Performance (net)[1]

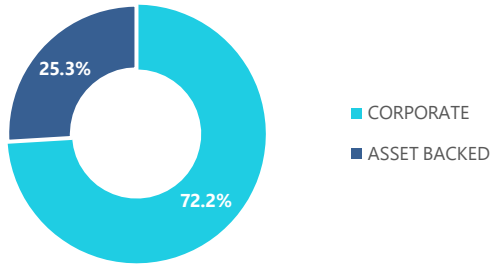
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Neuberger Berman/Greshman	**366.2**	**1.2%**	**17.0%**	**12.0%**	**6.5%**
Bloomberg Commodity Index Total Return		2.2%	16.1%	12.7%	6.4%
RA & IH Policy Benchmark		5.4%	6.4%	8.3%	--

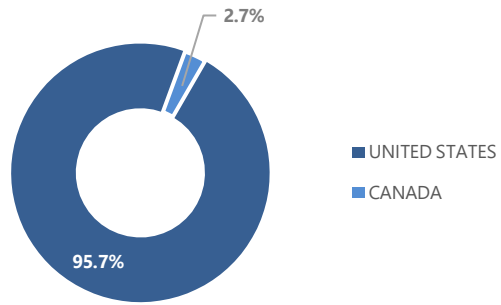
Universe data: Commodities Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Neuberger Berman/Greshman	**1.3%**	**49**	**17.4%**	**25**	**12.4%**	**53**	**6.9%**	**62**
Median	1.2%		2.1%		13.1%		8.3%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Real Assets & Inflation Hedges Risk Analysis

Natural Resources & Commodities

Neuberger Berman / Gresham

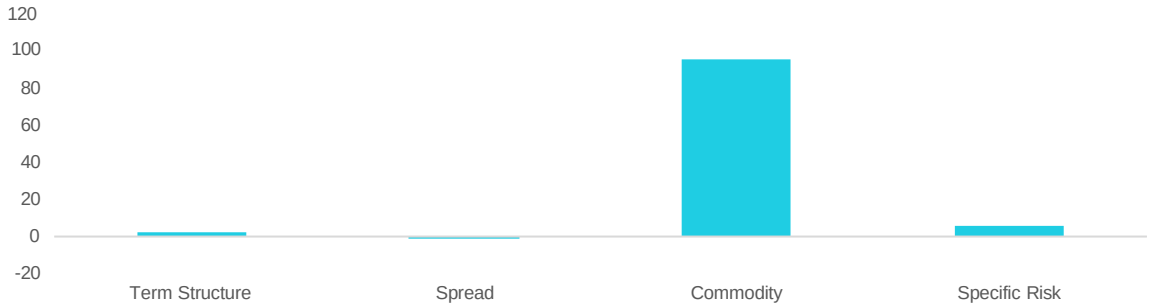
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

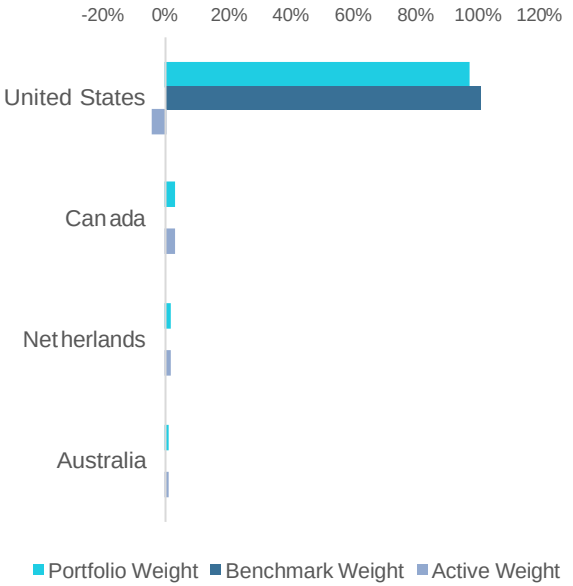
Portfolio Risk Summary

	Value
Total Risk	**14.94**
Benchmark Risk	18.46
Active Risk	4.66
Portfolio Beta	0.80

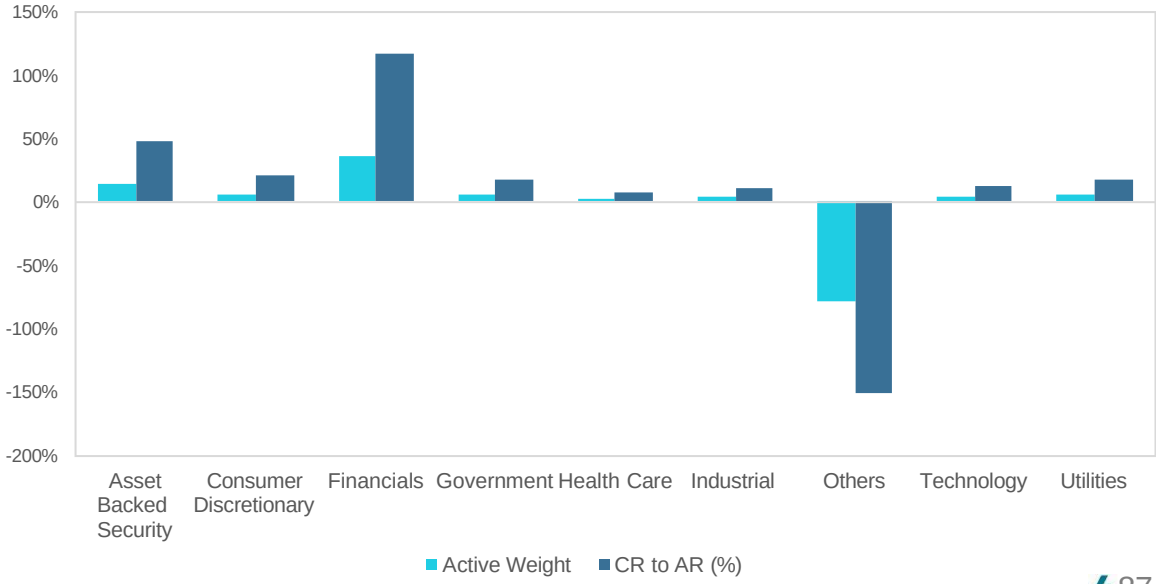
Active Risk from Common Factors



Top Countries by Weight%



Portfolio Risk by Sector



Real Assets & Inflation Hedges

Infrastructure

DWS

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Strategy

Seeks to provide capital appreciation and income with global infrastructure securities. The strategy takes a diversified approach within infrastructure to gain exposure to infrastructure related to telecommunication, transportation, utilities, waste and energy.

Inception Date: June 2019

Portfolio Characteristics

	Portfolio	Benchmark
Market Cap Wtd Average (mm)	40,438.9	37,905.6
No. Of Issues	48.0	0.0
Dividend Yield	2.8	3.3
Return on Equity	16.7	16.3
Price to Sales	4.3	4.5
Price to Book	2.9	3.1
PE Ratio	23.8	22.2

Top Holdings (% of assets)

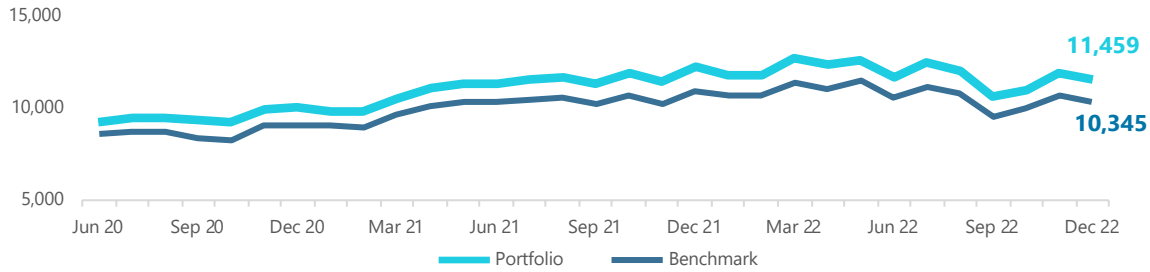
AMERICAN TOWER CORP	6.7%
ENBRIDGE INC	5.9%
SEMPRA ENERGY	5.4%
WILLIAMS COS INC	5.2%
NATIONAL GRID PLC	4.8%
Top 5 Holdings	**27.9%**

Performance (net)[1]

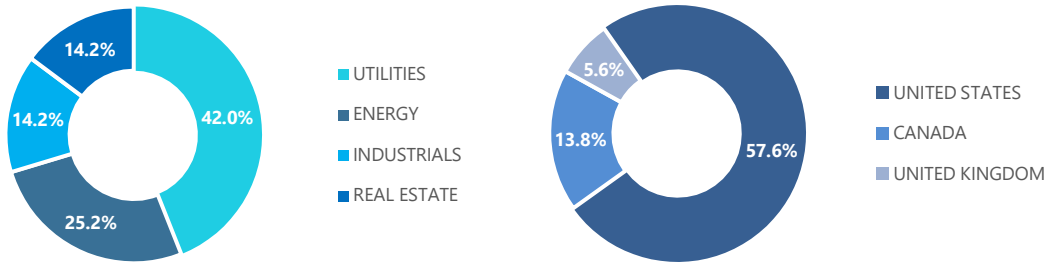
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
DWS Infrastructure	**2,781.6**	**8.5%**	**-6.3%**	**4.6%**	**--**
DJ Brookfield Global Infra Comp		9.4%	-4.9%	1.1%	--
RA & IH Policy Benchmark		5.4%	6.4%	8.3%	--

Universe data: Infrastructure	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
DWS Infrastructure	**8.5%**	**--**	**-6.2%**	**--**	**--**	**4.85**	**--**	**--**
Median	9.4%		-4.9%		1.1%		--	

Growth of $10,000



Top Exposures (% of assets)[2]



[1] Univ erse data for infrastructure is unavailable.
[2] Charts display top exposures and may not add up to 100%.

Real Assets & Inflation Hedges Risk Analysis

Infrastructure

DWS

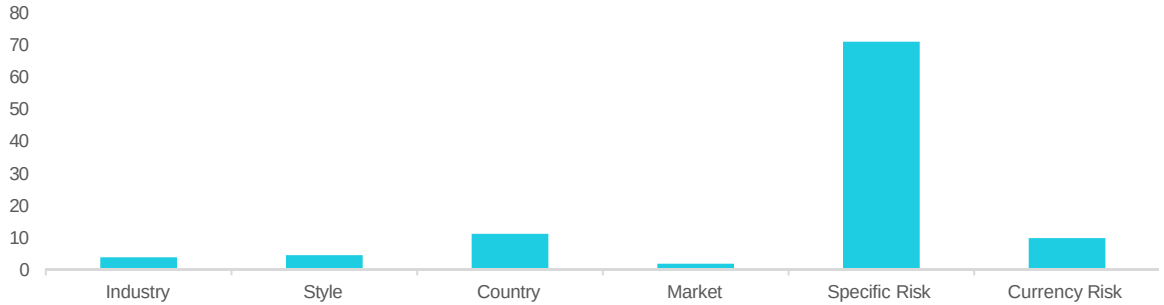
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

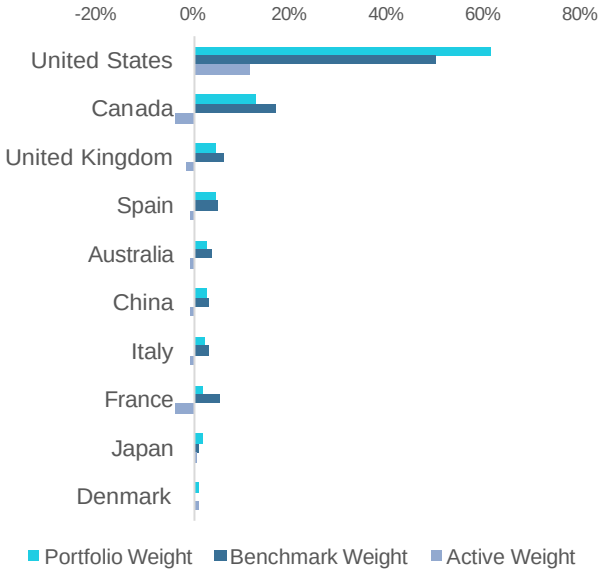
Portfolio Risk Summary

	Value
Total Risk	**18.29**
Benchmark Risk	18.65
Active Risk	1.94
Portfolio Beta	0.98

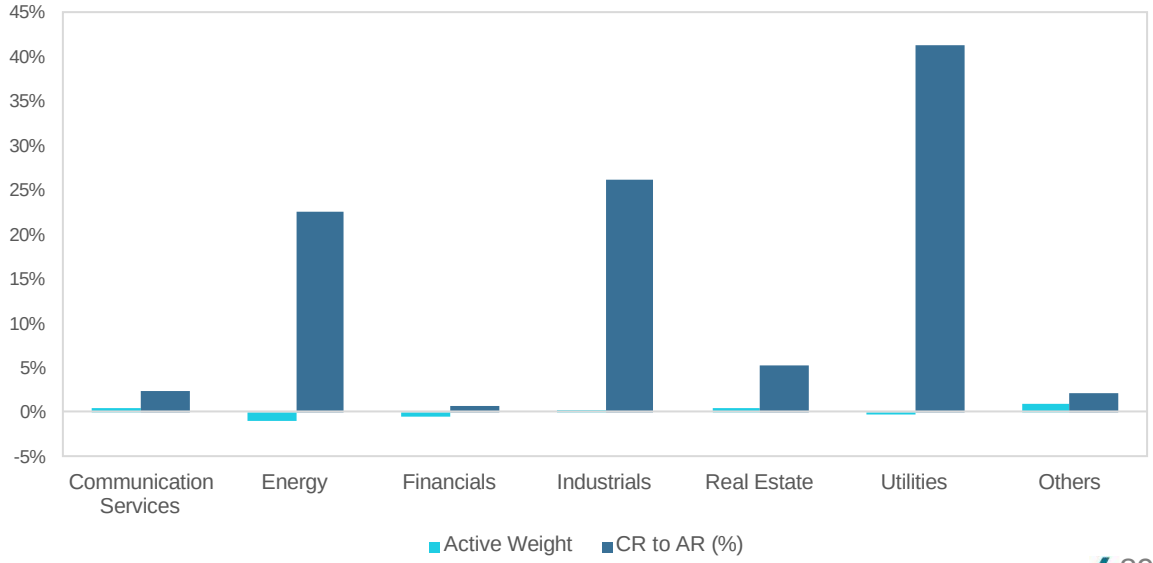
Active Risk from Common Factors



Top Countries by Weight%



Portfolio Risk by Sector



Real Assets & Inflation Hedges
TIPS
BlackRock
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

Seeks to provide income and a hedge against inflation with passive TIPS exposure.

Inception Date: May 2019

Risk Statistics (since inception)

Standard Deviation	6.5%
Benchmark Standard Deviation	6.5%
Sharpe Ratio	0.21
Information Ratio	-0.08
Beta	0.99
Tracking Error	0.8%

Top Holdings (% of assets)

TSY INFL IX N/B	4.6%
TSY INFL IX N/B	4.1%
TSY INFL IX N/B	4.0%
TSY INFL IX N/B	3.7%
TSY INFL IX N/B	3.7%
Top 5 Holdings	**20.1%**

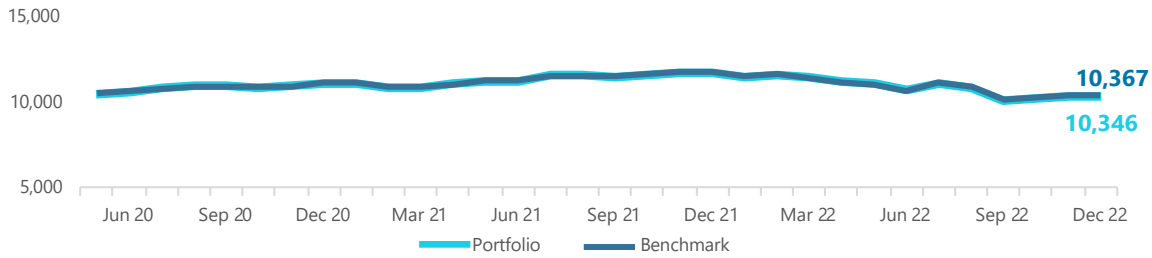
[1] Univ erse data for TIPS is unavailable.
[2] Charts display top exposures and may not add up to 100%.

Performance (net)[1]

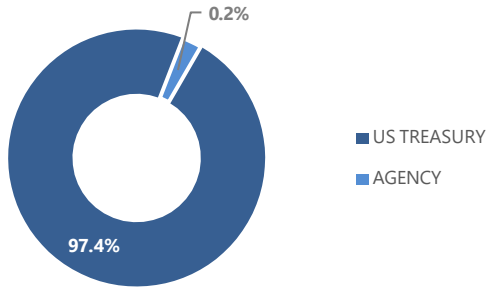
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
BlackRock TIPS	**1,860.9**	**2.1%**	**-11.9%**	**1.1%**	**--**
Bloomberg U.S. Treasury: U.S. TIPS		2.0%	-11.8%	1.2%	--
Real Assets & Inflation Hedges Policy BM		5.4%	6.4%	8.3%	--

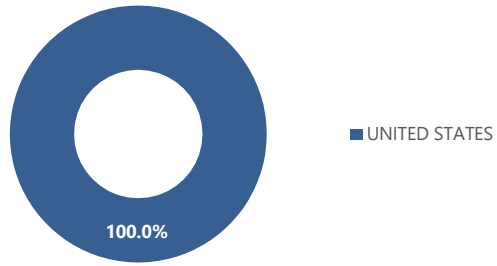
Universe data: Inflation Linked Bond Funds	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
BlackRock TIPS	**2.1%**	**--**	**-11.9%**	**--**	**1.2%**	**--**	**--**	**--**
Median	--		--		--		--	

Growth of $10,000



Top Exposures (% of assets)[2]





Real Assets & Inflation Hedges Risk Analysis

TIPS

BlackRock

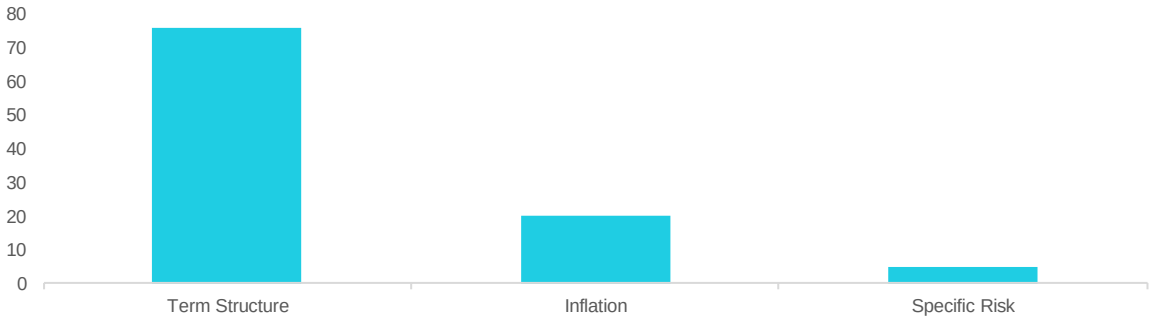
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

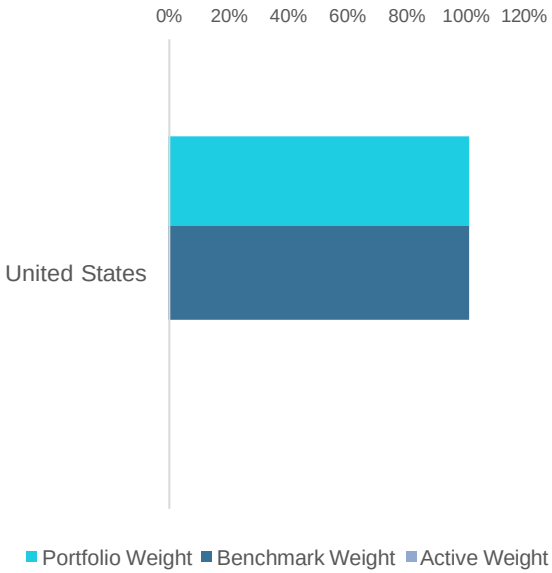
Portfolio Risk Summary

	Value
Total Risk	**6.62**
Benchmark Risk	6.71
Active Risk	0.10
Portfolio Beta	0.99

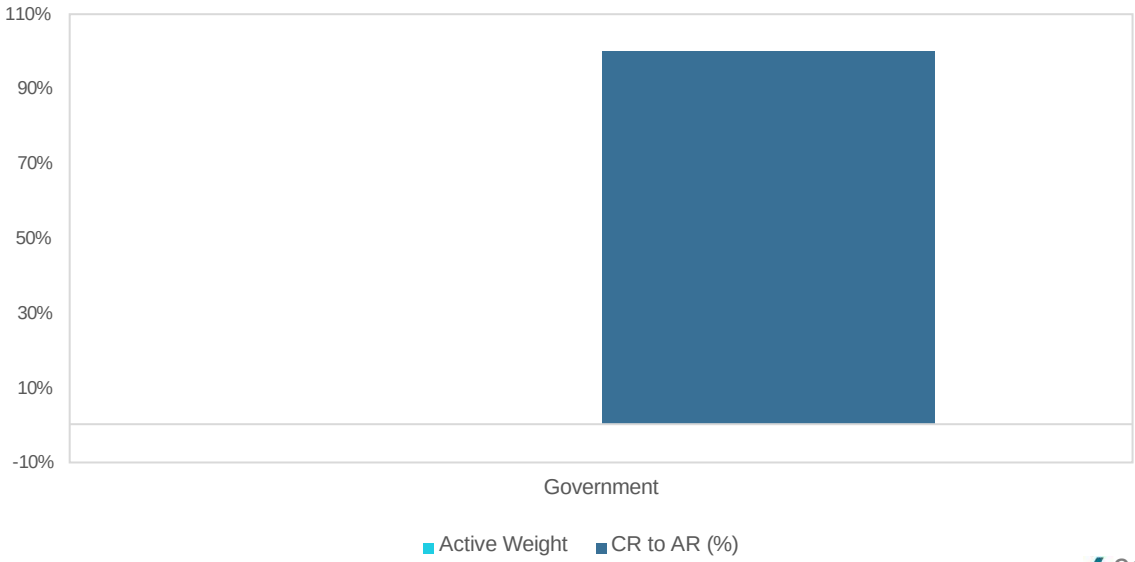
Active Risk from Common Factors



Top Countries by Weight%



Portfolio Risk by Sector



risk reduction & mitigation

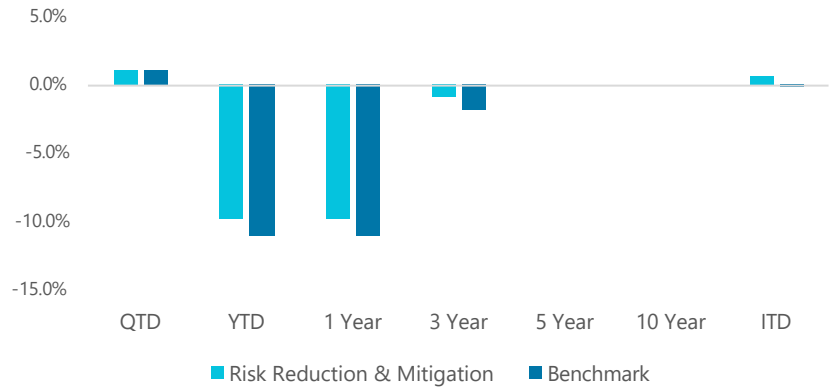
Summary

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Performance (net)



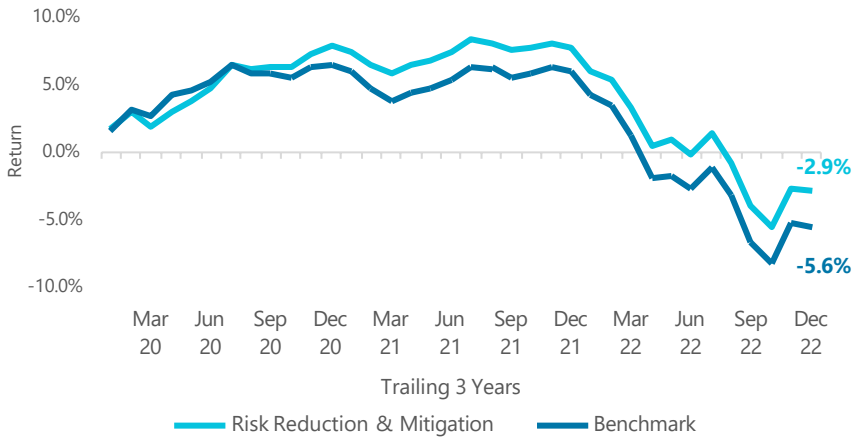
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Risk Reduction & Mitigation	**1.1%**	**-9.8%**	**-9.8%**	**-1.0%**	**--**	**--**	**0.6%**
Benchmark	1.1%	-11.0%	-11.0%	-1.9%	--	--	-0.2%
Excess	0.0%	1.2%	1.2%	0.9%	--	--	0.8%

Functional Category[1]

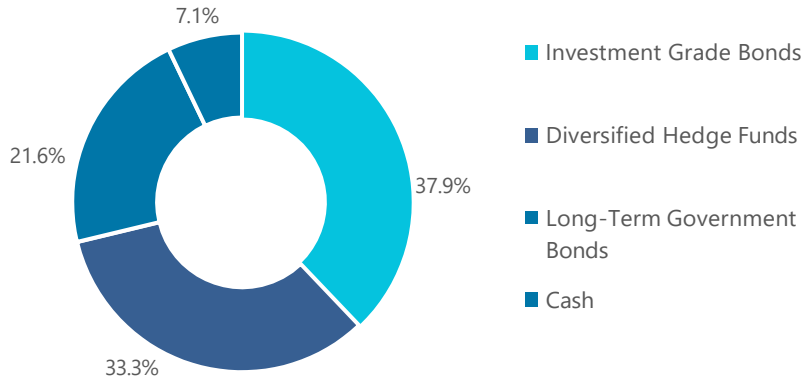
	QTD	FYTD	1 Year	3 Year
Investment Grade Bonds	**1.8%**	**-3.0%**	**-13.1%**	**-2.6%**
BBG BC Aggregate Bond Index	1.9%	-3.0%	-13.0%	-2.7%
Excess	0.0%	0.0%	-0.1%	0.1%
Diversified Hedge Funds	**1.4%**	**2.7%**	**5.8%**	**7.3%**
Diversified Hedge Funds Policy Benchmark	1.4%	2.3%	3.7%	3.2%
Excess	0.1%	0.4%	2.1%	4.1%
Long-Term Government Bonds	**-0.6%**	**-10.7%**	**-28.9%**	**--**
Bloomberg U.S. Treasury: Long	-0.6%	-10.2%	-29.3%	--
Excess	0.0%	-0.6%	0.3%	--
Cash	**1.3%**	**2.3%**	**3.2%**	**1.7%**
Cash Policy Benchmark	0.9%	1.3%	1.5%	0.7%
Excess	0.5%	0.9%	1.7%	1.0%

[1] Diversified Hedge Funds returns are net-of-all fees and expenses.

Cumulative Return



Exposure

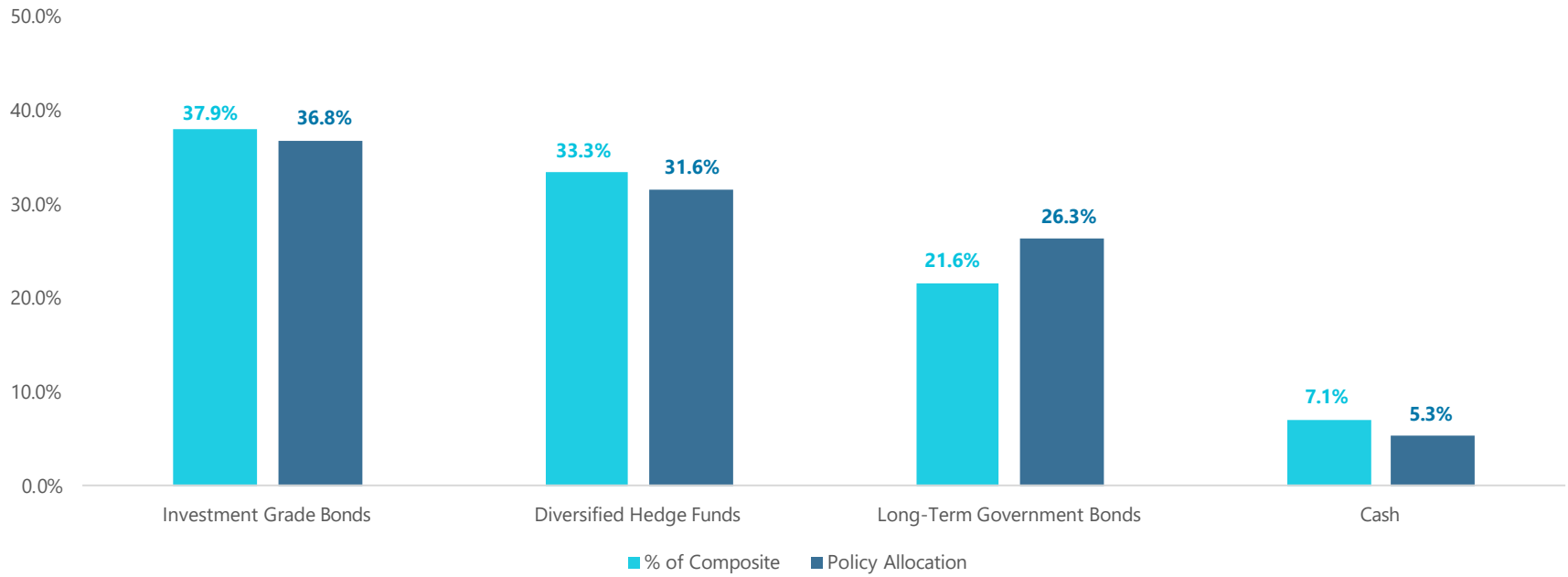


Asset Allocation

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Actual vs. Policy



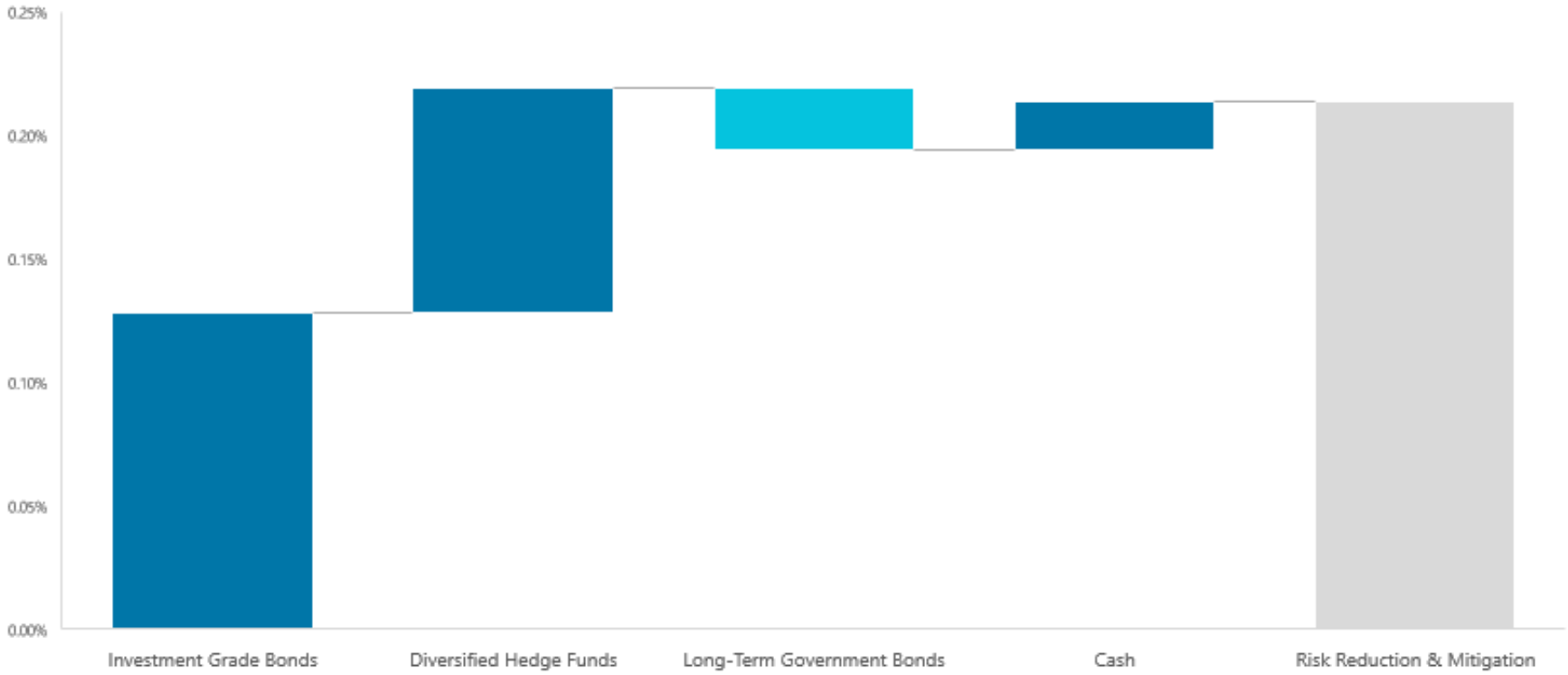
	Ending Market Value (mm)	% of Composite	Policy Allocation	Over / Under (%)	Over / Under (mm)
Risk Reduction & Mitigation	**13,202**	**100.0%**	**100.0%**		
Investment Grade Bonds	5,003	37.9%	36.8%	1.1%	139
Diversified Hedge Funds	4,402	33.3%	31.6%	1.8%	233
Long-Term Government Bonds	2,857	21.6%	26.3%	-4.7%	-618
Cash	940	7.1%	5.3%	1.9%	246

Contribution to Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Contribution to Return



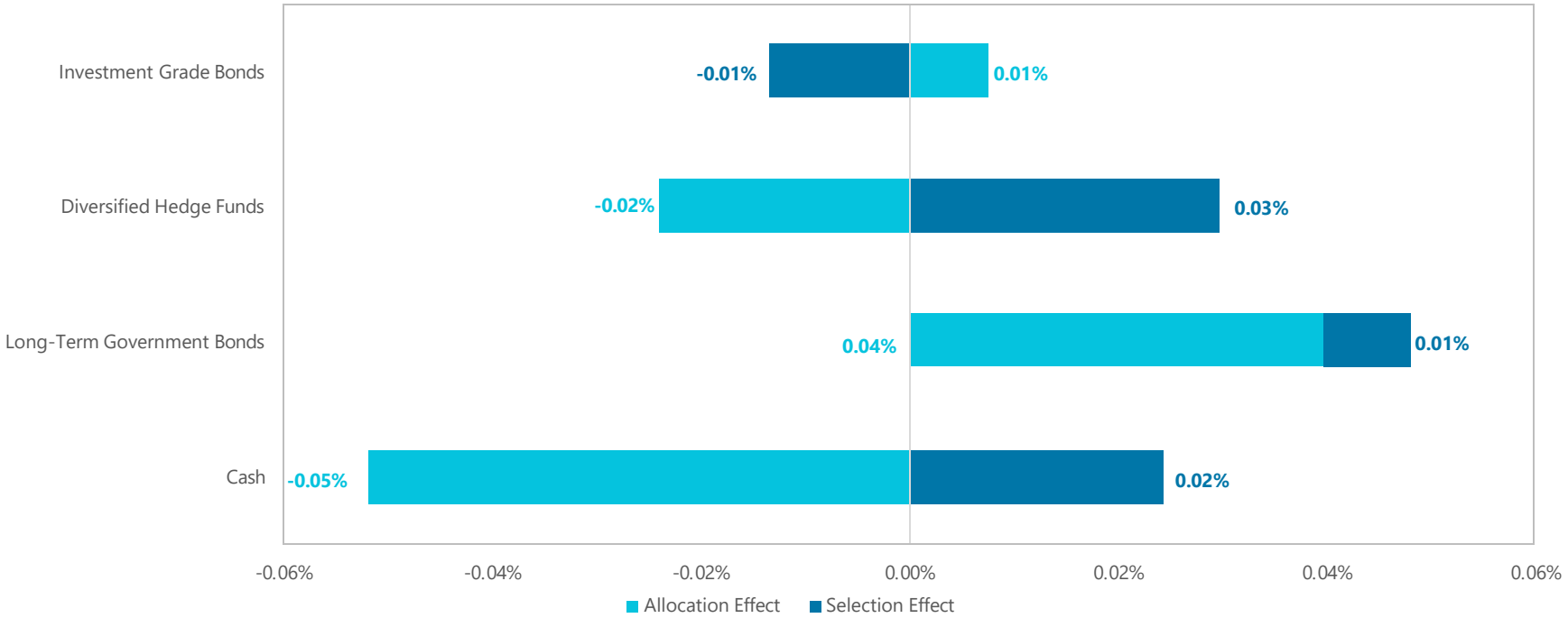
Functional Category		Contributors		Detractors	
Investment Grade Bonds	0.13%	BTC US Debt Index Fund	0.07%	BlackRock Long Treasury Bonds	-0.03%
Diversified Hedge Funds	0.09%	HBK Multi-strategy	0.03%	AM Asia Strategies	-0.01%
Long-Term Government Bonds	-0.03%	Allspring/Wells	0.03%		
Cash	0.02%	Capula GRV	0.02%		
Risk Reduction & Mitigation	0.21%	Pugh Capital Mgmt	0.02%		

Return Attribution

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

QTD Performance Attribution[1]



	Ending Market Value (mm)	% of Composite	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
Risk Reduction & Mitigation	**13,202**	**100.0%**	**100.0%**	**1.1%**	**1.1%**	**-0.03%**	**0.05%**	**0.03%**
Investment Grade Bonds	5,003	37.9%	36.8%	1.8%	1.9%	0.01%	-0.01%	0.00%
Diversified Hedge Funds	4,402	33.3%	31.6%	1.4%	1.4%	-0.02%	0.03%	0.01%
Long-Term Government Bonds	2,857	21.6%	26.3%	-0.6%	-0.6%	0.04%	0.01%	0.04%
Cash	940	7.1%	5.3%	1.3%	0.9%	-0.05%	0.02%	-0.02%

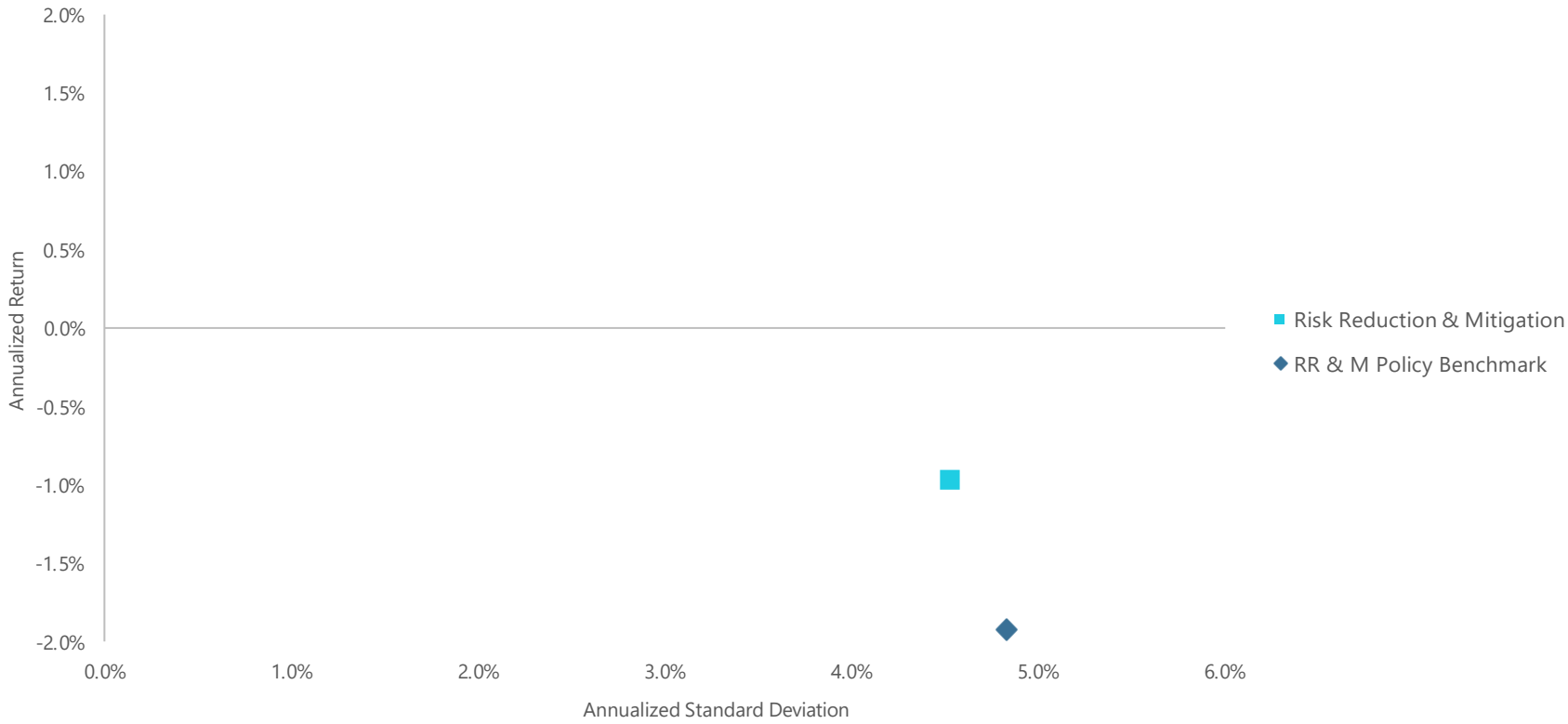
[1] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Risk Reduction & Mitigation	**-1.0%**	**4.5%**				
RR & M Policy Benchmark	-1.9%	4.8%	(0.35)	1.06	0.93	0.9%

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns[1]

	% of Composite	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Risk Reduction & Mitigation	**100.0%**	**13,202**	**13,536**	**1.1%**	**-9.8%**	**-9.8%**	**-1.0%**	**--**	**--**	**0.6%**	**Apr-2019**
RR & M Policy Benchmark				1.1%	-11.0%	-11.0%	-1.9%	--	--	-0.2%	
Investment Grade Bonds	**37.9%**	**5,003**	**5,292**	**1.8%**	**-13.1%**	**-13.1%**	**-2.6%**	**0.2%**	**1.5%**	**5.1%**	**Nov-1994**
BBG BC Aggregate Bond Index				1.9%	-13.0%	-13.0%	-2.7%	0.0%	1.1%	4.6%	
Allspring/Wells	9.5%	1,252	1,605	2.1%	-13.0%	-13.0%	-2.1%	0.4%	1.4%	3.8%	Mar-2004
BTC US Debt Index Fund	22.0%	2,905	2,856	1.7%	-13.0%	-13.0%	-2.7%	0.0%	1.1%	3.8%	Nov-1999
MHLP	0.1%	11	11	1.2%	4.8%	4.8%	5.2%	6.7%	5.3%	5.4%	Apr-2005
Pugh Capital Mgmt	6.3%	835	819	1.9%	-13.2%	-13.2%	-2.6%	0.1%	1.1%	3.2%	Jul-2005
Diversified Hedge Funds	**33.3%**	**4,402**	**4,281**	**1.4%**	**5.8%**	**5.8%**	**7.3%**	**--**	**--**	**6.7%**	**Apr-2019**
Diversified Hedge Funds Policy Benchmark				1.4%	3.7%	3.7%	3.2%	--	--	3.5%	
AM Asia Strategies	1.6%	217	221	-2.0%	-3.9%	-3.9%	--	--	--	-2.6%	Jun-2021
Brevan Howard Master Fund	4.9%	650	648	0.4%	18.5%	18.5%	--	--	--	9.4%	Apr-2021
Capula GRV	4.9%	642	626	2.6%	12.0%	12.0%	6.7%	--	--	6.6%	Dec-2018
Caxton Global Investments	2.2%	297	292	1.5%	15.7%	15.7%	--	--	--	10.1%	Feb-2021
DK Institutional Partners	3.7%	486	487	-0.1%	-1.3%	-1.3%	5.2%	--	--	4.7%	May-2018
Grosvenor HFOF	0.2%	31	34	--	--	--	--	--	--	--	Nov-2011
HBK Multi-strategy	4.4%	578	555	4.1%	3.9%	3.9%	6.9%	--	--	5.5%	Jun-2018
Hudson Bay	4.9%	650	641	1.4%	3.0%	3.0%	--	--	--	10.7%	Jul-2020
Polar	3.5%	467	462	1.2%	1.0%	1.0%	--	--	--	10.4%	May-2020
Stable Asset Management	2.9%	384	315	1.8%	-0.4%	-0.4%	--	--	--	-0.2%	Aug-2021
Long-Term Government Bonds	**21.6%**	**2,857**	**2,874**	**-0.6%**	**-28.9%**	**-28.9%**	**--**	**--**	**--**	**-25.6%**	**Nov-2021**
Bloomberg U.S. Treasury: Long				-0.6%	-29.3%	-29.3%	--	--	--	-26.8%	Nov-2021
BlackRock Long Treasury Bonds	21.6%	2,857	2,874	-0.6%	-28.9%	-28.9%	--	--	--	-25.6%	Nov-2021
Cash	**7.1%**	**940**	**1,088**	**1.3%**	**3.2%**	**3.2%**	**1.7%**	**2.0%**	**1.3%**	**1.8%**	**Jun-2001**
Cash Policy Benchmark				0.9%	1.5%	1.5%	0.7%	1.3%	0.8%	1.4%	

[1] Diversified Hedge Funds returns are net-of-all fees and expenses.

Risk Reduction & Mitigation
Risk Summary

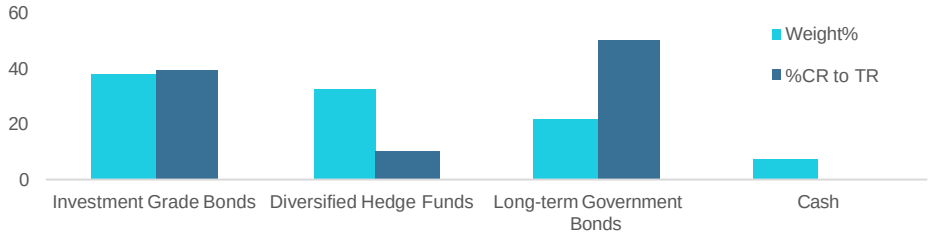
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**6.20**
Benchmark Risk	6.17
Active Risk	1.21
Portfolio Beta	0.99
Cont. to Eff. Duration	6.46
Convexity	1.51
Yield to Worst (%)	4.29
OAS to Swap (bp)	55

Contribution to Risk

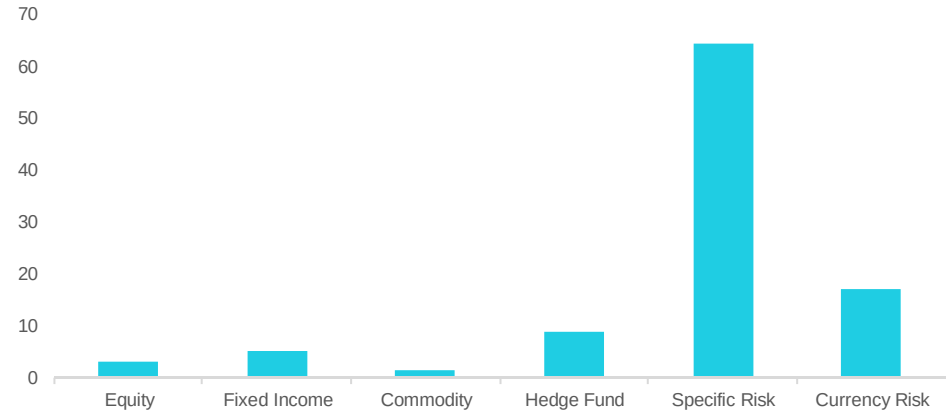


	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Risk Reduction & Mitigation	**12,852**	**100.00**	**6.20**	**6.20**	**100.00**
Investment Grade Bonds	4,868	37.88	6.64	2.44	39.29
Diversified Hedge Funds	4,187	32.58	3.85	0.65	10.46
Long-term Government Bonds	2,856	22.22	14.58	3.12	50.24
Cash	941	7.32	0.00	0.00	0.00

Risk Decomposition

	Portfolio		Active	
Risk Source	Risk Contribution	%Risk	Risk Contribution	%Risk
Total Risk	**6.20**	**100.00**	**1.21**	**100.00**
Local Market Risk	6.05	97.55	1.00	82.83
Common Factor Risk	5.90	95.09	0.22	18.46
Specific Risk	0.15	2.46	0.78	64.37
Currency Risk	0.15	2.45	0.21	17.17

Active Risk from Common Factors

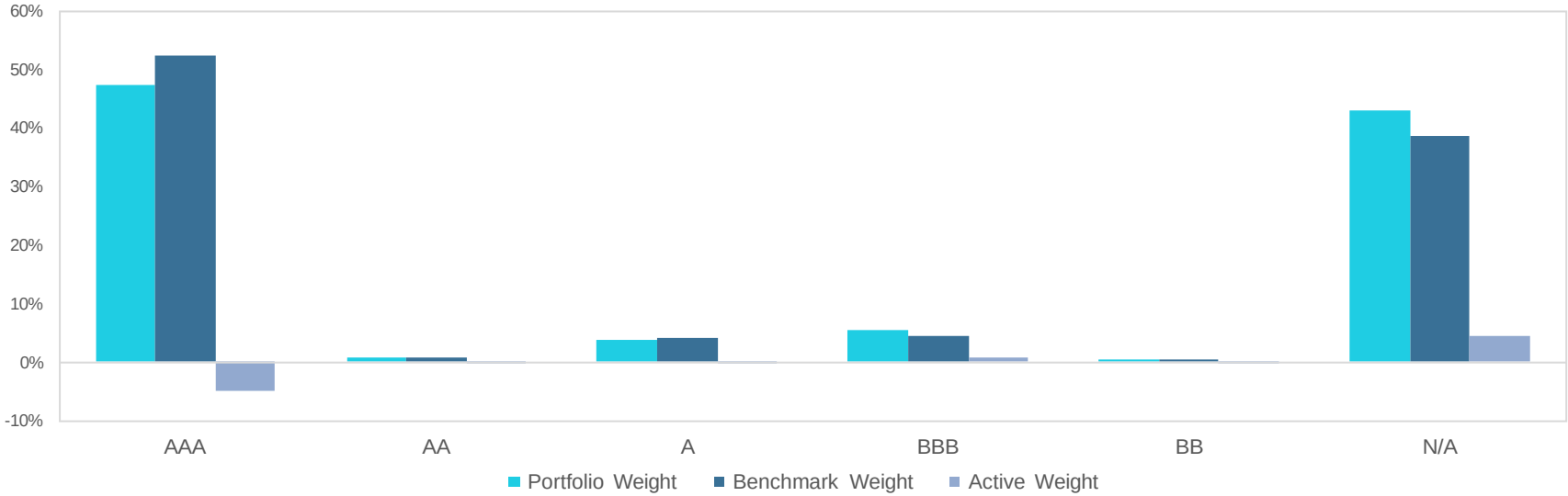


Risk Reduction & Mitigation
Risk Summary

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Portfolio Allocation By Moody's Rating



	Weight%						
Rating	Portfolio	Benchmark	Active	Total Risk	Active Risk CR	% of Active TR	CR to Effective Duration
Risk Reduction & Mitigation	**100.00%**	**100.00%**	**0.00%**	**6.20**	**1.21**	**100%**	**6.46**
AAA	47.14%	52.15%	-5.01%	10.22	0.04	4.9%	5.07
AA	0.66%	0.79%	-0.13%	7.50	0.00	0.0%	0.05
A	3.94%	4.00%	-0.06%	6.49	0.00	0.1%	0.27
BBB	5.32%	4.45%	0.87%	7.03	0.01	0.4%	0.37
BB	0.12%	0.14%	-0.03%	8.12	0.00	0.0%	0.01
N/A	42.82%	38.46%	4.36%	3.16	1.17	94.6%	0.69

Risk Reduction & Mitigation

Investment Grade Bonds

Allspring/Wells

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Strategy

A core fixed income strategy focusing on bottom-up quantitative and qualitative security selection and comprehensive risk management. Value is added primarily through security selection and sector rotation.

Inception Date: March 2004

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	875.0	0.0
Effective Duration	6.2	6.2
Convexity	0.7	0.8
Coupon Rate	3.2	2.7
Yield to Maturity	4.7	4.6
Current Yield	3.5	3.0
Rating – Moody's	AA-2	AA-2
Rating – S & P	AA	AA

Top Holdings (% of assets)

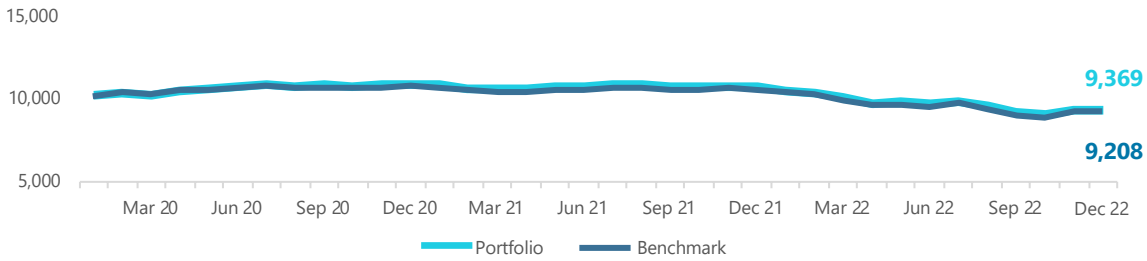
US TREASURY N/B	3.7%
US TREASURY N/B	2.9%
US TREASURY N/B	1.5%
US TREASURY N/B	1.5%
US TREASURY N/B	1.4%
Top 5 Holdings	**11.0%**

Performance (net)[1]

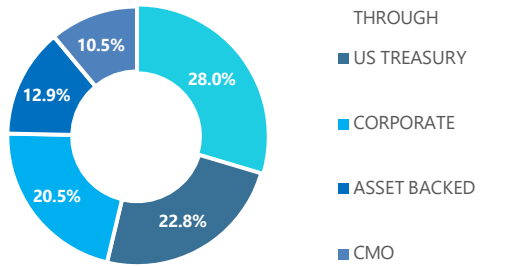
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Allspring/Wells	**1,251.5**	**2.1%**	**-13.0%**	**-2.1%**	**0.4%**
BBG BARC Agg		1.9%	-13.0%	-2.7%	0.0%
RR & M Policy Benchmark		1.1%	-11.0%	-1.9%	--

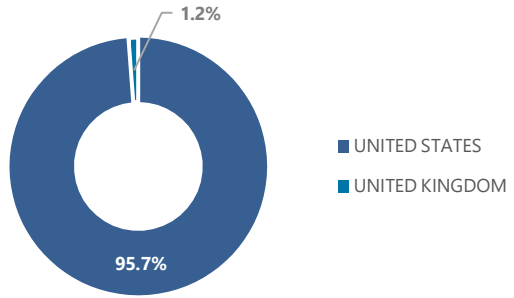
Universe data: US Fixed Income Pools	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Allspring/Wells	**2.1%**	**32**	**-12.9%**	**63**	**-2.1%**	**63**	**0.5%**	**62**
Median	1.7%		-10.8%		-1.3%		0.9%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Risk Reduction & Mitigation Risk Analysis

Investment Grade Bonds

Allspring/Wells

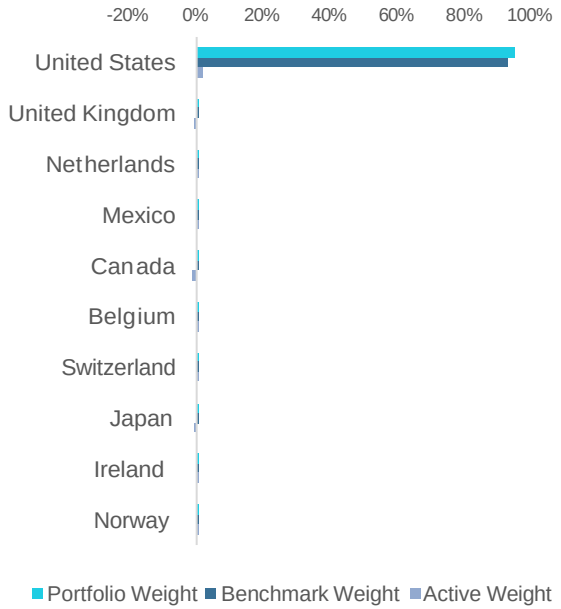
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

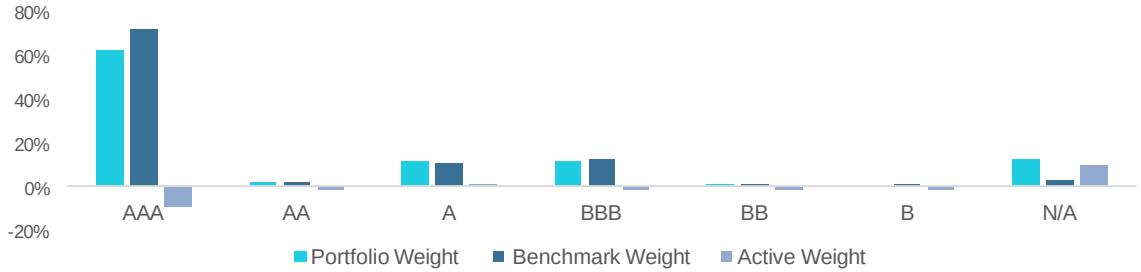
Portfolio Risk Summary

	Value
Total Risk	**6.89**
Benchmark Risk	6.54
Active Risk	0.64
Portfolio Beta	1.05
Cont. to Eff. Duration	6.97
Yield to Worst (%)	4.58
OAS to Swap (bp)	70

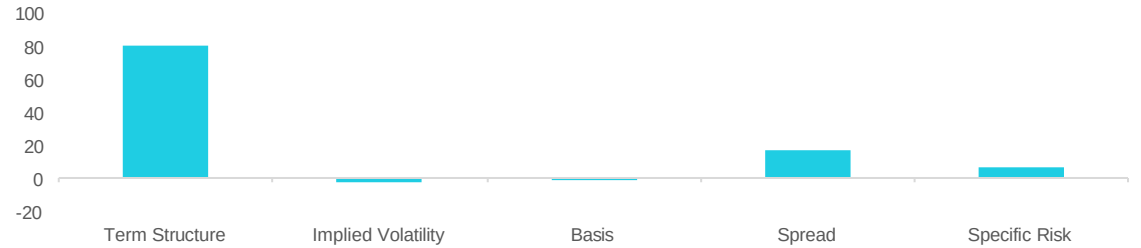
Top Countries by Weight%



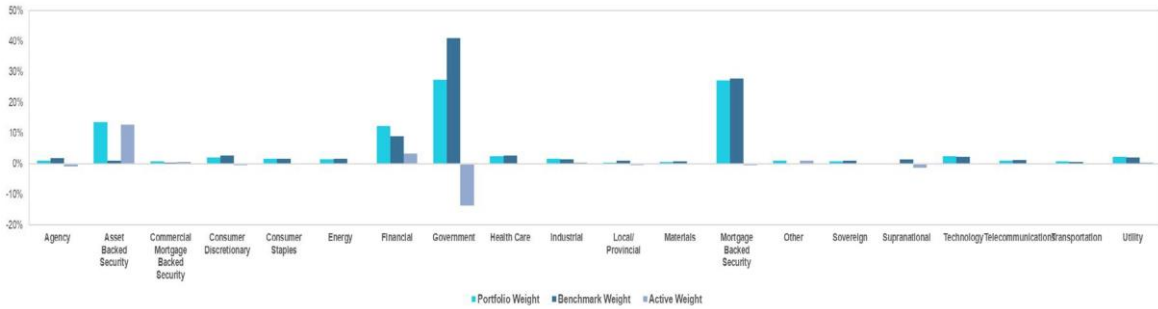
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Risk Reduction & Mitigation
Investment Grade Bonds
Pugh Capital
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Strategy

A core fixed income strategy that invests in investment-grade securities, with an emphasis on higher credit quality and mortgage-backed securities. The strategy seeks to add value relative to the Index by minimizing downside risk across the portfolio while adding incremental return through issue selection.

Inception Date: July 2005

Portfolio Characteristics

	Portfolio	Benchmark
No. of Issues	274.0	0.0
Effective Duration	6.2	6.2
Convexity	0.6	0.8
Coupon Rate	3.2	2.7
Yield to Maturity	4.7	4.6
Current Yield	3.5	3.0
Rating – Moody's	AA-2	AA-2
Rating – S & P	AA-	AA-

Top Holdings (% of assets)

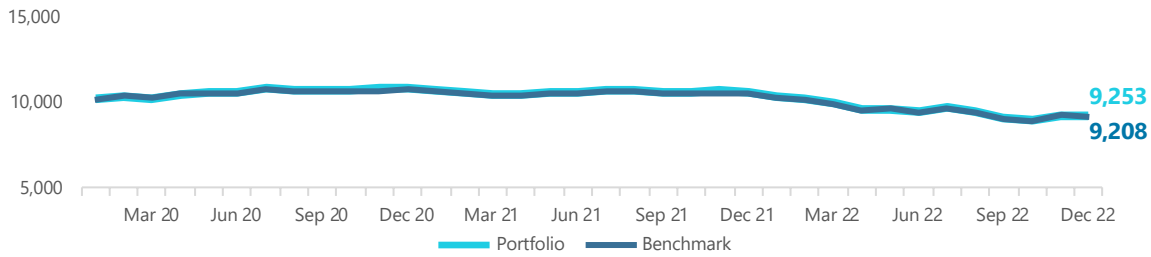
US TREASURY N/B	3.6%
US TREASURY N/B	3.2%
US TREASURY N/B	1.8%
US TREASURY N/B	1.7%
US TREASURY N/B	1.6%
Top 5 Holdings	**11.9%**

Performance (net)[1]

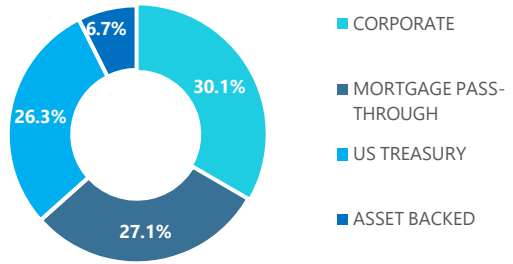
	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
Pugh Capital Mgmt	**835.2**	**1.9%**	**-13.2%**	**-2.6%**	**0.1%**
BBG BARC Agg		1.9%	-13.0%	-2.7%	0.0%
RR & M Policy Benchmark		1.1%	-11.0%	-1.9%	--

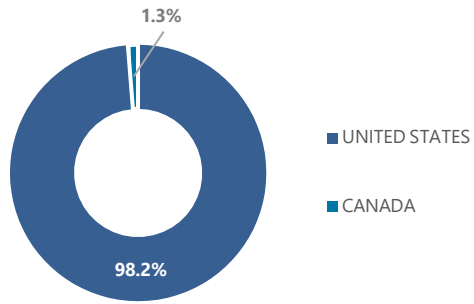
Universe data: US Fixed Income Pools	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
Pugh Capital Mgmt	**2.0%**	**34**	**-13.1%**	**64**	**-2.4%**	**70**	**0.2%**	**69**
Median	1.7%		-10.8%		-1.3%		0.9%	

Growth of $10,000



Top Exposures (% of assets)[2]





[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Risk Reduction & Mitigation Risk Analysis

Investment Grade Bonds

Pugh Capital

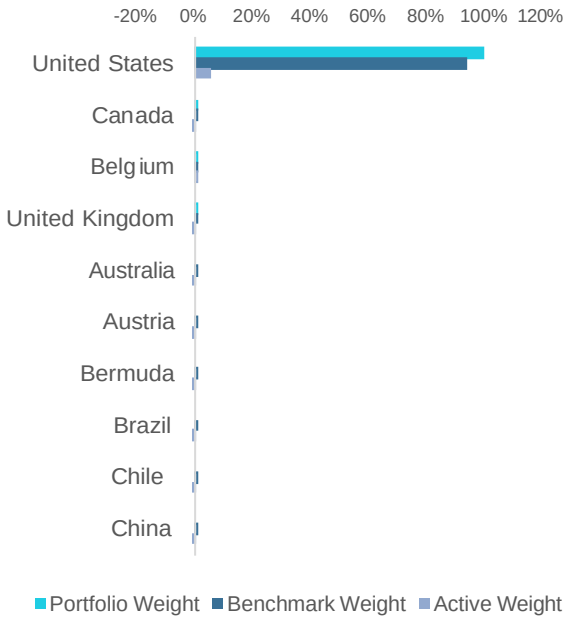
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

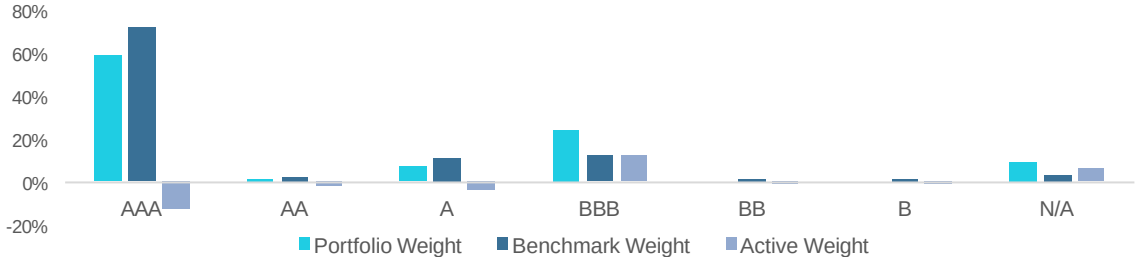
Portfolio Risk Summary

	Value
Total Risk	**6.76**
Benchmark Risk	6.54
Active Risk	0.41
Portfolio Beta	1.03
Cont. to Eff. Duration	6.53
Yield to Worst (%)	4.60
OAS to Swap (bp)	67

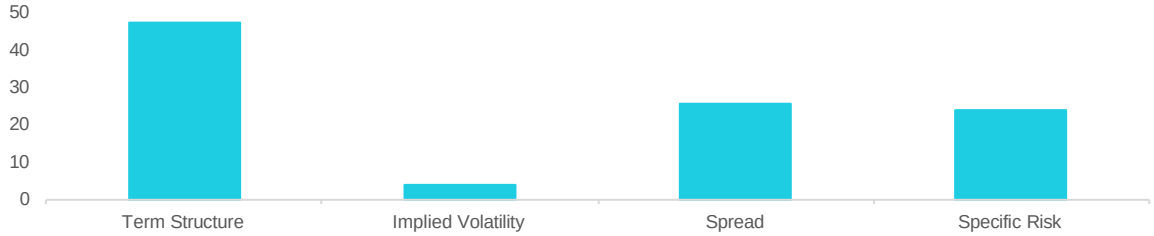
Top Countries by Weight%



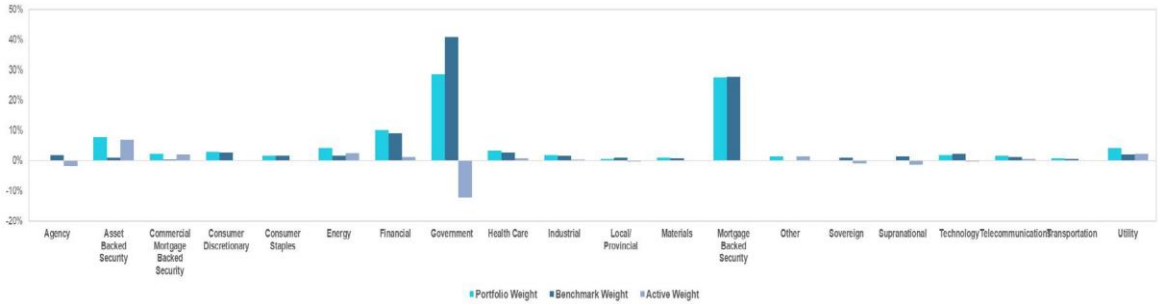
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector



Risk Reduction & Mitigation

Long-term Government Bonds

BlackRock

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Strategy

Seeks investment results that correspond generally to the price and yield performance of long duration U.S. government bonds.

Inception Date: Nov 2021

Portfolio Characteristics

Standard Deviation	15.0%
Benchmark Standard Deviation	15.0%
Sharpe Ratio	-1.93
Information Ratio	-0.19
Beta	1.00
Tracking Error	1.5%

Top Holdings (% of assets)

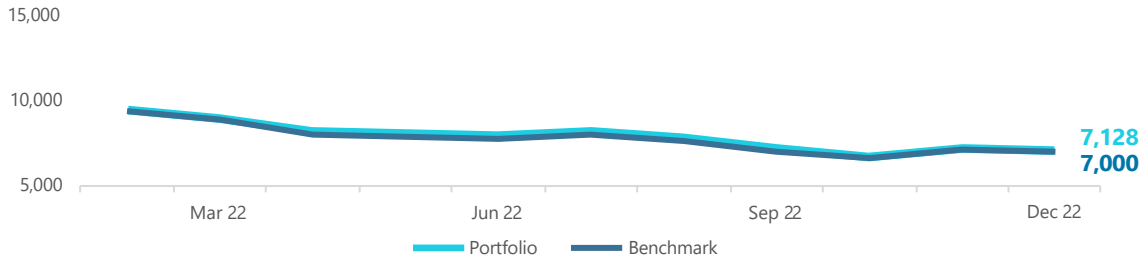
US TREASURY N/B	3.0%
US TREASURY N/B	2.8%
US TREASURY N/B	2.7%
US TREASURY N/B	2.6%
US TREASURY N/B	2.6%
Top 5 Holdings	**13.8%**

Performance (net)[1]

	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year
BlackRock Long Treasury Bonds	**2,856.8**	**-0.6%**	**-28.9%**	**--**	**--**
Bloomberg U.S. Treasury: Long		-0.6%	-29.3%	--	--
RR & M Policy Benchmark		1.1%	-11.0%	-1.9%	--

Universe data: US Fixed Income Pools	QTD	Rank	1 Year	Rank	3 Year	Rank	5 Year	Rank
BlackRock Long Treasury Bonds	**-0.6%**	**94**	**-28.9%**	**92**	**--**	**--**	**--**	**--**
Median	1.7%		-10.8%		--		--	

Growth of $10,000



Top Exposures (% of assets)[2]

[1] Univ erse data is gross-of-fees.
[2] Charts display top exposures and may not add up to 100%.

Risk Reduction & Mitigation Risk Analysis

Long-term Government Bonds

BlackRock

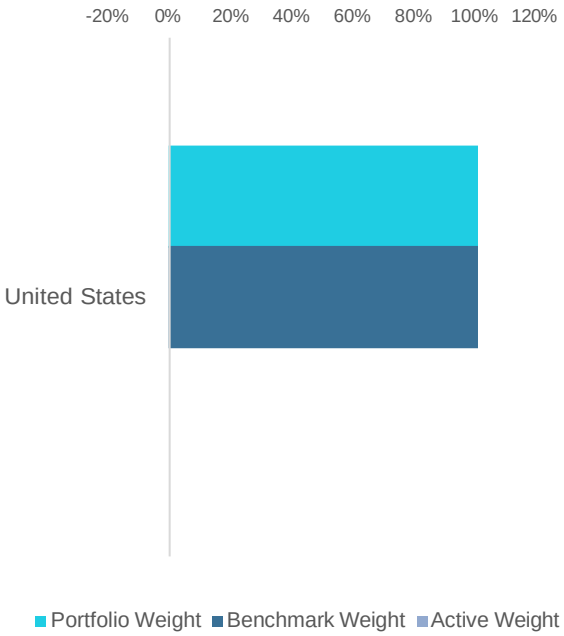
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

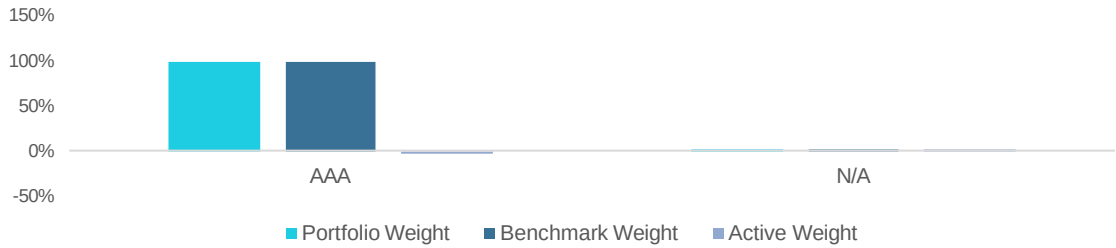
Portfolio Risk Summary

	Value
Total Risk	**14.58**
Benchmark Risk	14.58
Active Risk	0.03
Portfolio Beta	1.00
Cont. to Eff. Duration	16.18
Yield to Worst (%)	4.07
OAS to Swap (bp)	45

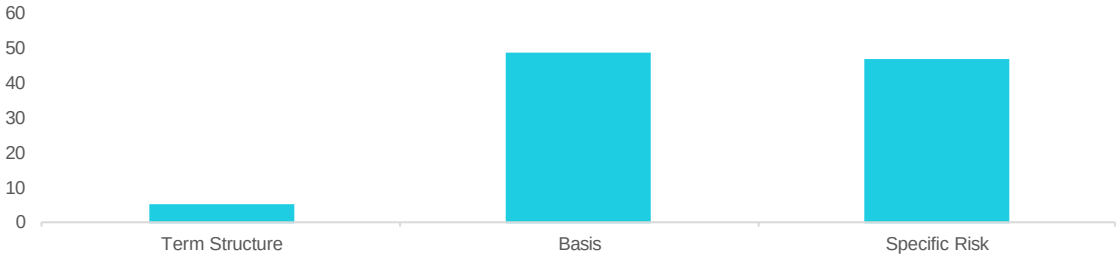
Top Countries by Weight%



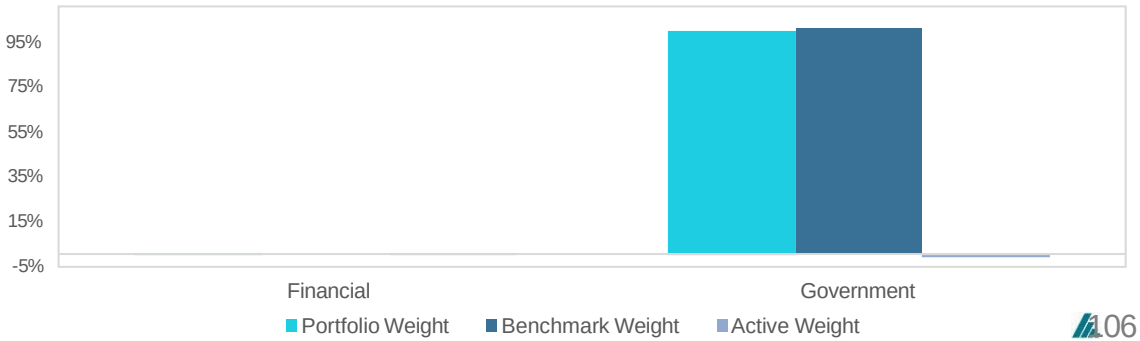
Allocation by Moody's Rating



Active Risk from Common Factors



Portfolio Risk by Bond Sector

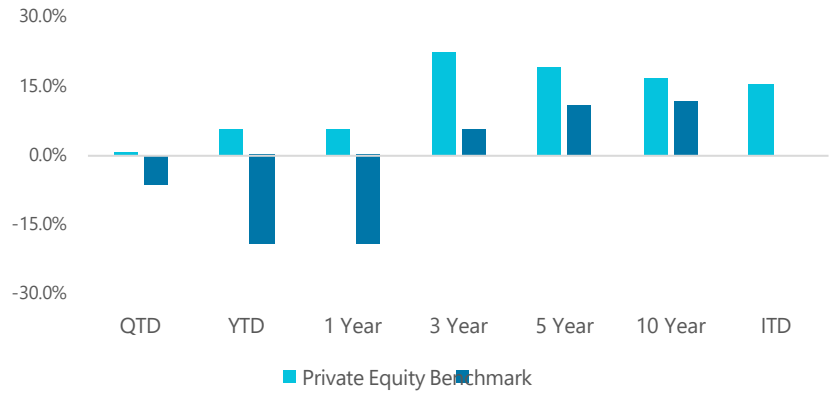


private markets

Summary
Private Equity
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

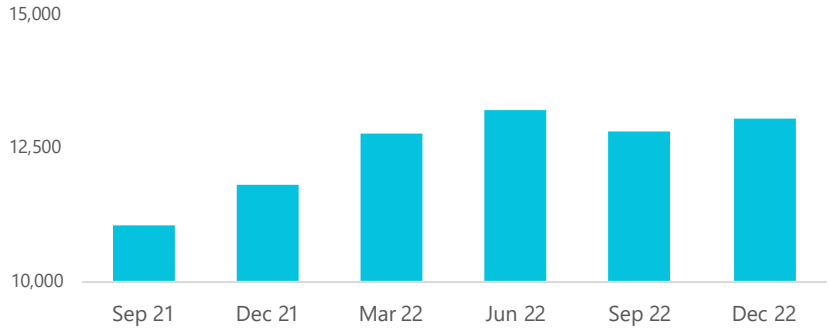
Performance (net)



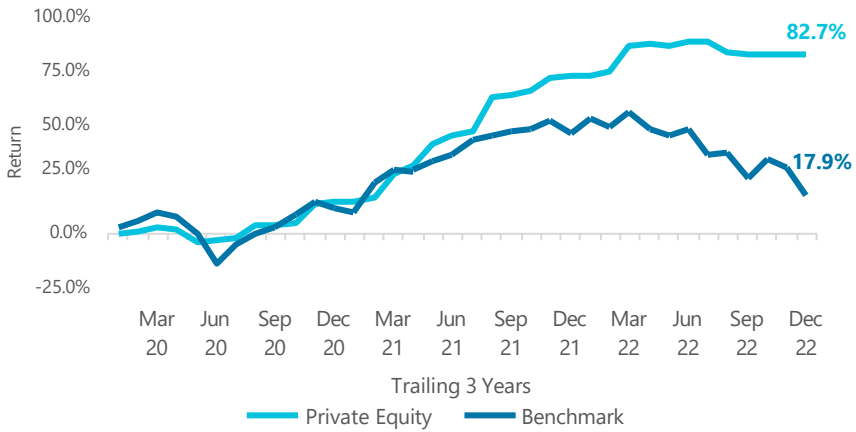
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Private Equity	**0.1%**	**5.8%**	**5.8%**	**22.3%**	**19.2%**	**17.0%**	**15.4%**
Benchmark	-6.1%	-19.3%	-19.3%	5.6%	10.7%	12.0%	--
Excess	6.2%	25.1%	25.1%	16.6%	8.5%	5.0%	--

Asset Growth (mm)

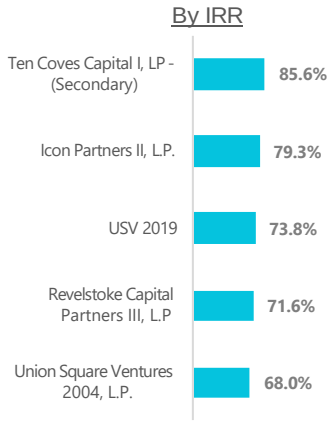
	QTD	1 Year	3 Year
Beginning Market Value	12,821	11,793	6,563
Net Cash Flow	193	559	709
Gain/Loss	16	678	5,759
Ending Market Value	**13,030**	**13,030**	**13,030**

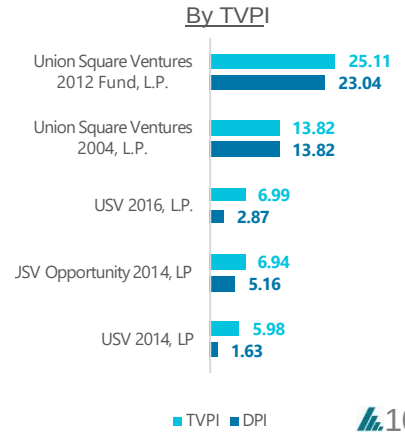


Cumulative Return



Top Performing Investments (since inception)





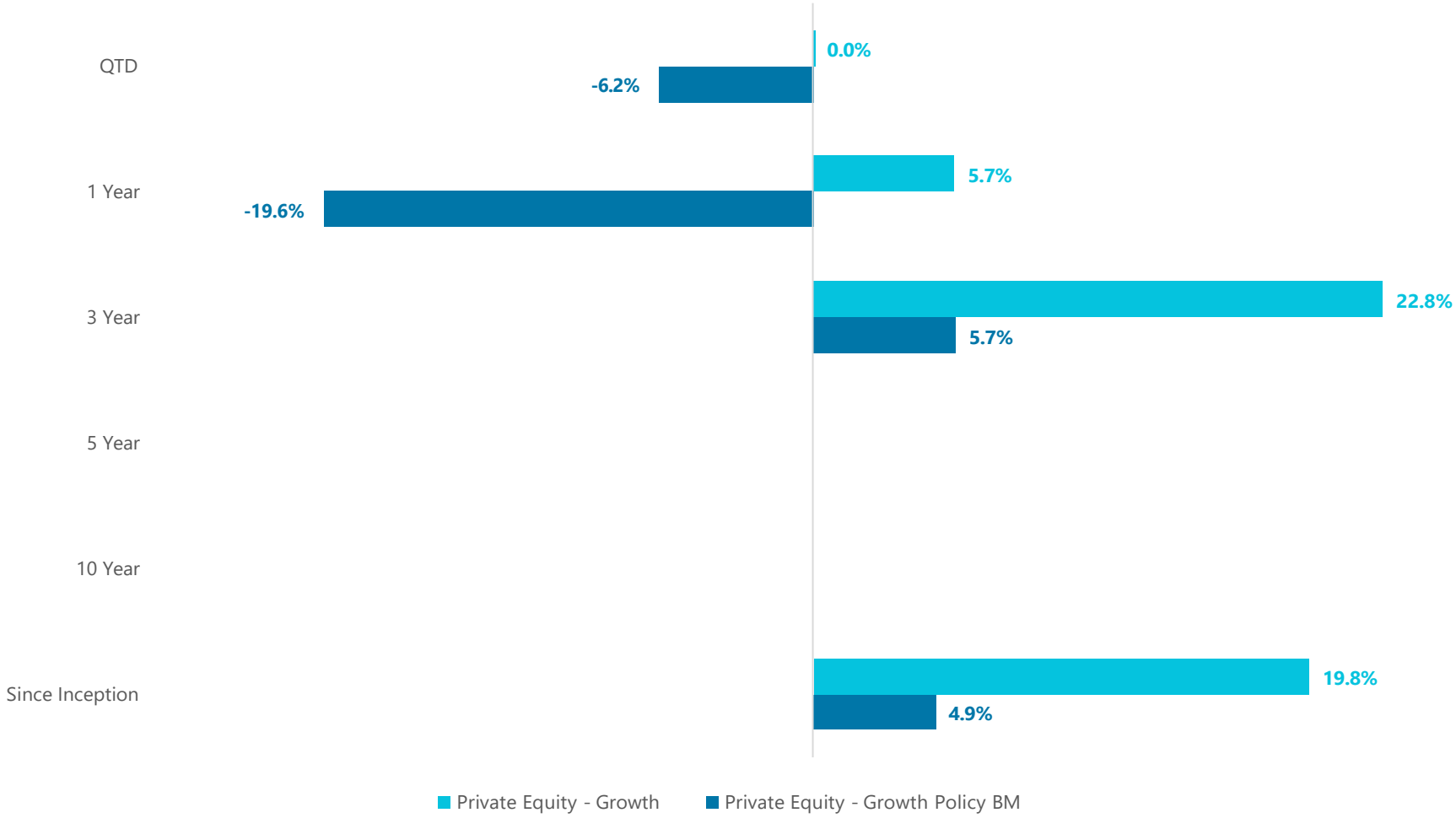
Historical Returns

Private Equity – Growth

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Time-Weighted Returns (net)[1]



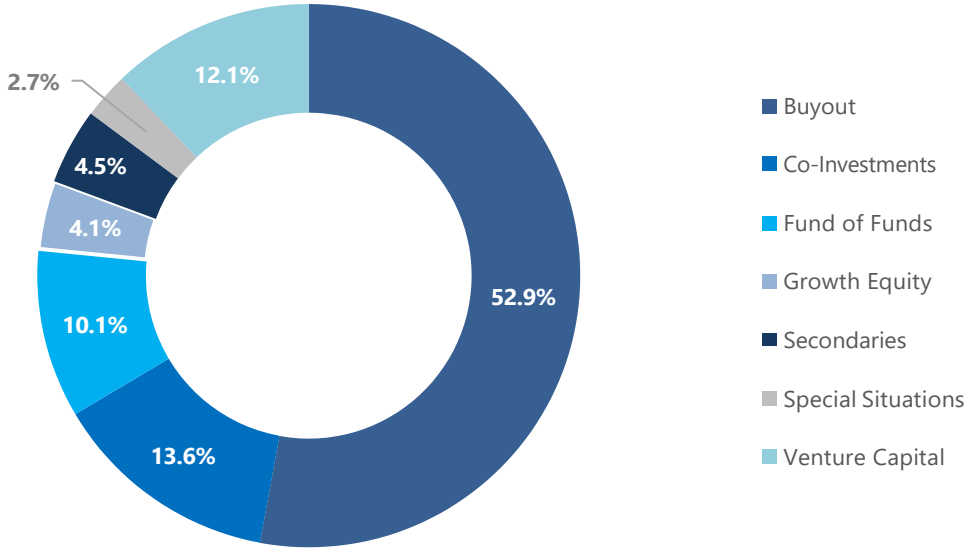
Performance by Strategy

Private Equity – Growth

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Strategy[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Buyout	203	14,428.5	12,850.1	14,250.3	7,161.5	21,411.8	8,561.7	1.11x	1.67x	14.0%	1.58
Co-Investments	10	1,356.4	2,113.2	1,011.9	1,840.7	2,852.6	739.4	0.48x	1.35x	18.1%	1.31
Fund of Funds	12	1,440.9	1,330.1	1,533.1	1,367.1	2,900.2	1,570.1	1.15x	2.18x	14.7%	1.62
Growth Equity	23	1,346.4	1,116.4	1,505.0	552.7	2,057.7	941.3	1.35x	1.84x	86.9%	1.70
Secondaries	21	959.0	771.0	366.7	613.7	980.3	209.3	0.48x	1.27x	17.4%	1.28
Special Situations	22	1,170.6	1,014.6	1,072.5	370.9	1,443.4	428.8	1.06x	1.42x	9.3%	1.16
Venture Capital	105	2,253.4	1,934.9	2,584.3	1,635.9	4,220.2	2,285.3	1.34x	2.18x	21.8%	2.04
Total Private Equity - Growth	**396**	**22,955.1**	**21,130.3**	**22,323.7**	**13,542.4**	**35,866.2**	**14,735.9**	**1.06x**	**1.70x**	**16.4%**	**1.69**

[1] Based on best available cash flow adjusted market values.
[2] Investment counts for Co-Investments and Fund of Funds do not include underlying funds.

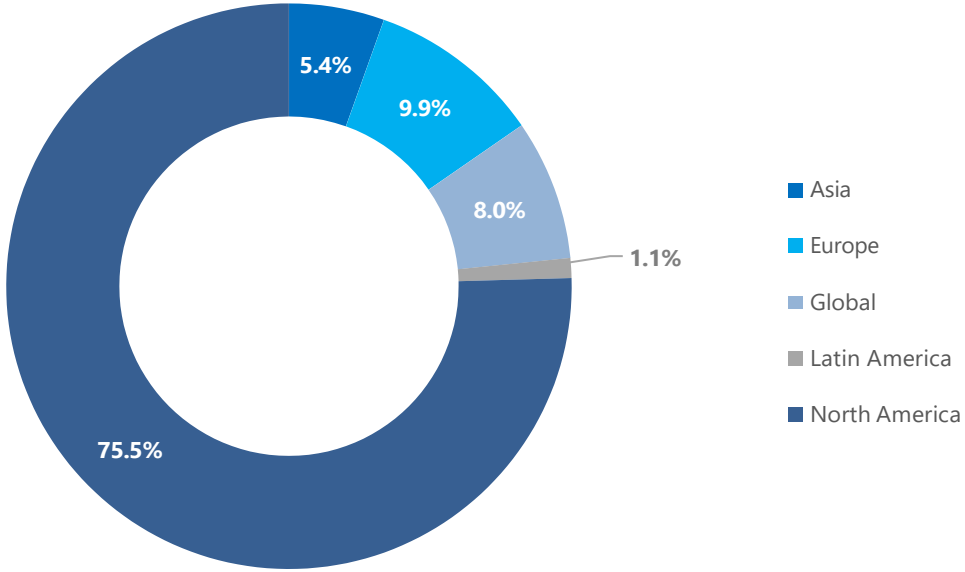
Performance by Geography

Private Equity – Growth

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Geography[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Asia	14	826.0	693.7	441.5	737.7	1,179.2	485.4	0.64x	1.70x	14.7%	1.33
Europe	36	2,545.9	2,397.5	2,320.1	1,343.1	3,663.2	1,265.7	0.97x	1.53x	15.7%	1.35
Global	27	2,162.8	1,300.0	809.0	1,088.3	1,897.2	597.3	0.62x	1.46x	15.8%	1.34
Latin America	2	200.0	183.9	51.5	153.9	205.4	21.5	0.28x	1.12x	4.1%	0.95
North America	317	17,220.4	16,555.2	18,701.7	10,219.4	28,921.1	12,365.9	1.13x	1.75x	16.4%	1.73
Total Private Equity - Growth	**396**	**22,955.1**	**21,130.3**	**22,323.7**	**13,542.4**	**35,866.2**	**14,735.9**	**1.06x**	**1.70x**	**16.4%**	**1.69**

[1] Based on best available cash flow adjusted market values.
[2] Investment counts for Co-Investments and Fund of Funds do not include underlying funds.

Performance by Vintage Year

Private Equity – Growth

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

By Vintage Year[1,2,3]

	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME	Quartile Ranking
1986	3	80.0	80.0	267.5	0.0	267.5	187.5	3.34x	3.34x	15.7%	--	1st
1987	1	25.0	25.0	40.3	0.0	40.3	15.3	1.61x	1.61x	7.3%	--	3rd
1988	2	200.0	216.6	466.9	0.0	466.9	250.3	2.16x	2.16x	15.5%	89.91	2nd
1989	0	--	--	--	--	--	--	--	--	--	--	N/A
1990	1	7.5	7.5	16.7	0.0	16.7	9.2	2.22x	2.22x	13.0%	9.13	3rd
1991	0	--	--	--	--	--	--	--	--	--	--	N/A
1992	10	116.0	111.0	242.5	0.0	242.5	131.6	2.19x	2.19x	29.1%	3.78	1st
1993	8	68.0	64.8	239.5	0.0	239.5	174.7	3.70x	3.70x	39.7%	3.22	1st
1994	5	56.9	58.8	237.6	0.0	237.6	178.8	4.04x	4.04x	54.1%	2.82	1st
1995	7	100.5	102.3	362.6	0.0	362.6	260.2	3.54x	3.54x	43.2%	2.58	1st
1996	12	222.9	225.2	608.8	0.0	608.8	383.6	2.70x	2.70x	37.5%	2.15	1st
1997	11	397.5	410.4	606.4	0.0	606.4	196.0	1.48x	1.48x	7.7%	1.20	3rd
1998	22	644.4	655.2	945.3	0.7	946.0	290.7	1.44x	1.44x	7.3%	1.19	2nd
1999	21	362.7	369.7	436.6	0.1	436.7	67.0	1.18x	1.18x	3.4%	0.96	2nd
2000	25	375.2	387.3	575.0	0.2	575.2	187.9	1.48x	1.49x	8.7%	1.07	2nd
2001	15	409.7	442.6	834.9	3.0	838.0	395.4	1.89x	1.89x	21.7%	1.38	1st
2002	8	220.4	230.3	537.4	0.0	537.4	307.1	2.33x	2.33x	19.0%	1.64	2nd
2003	8	309.1	339.2	701.6	0.3	701.9	362.7	2.07x	2.07x	21.3%	1.60	1st
2004	7	342.1	392.2	744.2	1.9	746.0	353.9	1.90x	1.90x	19.5%	1.58	1st
2005	15	503.2	506.2	1,039.9	2.6	1,042.5	536.3	2.05x	2.06x	13.4%	1.64	1st
2006	28	1,513.9	1,607.3	2,559.4	44.0	2,603.3	996.0	1.59x	1.62x	8.9%	1.25	2nd
2007	11	516.6	461.8	782.7	27.4	810.2	348.3	1.69x	1.75x	11.4%	1.19	2nd
2008	10	637.8	700.4	1,231.1	28.7	1,259.8	559.4	1.76x	1.80x	13.2%	1.21	2nd
2009	0	--	--	--	--	--	--	--	--	--	--	N/A
2010	2	450.0	472.2	689.1	293.4	982.5	510.3	1.46x	2.08x	16.0%	1.47	2nd
2011	7	391.0	414.2	802.9	154.0	956.9	542.7	1.94x	2.31x	18.5%	1.49	2nd
2012	7	435.0	581.6	1,062.2	118.8	1,181.0	599.4	1.83x	2.03x	21.9%	1.69	2nd
2013	10	895.0	973.2	1,153.1	578.4	1,731.5	758.3	1.18x	1.78x	14.9%	1.32	2nd
2014	11	1,247.5	1,382.1	1,465.4	1,207.6	2,673.0	1,290.9	1.06x	1.93x	17.5%	1.46	2nd
2015	10	1,087.0	1,235.2	1,291.4	1,530.8	2,822.2	1,587.1	1.05x	2.28x	23.9%	1.80	2nd
2016	12	1,127.2	1,284.5	1,072.3	1,183.7	2,255.9	971.4	0.83x	1.76x	17.7%	1.37	3rd
2017	8	594.0	575.5	365.6	706.8	1,072.4	496.9	0.64x	1.86x	21.6%	1.52	3rd
2018	9	1,265.5	1,146.7	350.4	1,399.2	1,749.6	603.0	0.31x	1.53x	20.9%	1.43	3rd
2019	30	2,686.5	3,105.7	443.8	3,639.6	4,083.4	977.7	0.14x	1.31x	20.1%	1.26	3rd
2020	10	1,020.0	700.2	99.9	750.5	850.5	150.3	0.14x	1.21x	16.2%	1.32	3rd
2021	30	2,845.7	1,333.6	50.9	1,348.0	1,398.9	65.3	0.04x	1.05x	5.6%	1.15	2nd
2022	20	1,801.1	532.0	0.0	522.8	522.8	(9.2)	0.00x	0.98x	-3.6%	1.02	2nd
Total Private Equity - Growth	**396**	**22,955.1**	**21,130.3**	**22,323.7**	**13,542.4**	**35,866.2**	**14,735.9**	**1.06x**	**1.70x**	**16.4%**	**1.69**	

1. Based on best available cash flow adjusted market values.
2. Investment counts for Co-Investments and Fund of Funds do not include underlying funds.
3. Benchmark data used is latest available by Burgiss Private IQ. Quartile rankings are reported as not applicable (N/A) if commitment date is within 3 years of reporting date or if no commitments were made for the respective vintage year.

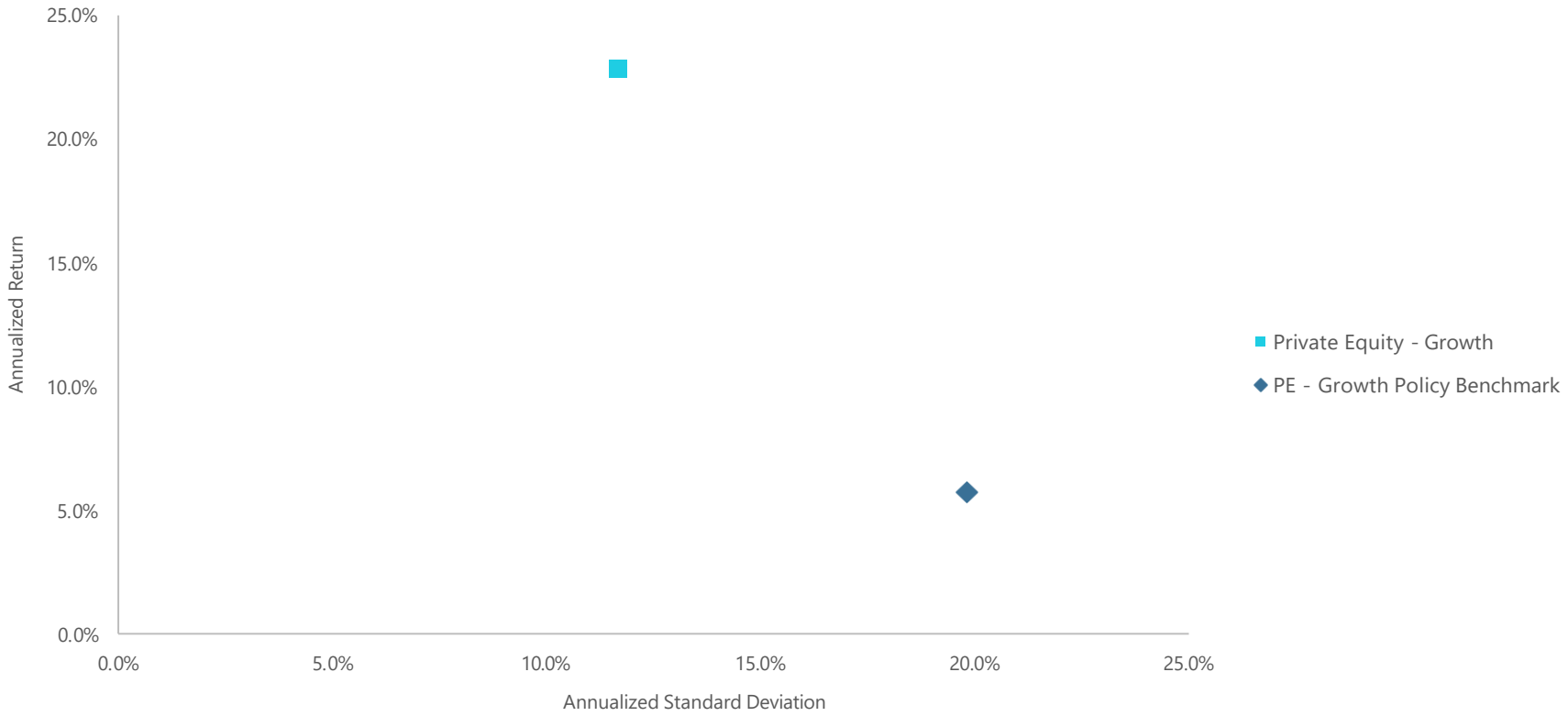
Risk vs. Return

Private Equity – Growth

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Private Equity - Growth	**22.8%**	**11.7%**				
PE - Growth Policy Benchmark	5.7%	19.8%	1.76	0.74	0.23	18.8%

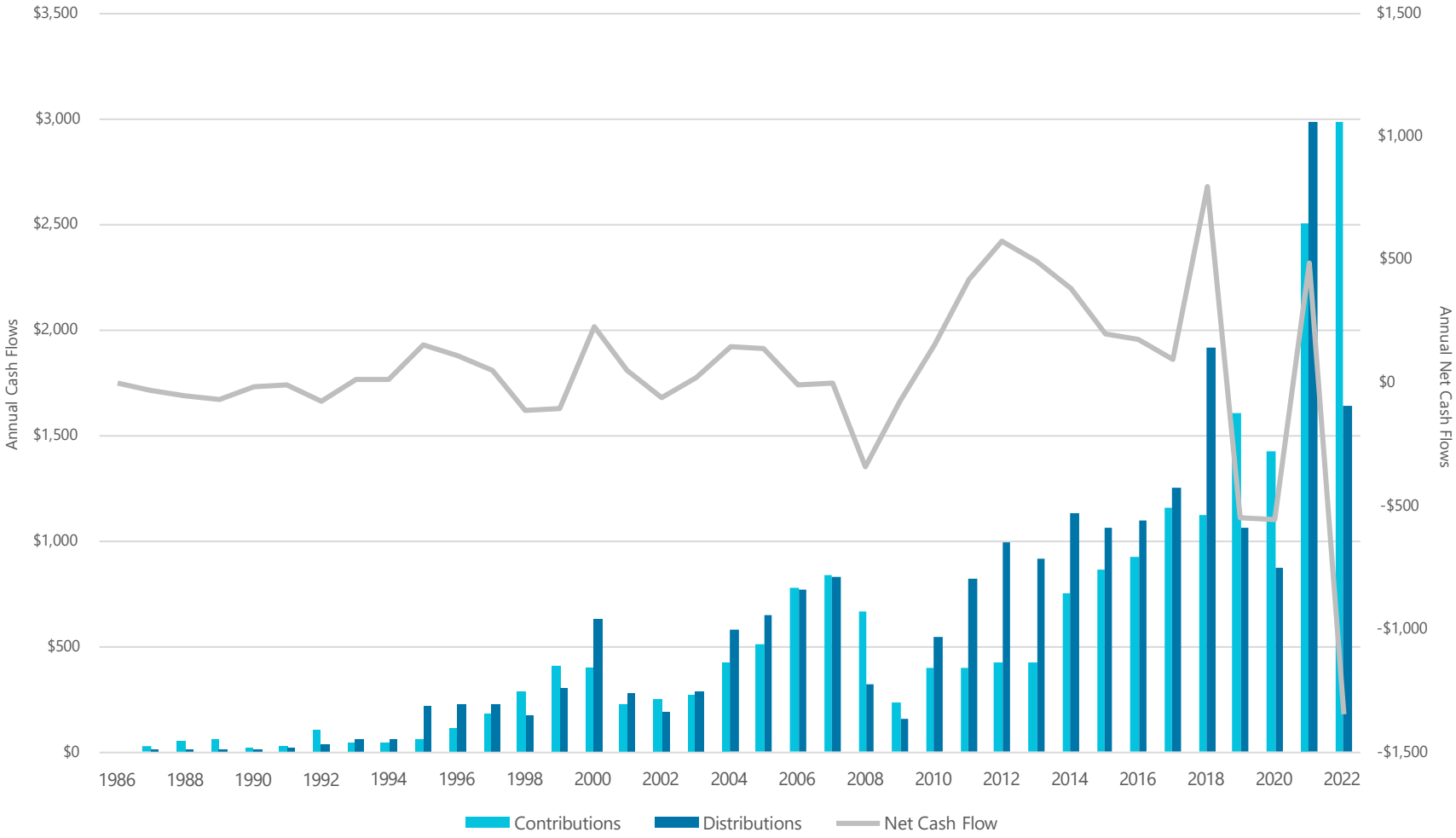
Annual Cash Flow Activity

Private Equity

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Year (mm)



Summary

Real Estate

for the quarter ended December 31, 2022

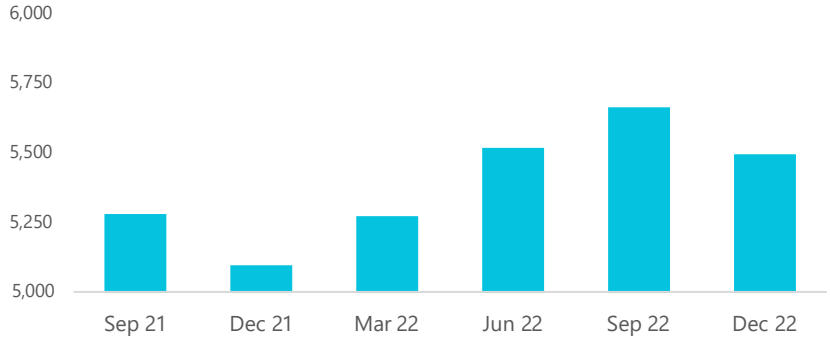
Los Angeles County Employees Retirement Association

Performance (net)

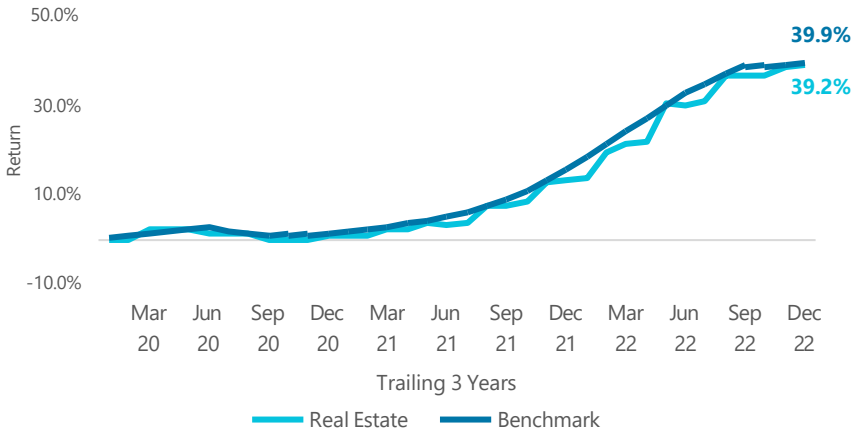
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Real Estate	**1.7%**	**22.8%**	**22.8%**	**11.7%**	**9.5%**	**9.5%**	**8.2%**
Benchmark	0.4%	20.9%	20.9%	11.9%	9.8%	10.3%	--
Excess	1.3%	2.0%	2.0%	-0.2%	-0.2%	-0.8%	--

Asset Growth (mm)

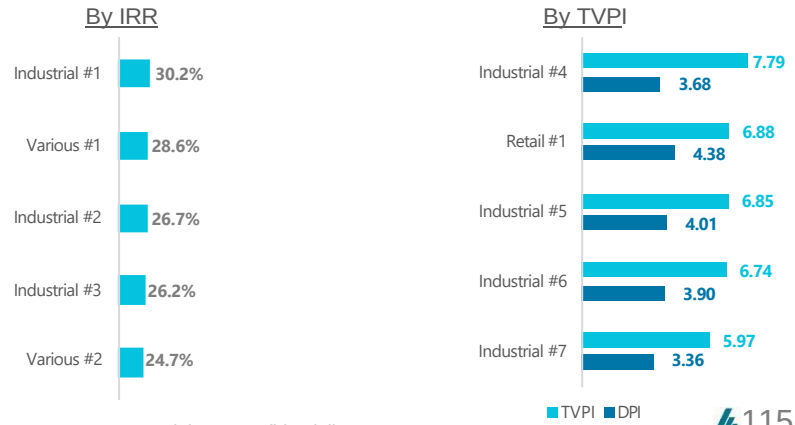
	QTD	1 Year	3 Year
Beginning Market Value	5,660	5,098	6,126
Net Cash Flow	-264	-716	-2,419
Gain/Loss	98	1,111	1,787
Ending Market Value	**5,493**	**5,493**	**5,493**



Cumulative Return



Top Performing Investments (since inception)[1]



[1] Property names removed due to confidentiality reasons.

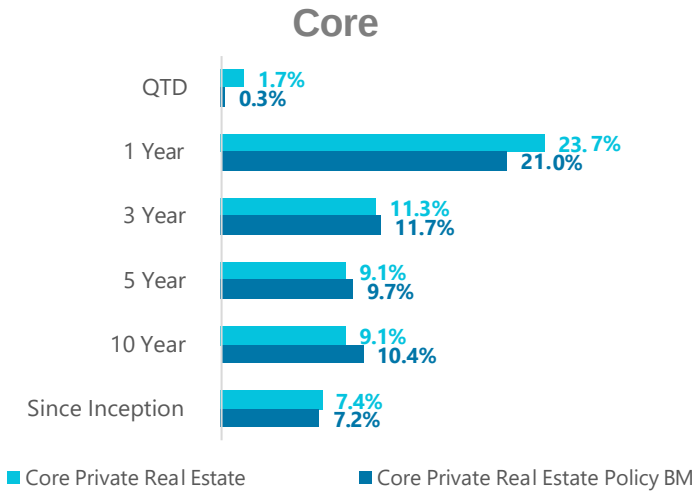
Historical Returns

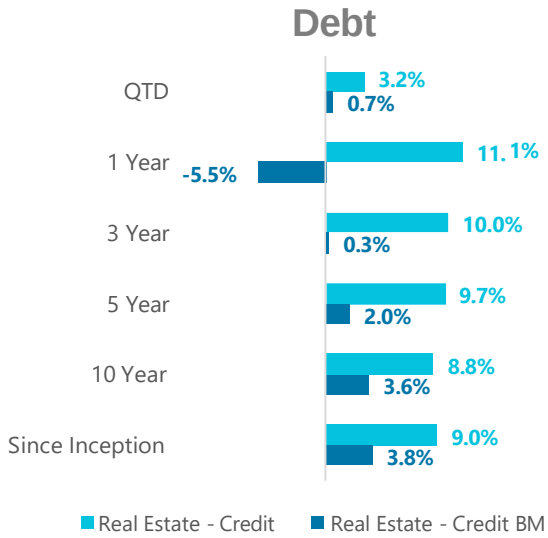
Real Estate

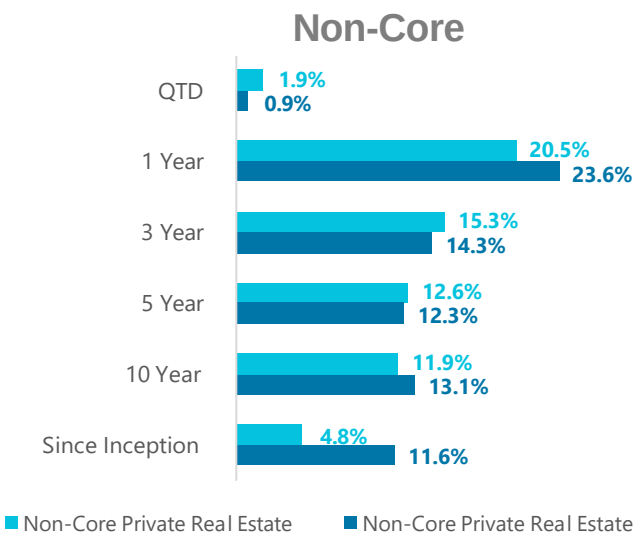
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Time-Weighted Returns (net)







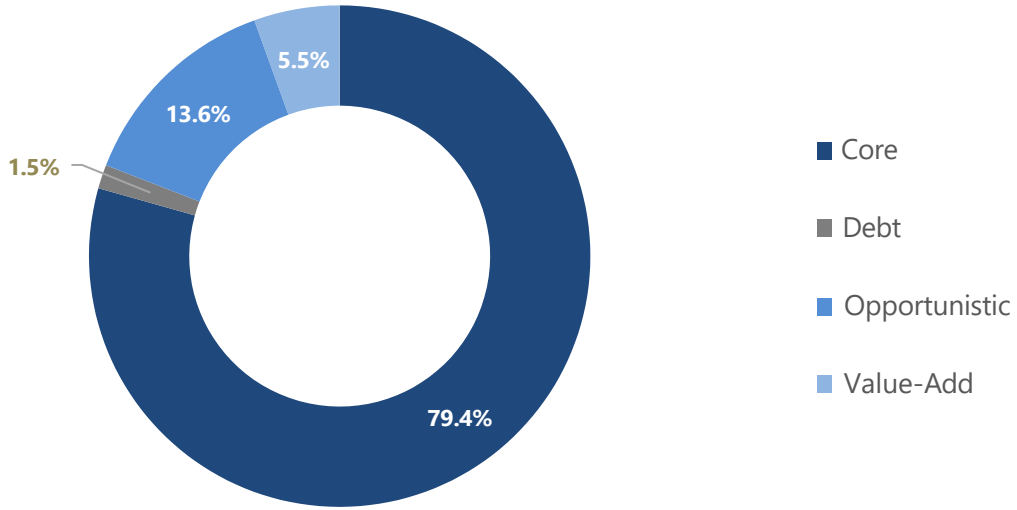
Performance by Strategy

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Strategy[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Core	79	431.7	7,409.9	6,794.4	4,352.3	11,146.7	3,736.8	0.92x	1.50x	8.9%	1.19
Debt	7	0.0	157.0	109.7	84.5	194.2	37.2	0.70x	1.24x	8.3%	1.17
Opportunistic	16	1,096.8	1,118.1	773.6	744.0	1,517.6	399.4	0.69x	1.36x	6.9%	1.02
Value-Add	12	468.2	602.5	221.3	303.3	524.6	(77.9)	0.37x	0.87x	-3.2%	0.63
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**

[1] Based on best available cash flow adjusted market values and includes only active investments and sold assets with balance sheet residuals.
[2] Commitment amounts reflect only commingled fund investments.

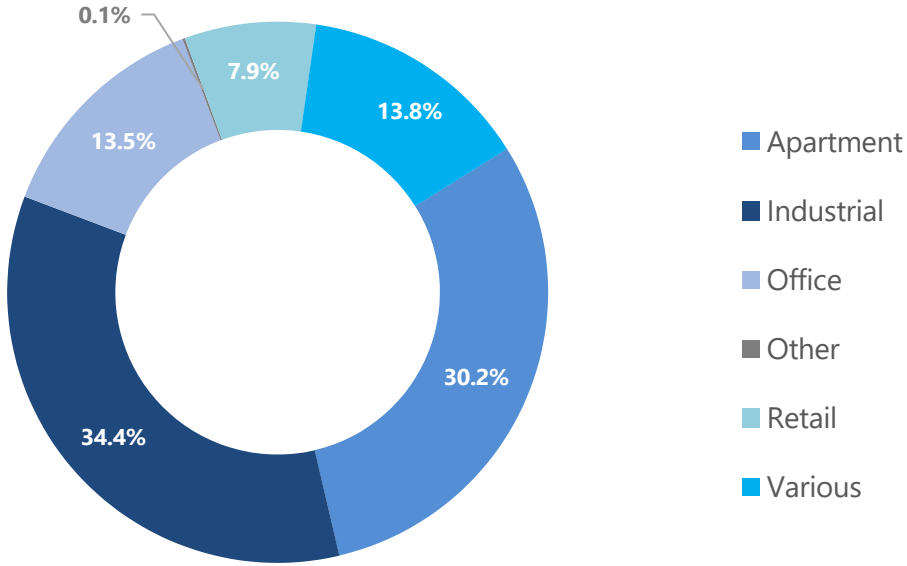
Performance by Property Type

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Property Type[1,2,3]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Apartment	36	384.0	3,082.3	2,558.7	1,657.9	4,216.6	1,134.2	0.83x	1.37x	8.5%	1.17
Industrial	21	231.7	1,692.9	1,547.9	1,887.1	3,434.9	1,742.1	0.91x	2.03x	13.5%	1.75
Office	19	0.0	2,006.0	1,884.9	741.9	2,626.9	620.9	0.94x	1.31x	6.3%	1.09
Other	4	100.0	170.6	199.0	7.8	206.8	36.2	1.17x	1.21x	4.2%	0.76
Retail	15	0.0	1,277.3	1,269.1	431.2	1,700.3	423.0	0.99x	1.33x	6.5%	0.84
Various	19	1,281.0	1,058.5	439.4	758.2	1,197.5	139.1	0.42x	1.13x	2.6%	0.83
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**

[1] Based on best available cash flow adjusted market values and includes only active investments and sold assets with balance sheet residuals.
[2] Commitment amounts reflect only commingled fund investments.
[3] Various refers to commingled fund investments with more than one property type; Other refers to hotel and fund level market values for the debt program.

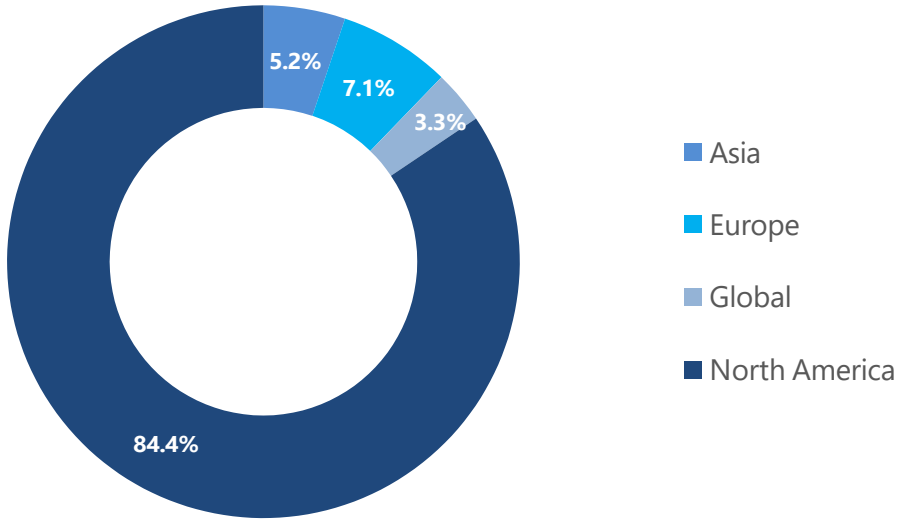
Performance by Geography

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Geography (non-US)[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Asia	4	300.0	304.4	112.5	283.0	395.5	91.1	0.37x	1.30x	6.0%	1.09
Europe	10	469.0	614.5	364.3	387.6	752.0	137.5	0.59x	1.22x	4.8%	0.91
Global	5	468.8	267.1	212.2	183.2	395.4	128.3	0.79x	1.48x	12.2%	1.13
North America	95	759.0	8,101.5	7,209.8	4,630.3	11,840.2	3,738.7	0.89x	1.46x	8.4%	1.15
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**

[1] Based on best available cash flow adjusted market values and includes only active investments and sold assets with balance sheet residuals.
[2] Commitment amounts reflect only commingled fund investments.

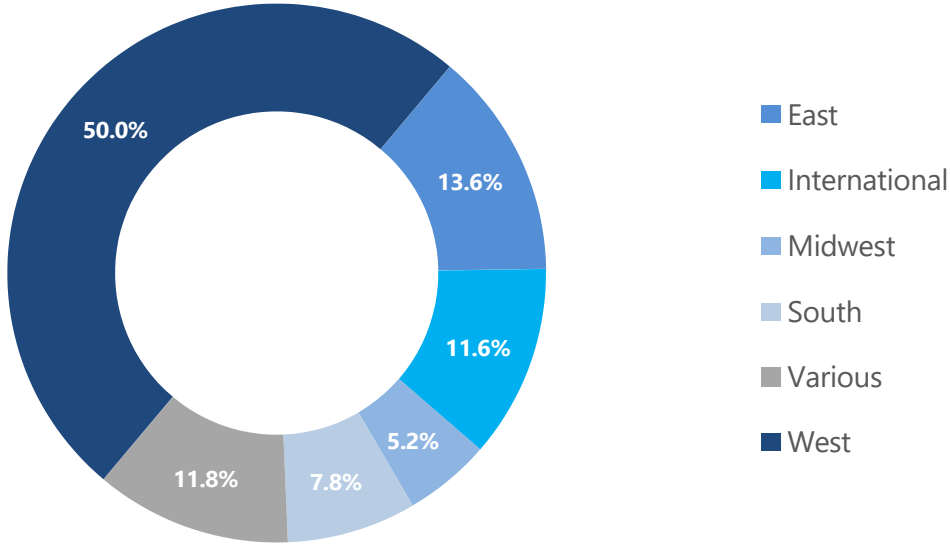
Performance by Geography

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Geography (US NCREIF)[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
East	26	0.0	2,472.7	2,284.4	748.0	3,032.4	559.6	0.92x	1.23x	5.9%	0.90
International	13	715.6	878.6	476.9	636.4	1,113.3	234.7	0.54x	1.27x	5.4%	0.97
Midwest	10	0.0	592.0	491.7	286.1	777.8	185.8	0.83x	1.31x	5.7%	0.88
South	11	0.0	1,190.5	1,252.2	426.4	1,678.6	488.1	1.05x	1.41x	8.7%	1.03
Various	11	897.1	686.8	347.0	645.5	992.5	305.7	0.51x	1.45x	7.2%	1.04
West	43	384.0	3,466.9	3,046.8	2,741.7	5,788.6	2,321.6	0.88x	1.67x	9.8%	1.47
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**

[1] Based on best available cash flow adjusted market values and includes only active investments and sold assets with balance sheet residuals.
[2] Commitment amounts reflect only commingled fund investments.

Performance by Vintage Year

Real Estate

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

By Vintage Year[1,2,3]

	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME	Quartile Ranking
1990	1	0.0	249.9	302.5	124.7	427.2	177.3	1.21x	1.71x	6.4%	4.64	N/A
1991	3	0.0	32.9	124.2	91.3	215.5	182.6	3.78x	6.56x	12.3%	13.81	N/A
1992	0	0.0	--	--	--	--	--	--	--	--	--	N/A
1993	0	0.0	--	--	--	--	--	--	--	--	--	N/A
1994	1	0.0	15.4	67.4	38.4	105.9	90.5	4.38x	6.88x	12.9%	1.47	N/A
1995	1	0.0	67.0	111.4	102.4	213.8	146.7	1.66x	3.19x	11.7%	1.24	N/A
1996	1	0.0	24.0	38.8	32.6	71.4	47.4	1.62x	2.97x	7.7%	0.82	N/A
1997	1	0.0	18.4	67.6	75.4	143.0	124.7	3.68x	7.79x	15.9%	2.16	N/A
1998	1	0.0	48.9	66.3	49.1	115.4	66.6	1.36x	2.36x	6.4%	0.71	N/A
1999	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2000	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2001	1	0.0	143.5	77.3	93.4	170.6	27.2	0.54x	1.19x	4.6%	0.74	N/A
2002	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2003	1	0.0	142.8	131.4	69.1	200.6	57.8	0.92x	1.40x	4.4%	0.71	N/A
2004	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2005	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2006	0	0.0	--	--	--	--	--	--	--	--	--	N/A
2007	3	36.6	454.6	401.9	1.2	403.1	(51.5)	0.88x	0.89x	-5.4%	0.54	4th
2008	1	150.0	150.0	96.0	0.2	96.2	(53.8)	0.64x	0.64x	-5.7%	0.34	4th
2009	1	18.5	22.3	28.5	0.4	28.8	6.5	1.27x	1.29x	8.2%	0.84	3rd
2010	1	100.0	97.1	152.0	6.3	158.3	61.2	1.57x	1.63x	9.7%	0.92	3rd
2011	4	17.1	217.7	116.0	26.0	142.0	(75.7)	0.53x	0.65x	-39.0%	0.30	4th
2012	3	134.0	438.8	187.2	174.3	361.5	(77.3)	0.43x	0.82x	-4.7%	0.65	4th
2013	7	100.0	471.3	581.8	118.2	700.0	228.7	1.23x	1.49x	9.0%	1.03	3rd
2014	15	260.1	990.8	810.8	699.3	1,510.1	519.3	0.82x	1.52x	9.0%	1.20	3rd
2015	9	0.0	953.6	750.0	782.8	1,532.8	579.3	0.79x	1.61x	13.5%	1.51	2nd
2016	7	150.0	484.6	218.5	571.8	790.3	305.7	0.45x	1.63x	13.8%	1.47	2nd
2017	12	178.4	1,341.0	917.7	903.5	1,821.2	480.1	0.68x	1.36x	11.1%	1.24	3rd
2018	10	150.0	377.7	190.7	275.4	466.1	88.4	0.50x	1.23x	8.3%	1.15	4th
2019	25	412.1	2,399.0	2,376.8	1,166.9	3,543.7	1,144.7	0.99x	1.48x	9.2%	1.06	3rd
2020	2	0.0	71.8	81.2	0.8	82.0	10.2	1.13x	1.14x	5.6%	1.14	3rd
2021	2	180.0	67.7	2.9	73.6	76.5	8.8	0.04x	1.13x	13.3%	1.30	3rd
2022	1	110.0	7.0	0.0	7.0	7.0	0.0	0.00x	1.00x	0.0%	1.00	2nd
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**	

1. Based on best available cash flow adjusted market values.
2. Commitment amounts reflect only commingled fund investments.
3. Benchmark data used is latest available by Burgiss Private IQ. Quartile rankings exclude IMAs and Core Funds.

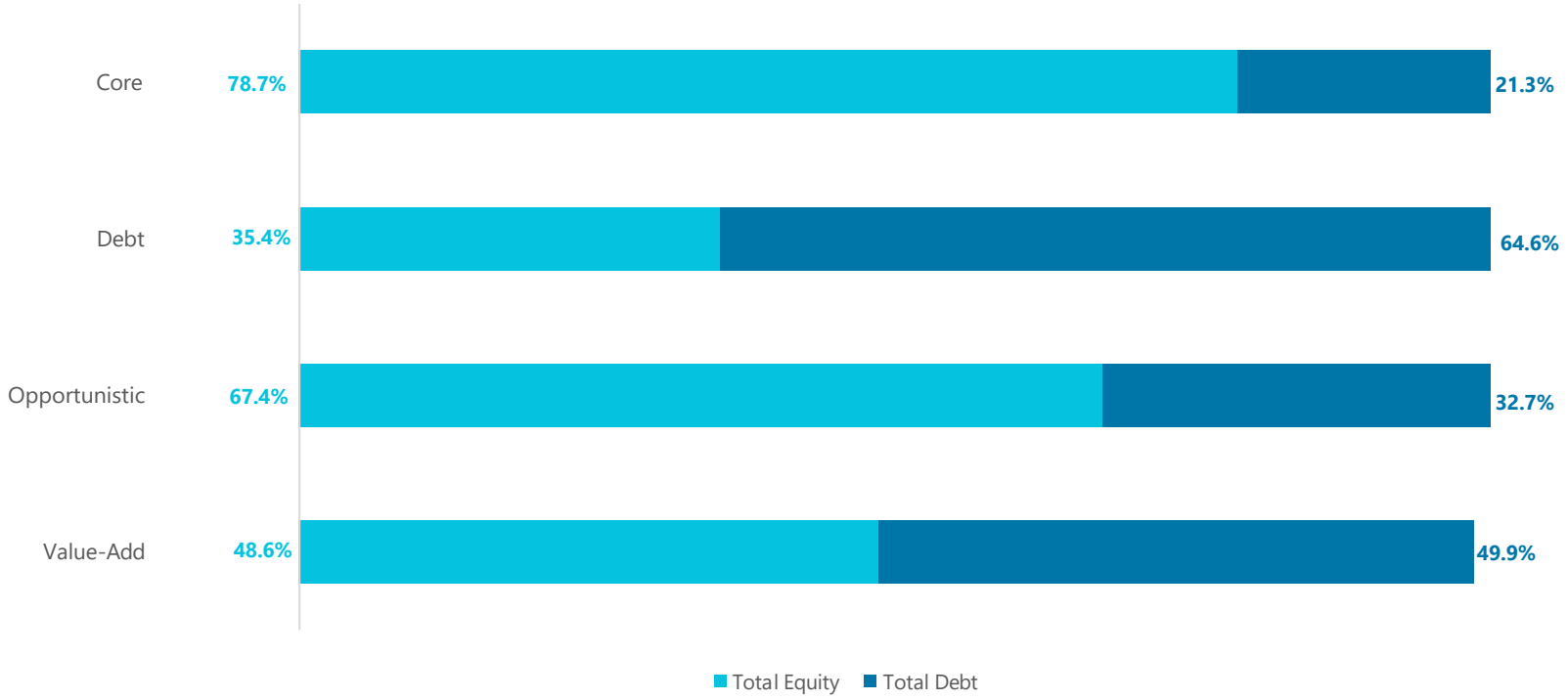
Leverage Exposure

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Leverage Exposure[1,2]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / (Loss) (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME	Total Debt-Fund Level (mm)	Total Equity-Fund Level (mm)	Total Debt-Fund Level (%)	Total Equity-Fund Level (%)
Core	79	431.7	7,409.9	6,794.4	4,352.3	11,146.7	3,736.8	0.92x	1.50x	8.9%	1.19	7,556.4	27,927.2	21.3%	78.7%
Debt	7	0.0	157.0	109.7	84.5	194.2	37.2	0.70x	1.24x	8.3%	1.17	165.8	90.7	64.6%	35.4%
Opportunistic	16	1,096.8	1,118.1	773.6	744.0	1,517.6	399.4	0.69x	1.36x	6.9%	1.02	5,748.1	11,852.1	32.7%	67.4%
Value-Add	12	468.2	602.5	221.3	303.3	524.6	(77.9)	0.37x	0.87x	-3.2%	0.63	74,261.5	72,286.2	49.9%	48.6%
Total Real Estate	**114**	**1,996.7**	**9,287.5**	**7,898.9**	**5,484.1**	**13,383.0**	**4,095.5**	**0.85x**	**1.44x**	**8.3%**	**1.14**	**87,731.7**	**112,156.3**	**43.4%**	**55.5%**

[1] Based on best available cash flow adjusted market values and includes only active investments and sold assets with balance sheet residuals.
[2] Commitment amounts reflect only commingled fund investments.

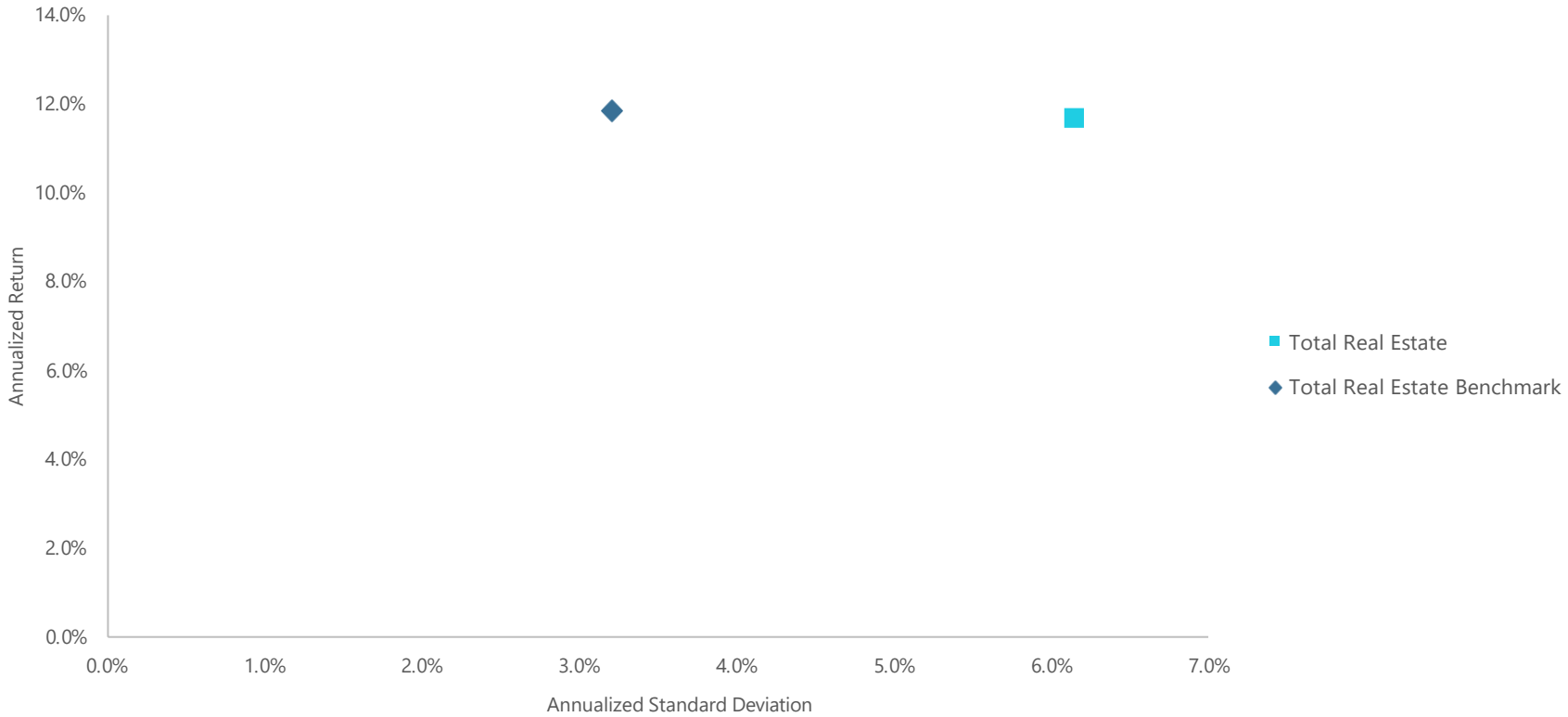
Risk vs. Return

Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Total Real Estate	**11.7%**	**6.1%**				
Total Real Estate Benchmark	11.9%	3.2%	1.72	(0.04)	0.95	18.3%

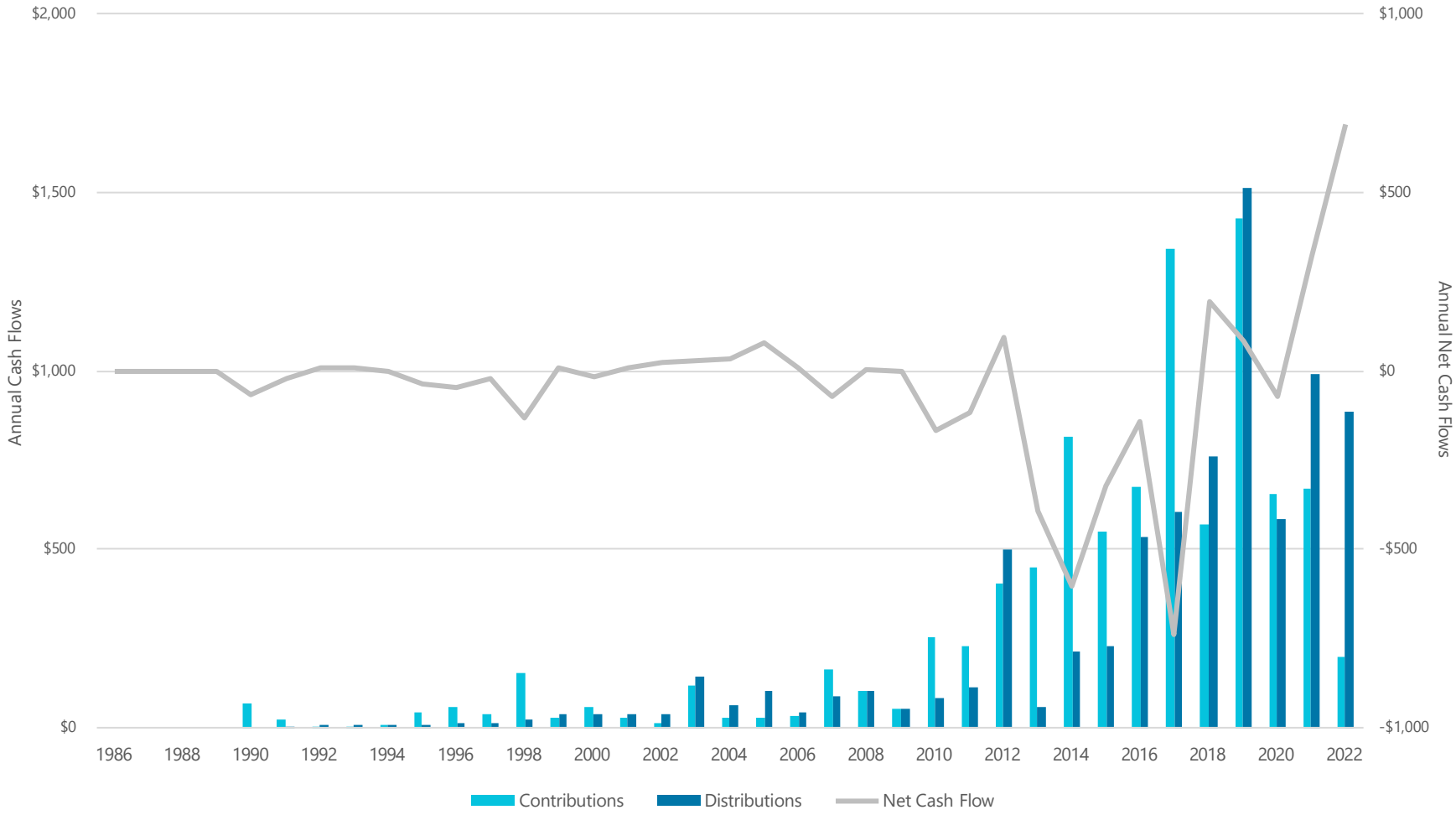
Annual Cash Flow Activity

Real Estate

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

By Year (mm)



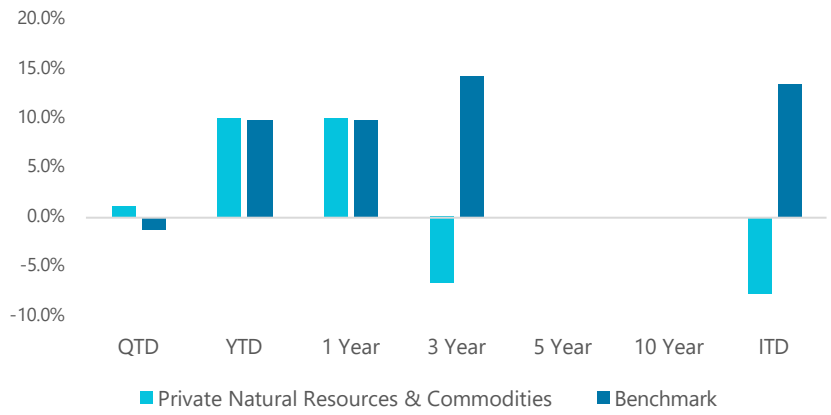
Summary

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

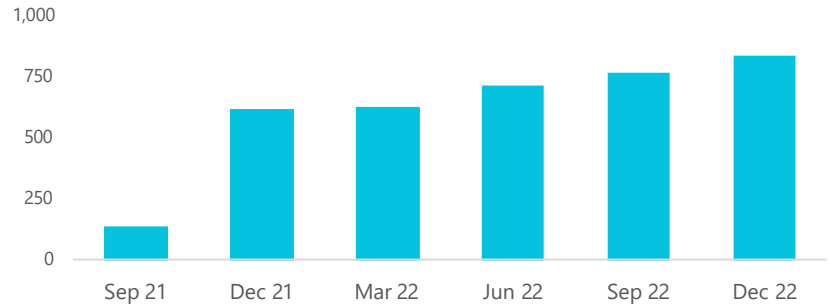
Performance (net)[1]



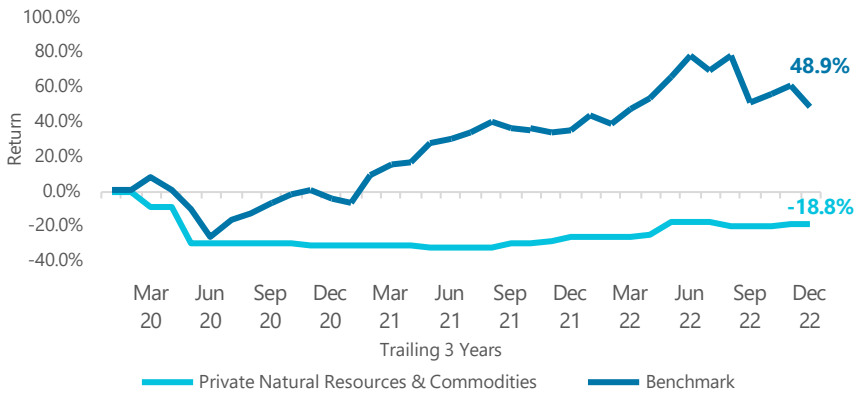
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Private Natural Resources & Commodities	**1.0%**	**10.0%**	**10.0%**	**-6.7%**	**--**	**--**	**-7.8%**
Benchmark	-1.3%	9.7%	9.7%	14.2%	--	--	13.4%
Excess	2.3%	0.3%	0.3%	-20.9%	--	--	-21.2%

Asset Growth (mm)

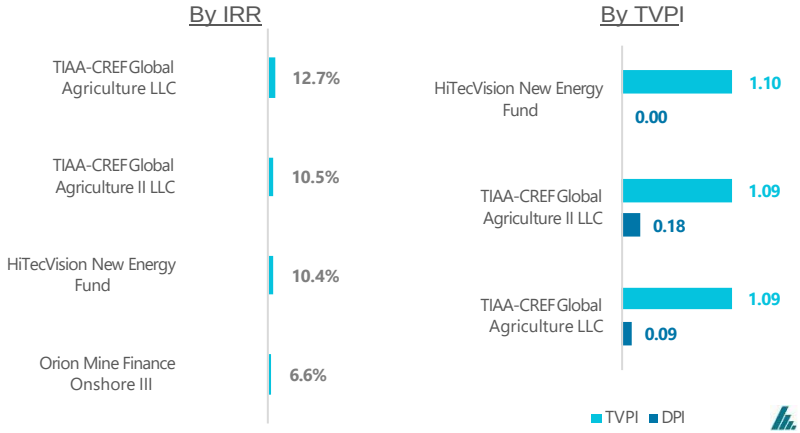
	QTD	1 Year	3 Year
Beginning Market Value	772	621	103
Net Cash Flow	59	153	693
Gain/Loss	8	64.5	42.4
Ending Market Value	**839**	**839**	**839**



Cumulative Return[1]



Top Performing Investments (since inception)[1]



[1] Private natural resources & commodities funds reflect early-stage life cycle performance.

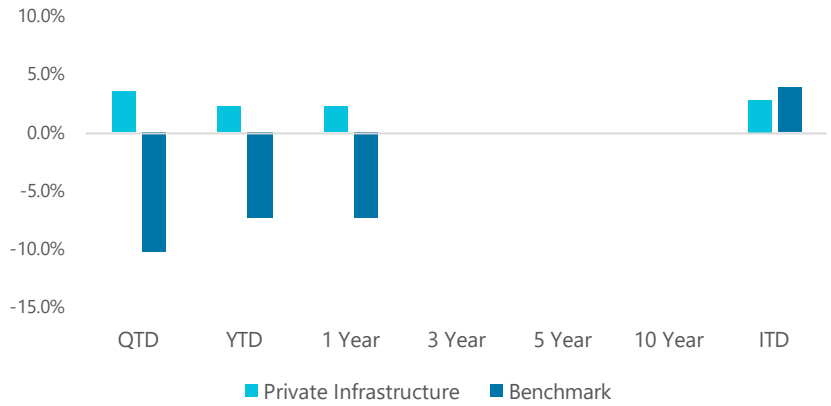
Summary

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

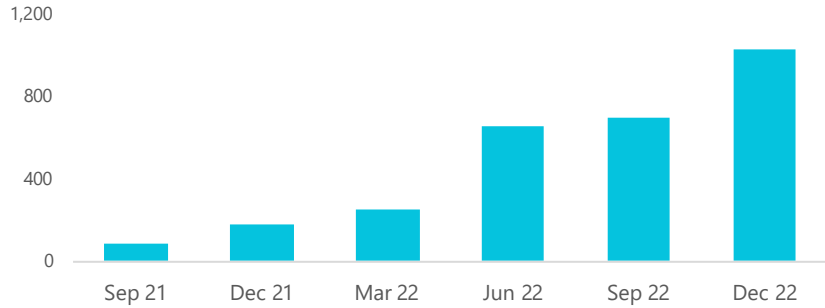
Performance (net)[1]



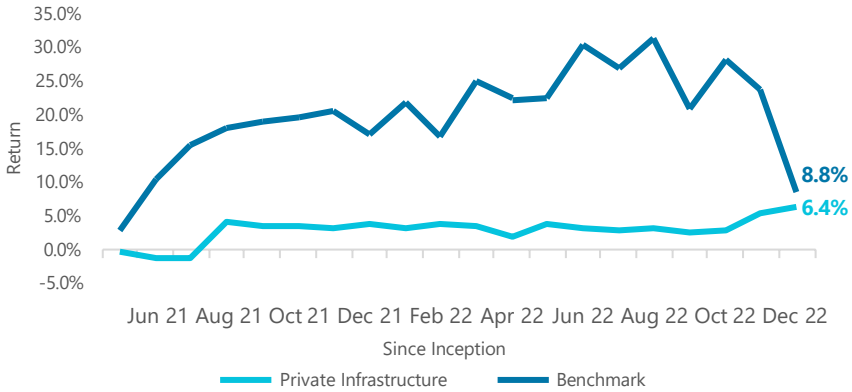
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Private Infrastructure	**3.6%**	**2.3%**	**2.3%**	**--**	**--**	**--**	**2.9%**
Benchmark	-10.2%	-7.2%	-7.2%	--	--	--	4.0%
Excess	13.8%	9.6%	9.6%	--	--	--	-1.0%

Asset Growth (mm)

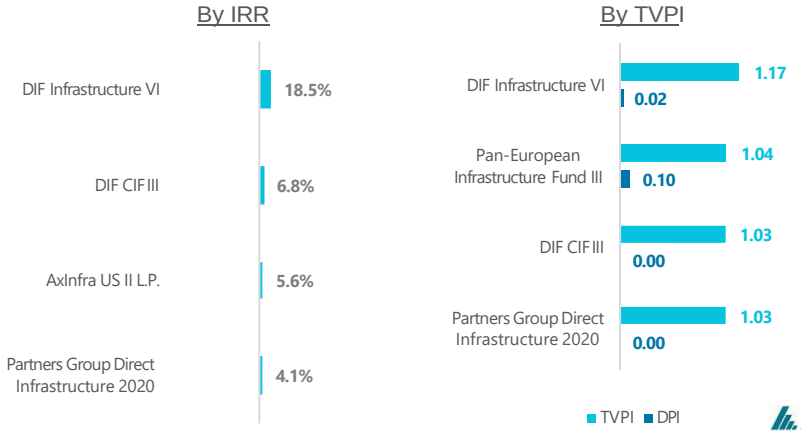
	QTD	1 Year	3 Year
Beginning Market Value	699	180	--
Net Cash Flow	297	823	--
Gain/Loss	34	28	--
Ending Market Value	**1,030**	**1,030**	**--**



Cumulative Return[1]



Top Performing Investments (since inception)[1]



[1] Private infrastructure funds reflect early-stage life cycle performance.

Historical Returns

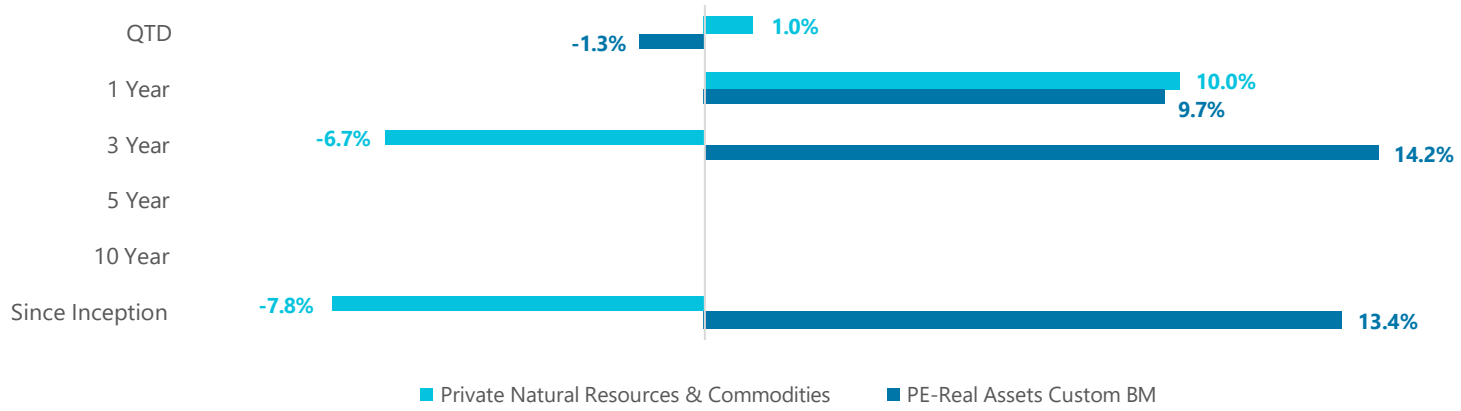
Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

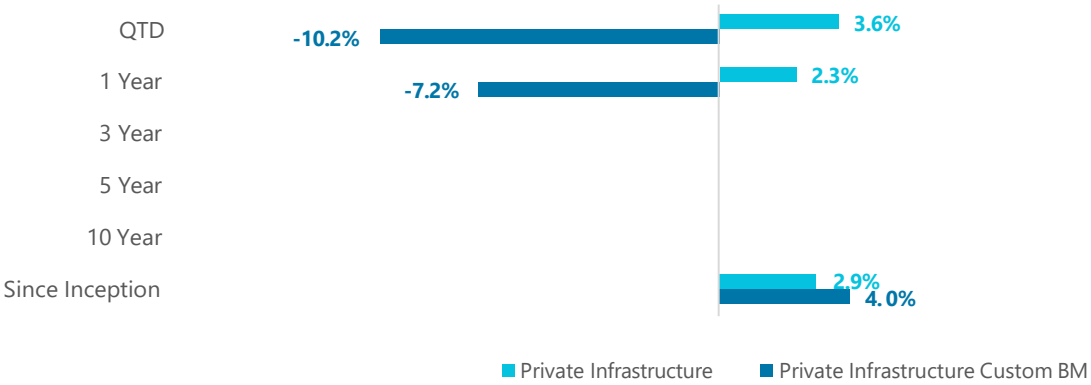
LACERA
Los Angeles County Employees Retirement Association

Time-Weighted Returns (net)[1]

Private Natural Resources & Commodities



Private Infrastructure



[1] Private natural resources and infrastructure funds reflect early-stage life cycle performance.

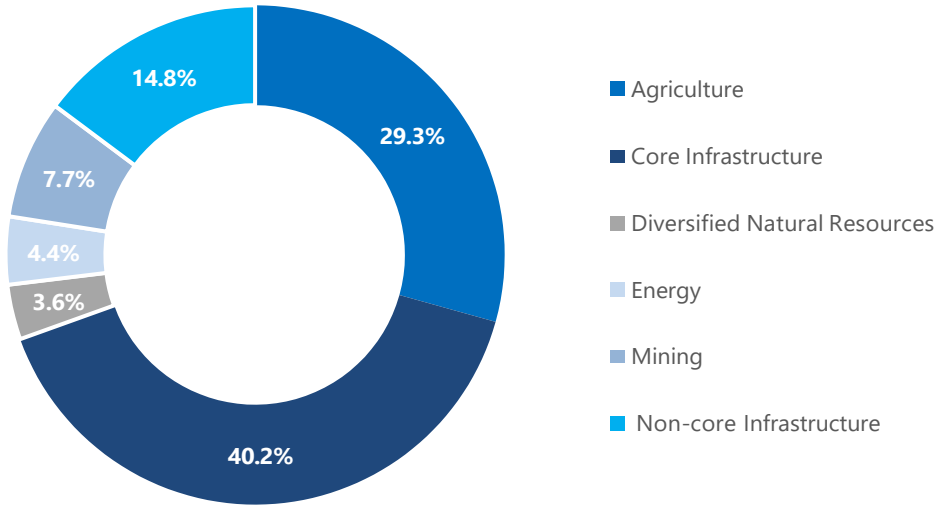
Performance by Strategy

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Strategy[1]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Agriculture	5	650.0	574.5	73.6	547.7	621.3	46.9	0.13x	1.08x	10.4%	1.00
Core Infrastructure	4	1,057.7	728.1	12.6	750.9	763.5	35.4	0.02x	1.05x	8.9%	1.02
Diversified Natural Resources	1	133.4	60.7	0.0	66.8	66.8	6.1	0.00x	1.10x	10.4%	1.01
Energy	2	200.0	205.0	116.9	82.0	198.9	(6.1)	0.57x	0.97x	-1.0%	0.75
Mining	2	250.0	141.9	5.9	144.2	150.0	8.2	0.04x	1.06x	6.1%	0.95
Non-core Infrastructure	6	701.0	283.9	7.0	276.6	283.6	(0.4)	0.02x	1.00x	-0.1%	0.90
Total Private Real Assets ex. Real Estate	**20**	**2,992.1**	**1,994.1**	**216.0**	**1,868.1**	**2,084.1**	**90.0**	**0.11x**	**1.05x**	**4.5%**	**0.95**

[1] Based on best available cash flow adjusted market values.

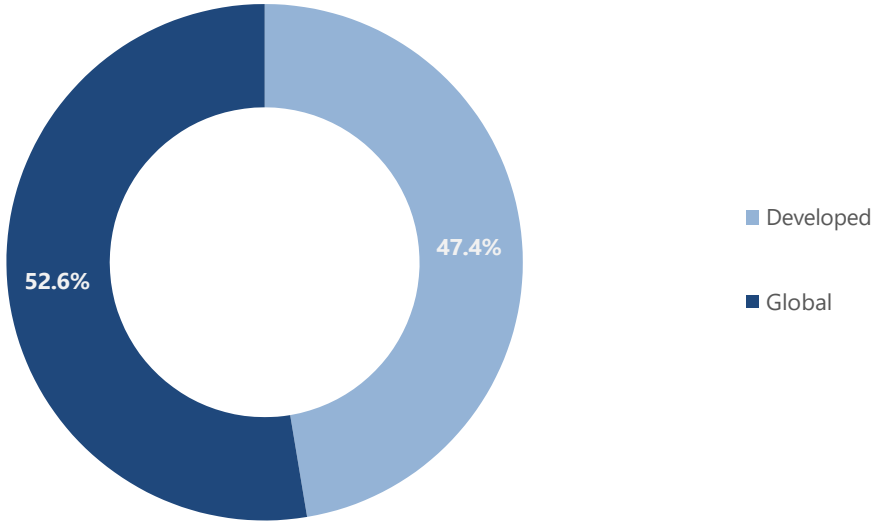
Performance by Geography

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Geography[1]



	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
Developed	11	1,386.7	1,031.5	180.9	884.9	1,065.8	34.3	0.18x	1.03x	2.6%	0.91
Global	9	1,605.4	962.6	35.1	983.2	1,018.3	55.7	0.04x	1.06x	8.3%	1.00
Total Private Real Assets ex. Real Estate	**20**	**2,992.1**	**1,994.1**	**216.0**	**1,868.1**	**2,084.1**	**90.0**	**0.11x**	**1.05x**	**4.5%**	**0.95**

[1] Based on best available cash flow adjusted market values.

Performance by Vintage Year

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

By Vintage Year[1]

	Number of Investments	Commitments (mm)	Cumulative Contributions (mm)	Cumulative Distributions (mm)	Market Value (mm)	Total Value (mm)	Total Gain / Loss (mm)	Distributed to Paid-In	Total Value to Paid-In	Since Inception Net IRR	Since Inception PME
2004	1	50.0	50.0	91.4	0.0	91.4	41.4	1.83x	1.83x	31.1%	1.40
2011	1	250.0	--	--	--	--	--	--	--	--	--
2014	2	450.0	435.0	75.1	338.9	414.0	(21.0)	0.17x	0.95x	-1.7%	0.75
2020	3	326.8	207.8	8.7	216.1	224.8	17.0	0.04x	1.08x	6.9%	0.94
2021	6	821.8	531.3	13.4	528.8	542.3	10.9	0.03x	1.02x	3.2%	0.97
2022	7	1,093.5	513.0	3.4	528.4	531.7	18.7	0.01x	1.04x	7.1%	1.00
Total Private Real Assets ex. Real Estate	**20**	**2,992.1**	**1,994.1**	**216.0**	**1,868.1**	**2,084.1**	**90.0**	**0.11x**	**1.05x**	**4.5%**	**0.95**

[1] Based on best available cash flow adjusted market values.

Risk vs. Return

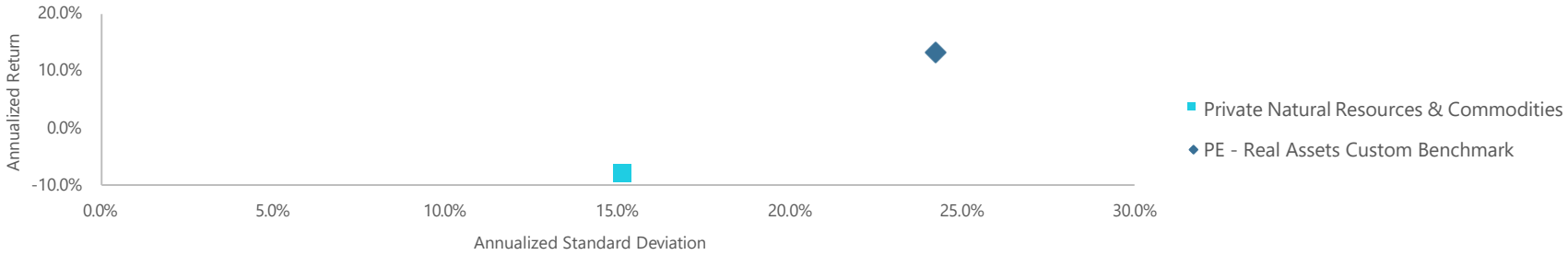
Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

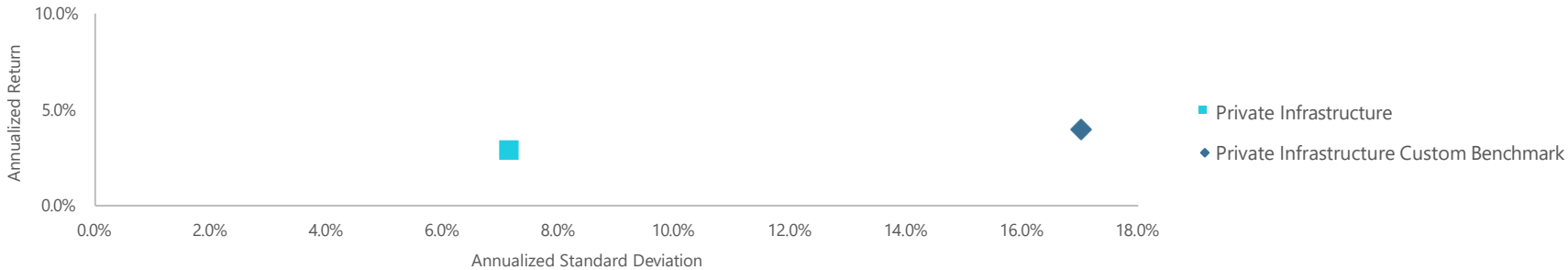
Since Inception (Annualized)

Private Natural Resources & Commodities



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Private Natural Resources & Commodities	**-7.8%**	**15.1%**				
PE - Real Assets Custom Benchmark	13.4%	24.2%	(0.52)	(0.85)	0.00	25.1%

Private Infrastructure



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Private Infrastructure	**2.9%**	**7.2%**				
Private Infrastructure Custom Benchmark	4.0%	17.0%	0.34	(0.05)	0.00	19.4%

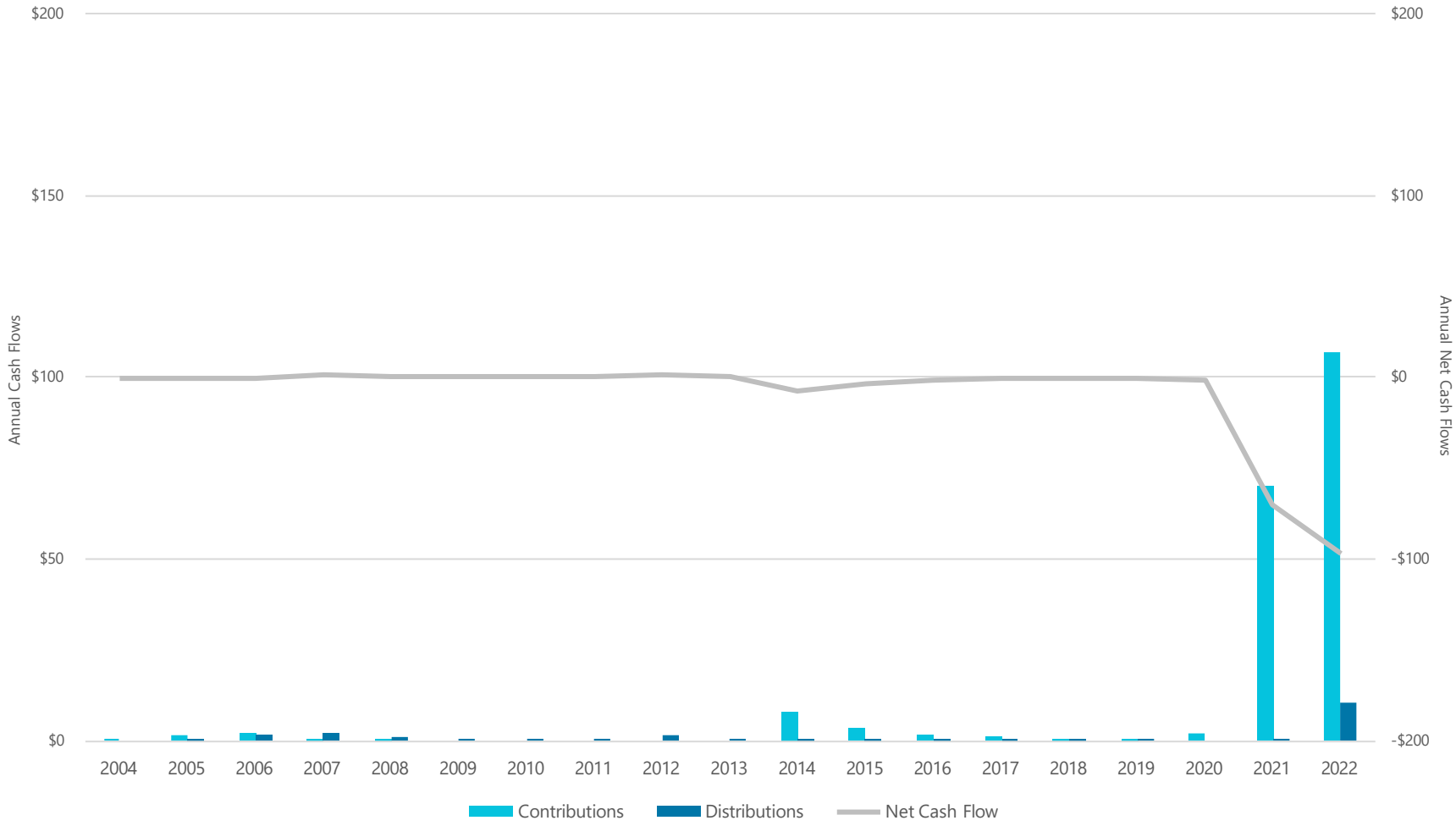
Annual Cash Flow Activity

Private Real Assets ex. Real Estate

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Year (mm)



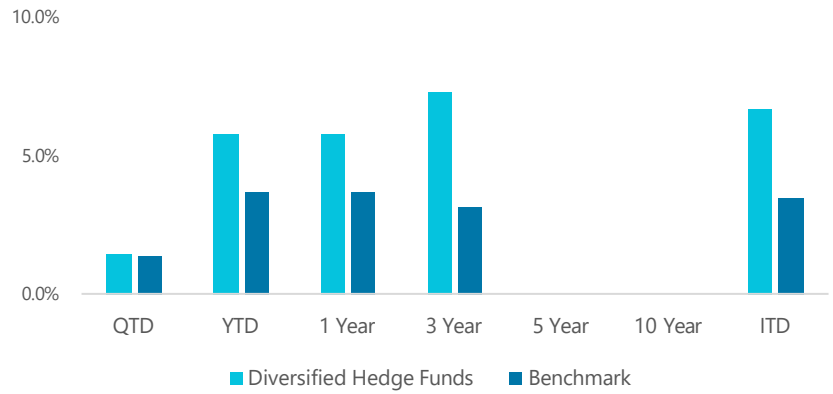
Summary

Diversified Hedge Funds

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

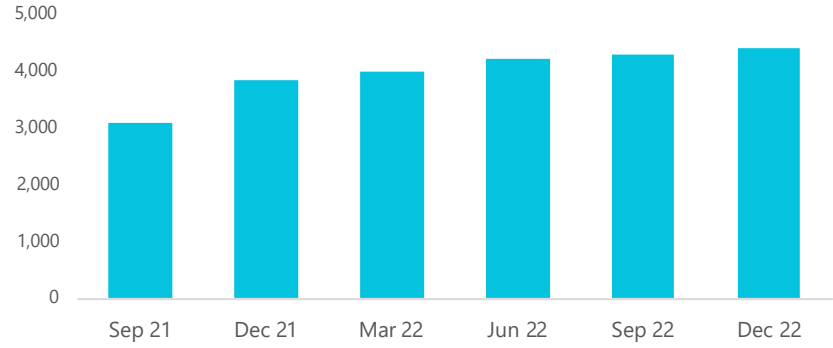
Performance (net all)



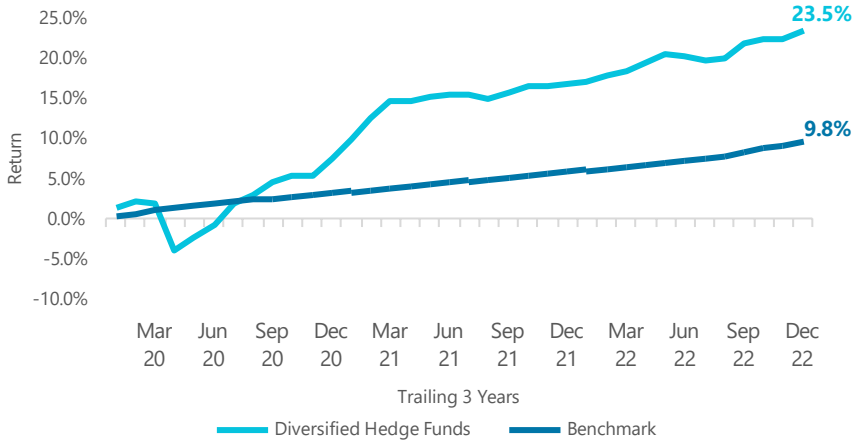
	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Diversified Hedge Funds	**1.4%**	**5.8%**	**5.8%**	**7.3%**	**--**	**--**	**6.7%**
Benchmark	1.4%	3.7%	3.7%	3.2%	--	--	3.5%
Excess	0.1%	2.1%	2.1%	4.1%	--	--	3.2%

Asset Growth (mm)

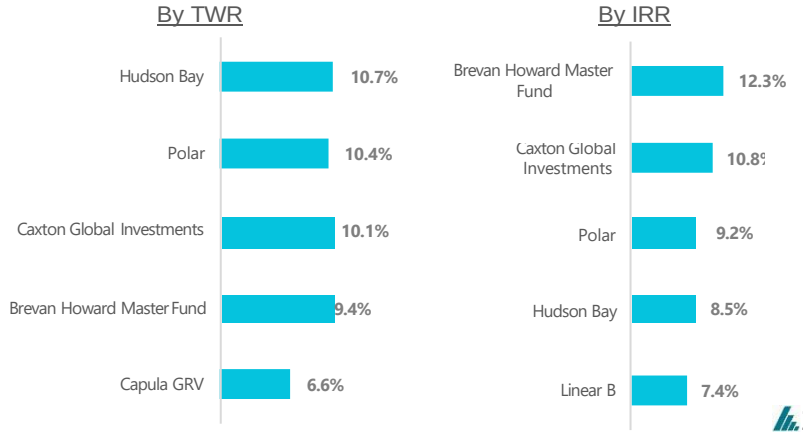
	QTD	1 Year	3 Year
Beginning Market Value	4,281	3,835	1,618
Net Cash Flow	59	334	2,220
Gain/Loss	62	234	565
Ending Market Value	**4,402**	**4,402**	**4,402**



Cumulative Return



Top Performing Investments (since inception)



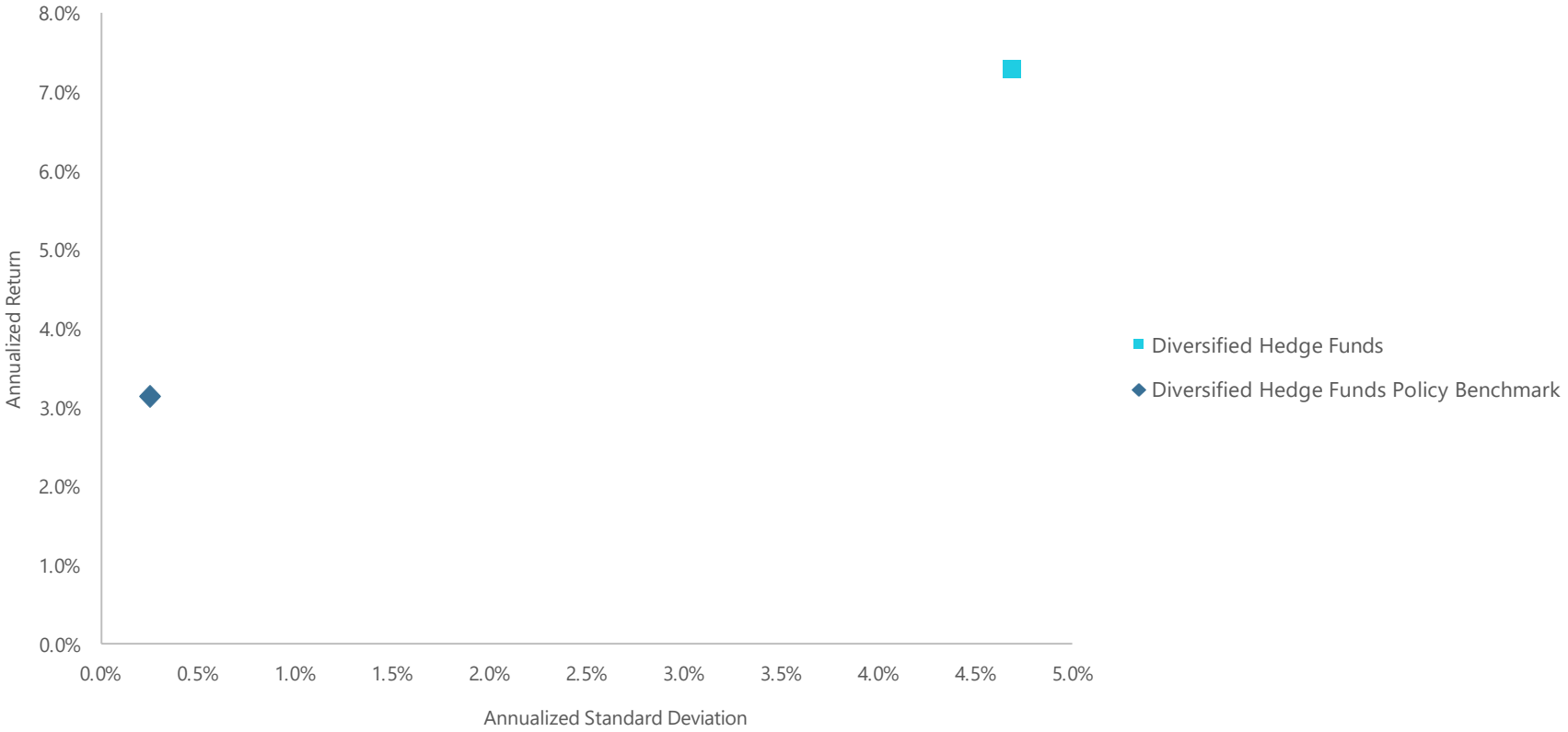
Risk vs. Return

Diversified Hedge Funds

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
Diversified Hedge Funds	**7.3%**	**4.7%**				
Diversified Hedge Funds Policy Benchmark	3.2%	0.3%	1.37	0.85	(6.84)	4.8%

Performance Detail
Diversified Hedge Funds
for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Annualized Net All Returns

	% of Composite	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
Diversified Hedge Funds	**100.0%**	**4,402**	**4,281**	**1.4%**	**5.8%**	**5.8%**	**7.3%**	**--**	**--**	**6.7%**	**Apr-2019**
Diversified Hedge Funds Policy Benchmark				1.4%	3.7%	3.7%	3.2%	--	--	3.5%	
LACERA HF Direct	**90.6%**	**3,987**	**3,932**	**1.4%**	**6.4%**	**6.4%**	**7.4%**	**--**	**--**	**5.1%**	**May-2018**
Custom Hedge Fund Benchmark				1.4%	3.7%	3.7%	3.2%	--	--	4.2%	May-2018
AM Asia Strategies	4.9%	217	221	-2.0%	-3.9%	-3.9%	--	--	--	-2.6%	Jun-2021
Brevan Howard Master Fund	14.8%	650	648	0.4%	18.5%	18.5%	--	--	--	9.4%	Apr-2021
Capula GRV	14.6%	642	626	2.6%	12.0%	12.0%	6.7%	--	--	6.6%	Dec-2018
Caxton Global Investments	6.7%	297	292	1.5%	15.7%	15.7%	--	--	--	10.1%	Feb-2021
DK Institutional Partners	11.0%	486	487	-0.1%	-1.3%	-1.3%	5.2%	--	--	4.7%	May-2018
HBK Multi-strategy	13.1%	578	555	4.1%	3.9%	3.9%	6.9%	--	--	5.5%	Jun-2018
Hudson Bay	14.8%	650	641	1.4%	3.0%	3.0%	--	--	--	10.7%	Jul-2020
Polar	10.6%	467	462	1.2%	1.0%	1.0%	--	--	--	10.4%	May-2020
HF Emerging Managers Program	**8.7%**	**384**	**315**	**1.8%**	**-0.4%**	**-0.4%**	**--**	**--**	**--**	**-0.2%**	**Aug-2021**
Custom Hedge Fund Benchmark				1.4%	3.7%	3.7%	--	--	--	3.4%	
Stable Asset Management	8.7%	384	315	1.8%	-0.4%	-0.4%	--	--	--	-0.2%	Aug-2021
Stable Fund Investments	8.7%	384	315	1.9%	-0.2%	-0.2%	--	--	--	-0.2%	Aug-2021
Amundsen	1.4%	63	60	4.5%	-6.1%	-6.1%	--	--	--	-2.2%	Sep-2021
Clear Sky	2.1%	92	72	0.3%	--	--	--	--	--	2.6%	Apr-2022
Linear B	1.6%	70	70	0.9%	8.2%	8.2%	--	--	--	6.1%	Aug-2021
Quarry	1.9%	82	40	-0.7%	--	--	--	--	--	-0.7%	Sep-2022
Sparta	1.1%	48	47	0.4%	-4.4%	-4.4%	--	--	--	-3.7%	Sep-2021
Trutino	0.7%	29	26	12.0%	5.6%	5.6%	--	--	--	-1.4%	Aug-2021

LACERA

Los Angeles County Employees Retirement Association

emerging manager program

Emerging Manager Program

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Annualized Net Returns

	Ending Market Value (mm)	QTD	1 Year	3 Year	5 Year	ITD TWR	ITD MWR	Inception Date
Growth								
Global Equity								
Corner Cap	80.6	11.0%	-7.0%	9.1%	--	7.1%	7.2%	Sep-2018
Global Equity Policy Benchmark		9.8%	-18.4%	3.9%	--	6.4%	6.4%	
Private Equity								
J.P. Morgan Emerging Managers Program	85.3	0.2%	1.6%	31.5%	24.3%	26.6%	22.8%	Jan-2010
J.P. Morgan Emerging Managers Program II	89.8	0.7%	-4.8%	22.7%	17.5%	29.5%	37.3%	Apr-2014
J.P. Morgan Emerging Managers Program III	111.2	1.6%	4.8%	36.4%	31.5%	32.3%	35.6%	Jan-2017
J.P. Morgan Emerging Managers Program IV	203.2	1.0%	8.5%	14.5%	--	19.2%	17.4%	Nov-2018
Total Private Equity Custom Benchmark		-6.1%	-19.3%	5.6%	10.7%	13.2%	13.2%	
Non-Core Private Real Estate								
Cityview Bay Area Fund II	81.7	1.9%	7.2%	4.6%	5.8%	--	11.3%	Oct-2012
Cityview Western Fund I, LP	214.6	0.8%	29.7%	17.6%	15.0%	-51.3%	16.2%	Jun-2016
CVBAF II Union City Co-Invest	23.8	0.0%	3.1%	6.4%	3.1%	5.7%	5.9%	Nov-2015
Non-Core Private RE Policy Benchmark		0.9%	23.6%	14.3%	12.3%	11.6%	11.6%	
Credit								
Illiquid Credit								
Stable Asset Management - IC	22.6	--	--	--	--	0.0%	0.0%	Nov-2022
Illiquid Credit Policy Benchmark		--	--	--	--	0.2%	0.2%	
Real Assets & Inflation Hedges								
Core Private Real Estate								
Cityview Core I.M.A	208.2	0.1%	4.8%	1.9%	5.7%	5.2%	5.3%	Jun-2014
Core Private RE Policy Benchmark		0.3%	21.0%	11.7%	9.7%	7.2%	7.2%	
Risk Reduction & Mitigation								
Hedge Funds								
Stable Asset Management	384.2	1.8%	-0.4%	--	--	-0.2%	0.4%	Aug-2021
Custom Hedge Fund Benchmark		1.4%	-0.4%	--	--	3.4%	3.4%	

LACERA

Los Angeles County Employees Retirement Association

risk reports

Summary

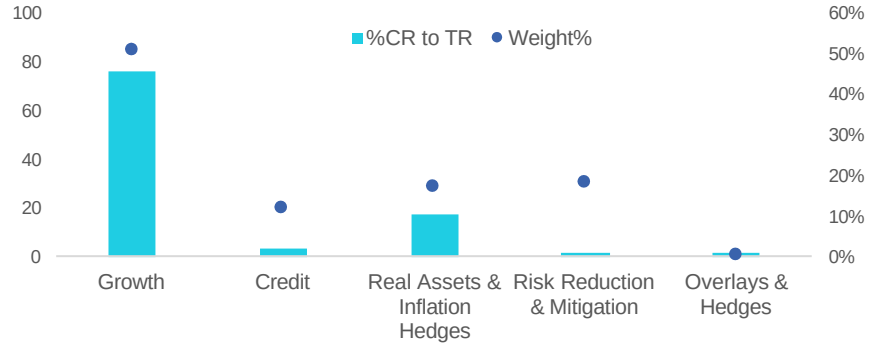
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**13.83**
Benchmark Risk	13.26
Active Risk	1.10
Portfolio Beta	1.04
Effective Duration	1.65

Contribution to Risk

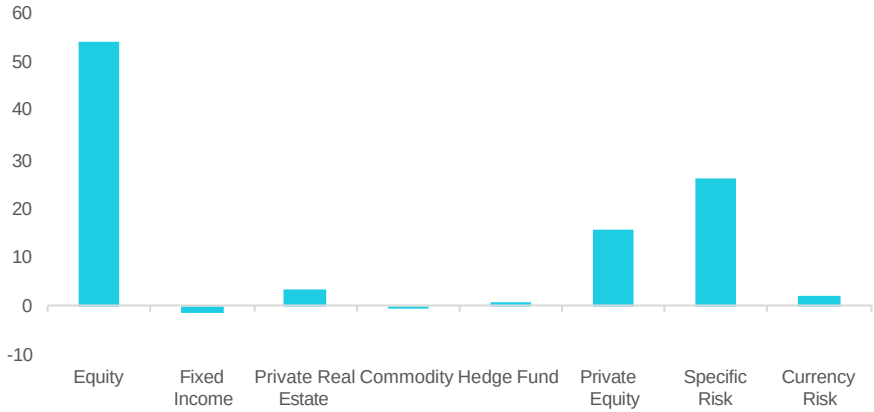


	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Total Fund	**68,776**	**100.0%**	**13.83**	**13.83**	**100.00**
Growth	35,193	51.2%	20.85	10.55	76.27
Credit	8,257	12.0%	4.58	0.42	3.02
Real Assets & Inflation Hedges	12,005	17.5%	15.42	2.45	17.70
Risk Reduction & Mitigation	12,852	18.7%	6.20	0.22	1.62
Overlays & Hedges	469	0.7%	56.58	0.19	1.39

Risk Decomposition

	Portfolio			Active		
Risk Source	Risk Contribution	%Risk	Correlation	Risk Contribution	%Risk	Correlation
Total Risk	**13.83**	**100.00**	**1.00**	**1.10**	**100.00**	**1.00**
Local Market Risk	13.16	95.15	1.00	1.08	97.99	0.99
Common Factor Risk	13.14	94.99	1.00	0.79	71.99	0.85
Equity	10.23	73.98	0.95	0.60	54.16	0.72
Fixed Income	0.64	4.60	0.41	-0.02	-1.39	-0.11
Private Real Estate	1.40	10.13	0.69	0.04	3.46	0.24
Commodity	0.06	0.43	0.36	0.00	-0.33	-0.08
Hedge Fund	0.00	0.01	0.01	0.01	0.86	0.09
Private Equity	0.80	5.77	0.24	0.17	15.47	0.39
Specific Risk	0.02	0.16	0.04	0.29	26.00	0.51
Currency Risk	0.67	4.85	0.58	0.02	2.01	0.13

Active Risk from Risk Factors

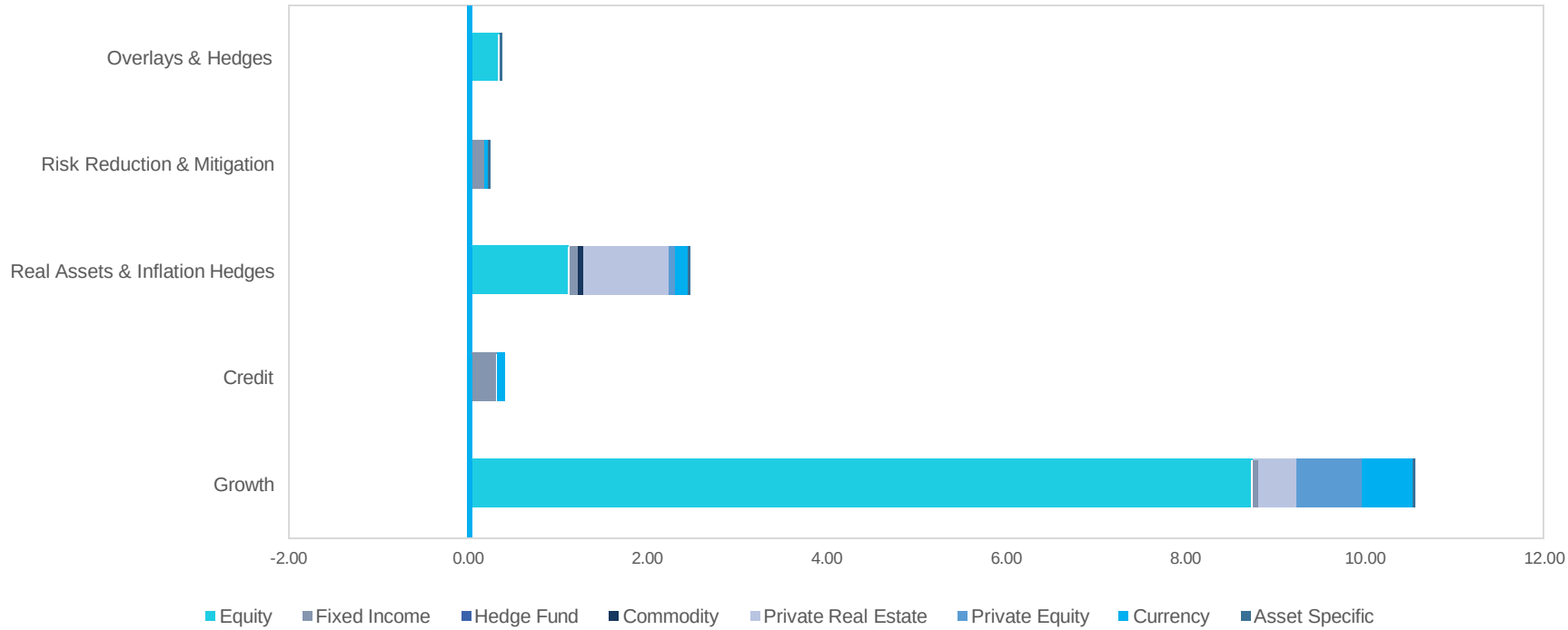


Risk Contribution Breakdown

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Risk Type



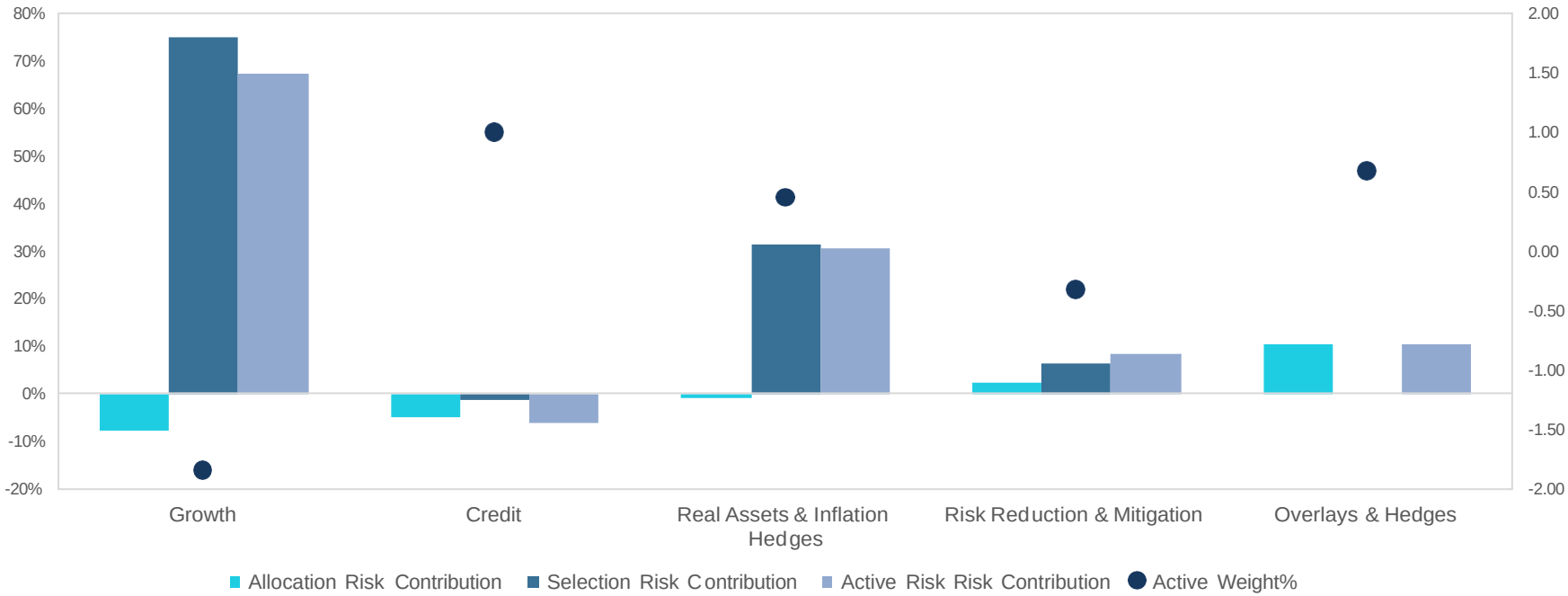
Functional Category	Mkt Value	Weight%	Total Risk	%CR to Total Risk	Port Risk Contribution	Equity	Fixed Income	Commodity	Private Real Estate	Private Equity	Currency	Asset Specific
Total Fund	**68,774**	**100.0%**	**13.83**	**100.00**	**13.83**	**10.23**	**0.65**	**0.06**	**1.40**	**0.80**	**0.67**	**0.02**
Grow th	35,193	51.2%	20.85	76.27	10.55	8.76	0.04	0.00	0.43	0.74	0.56	0.02
Credit	8,257	12.0%	4.58	3.02	0.42	0.00	0.36	0.00	0.01	0.00	0.04	0.00
Real Assets & Inflation Hedges	12,005	17.5%	15.42	17.70	2.45	1.12	0.09	0.06	0.96	0.06	0.16	0.00
Risk Reduction & Mitigation	12,852	18.7%	6.20	1.62	0.22	0.02	0.16	0.00	0.00	0.00	0.04	0.00
Overlays & Hedges	469	0.7%	56.75	1.39	0.19	0.33	0.00	0.00	0.00	0.00	-0.14	0.00

Allocation Selection

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Active Total Risk



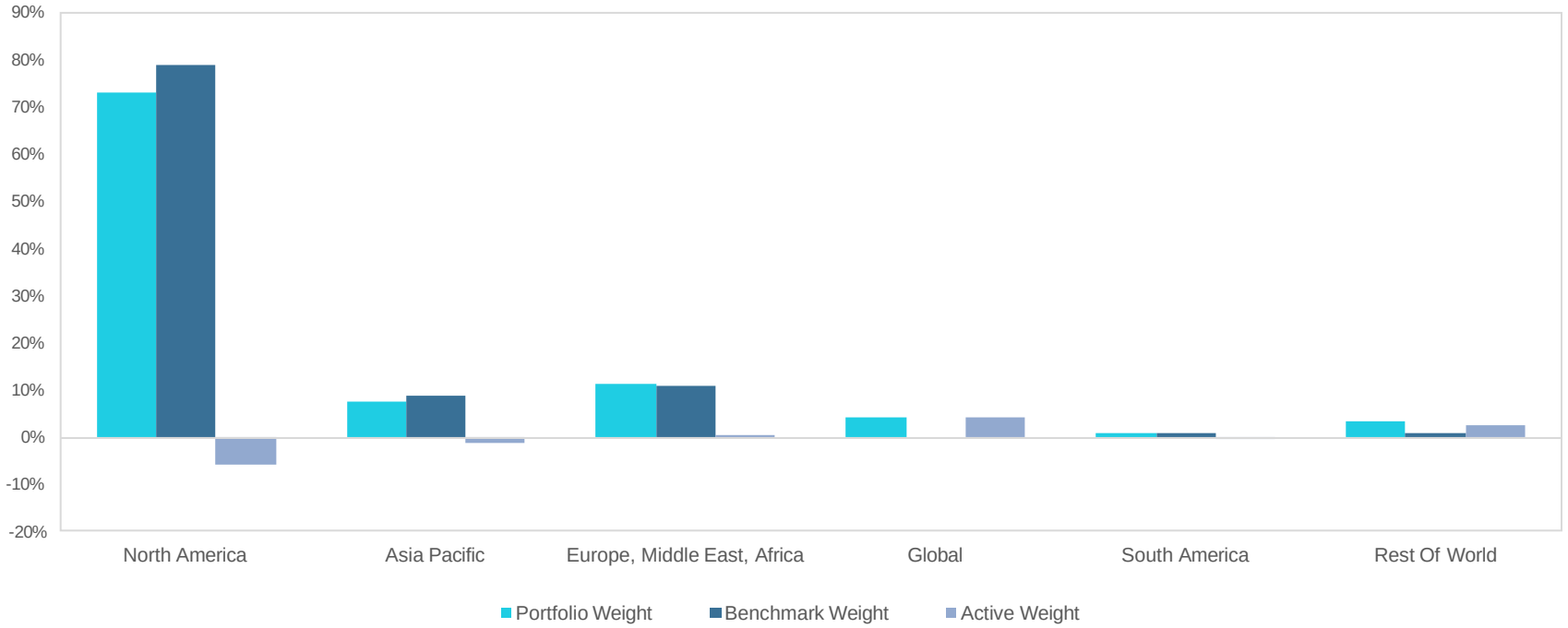
Functional Category	Active Weight%	Allocation			Selection			Active
		Volatility	Correlation	Risk Contribution	Volatility	Correlation	Risk Contribution	Risk Contribution
Active Total Risk				**-0.01**			**1.11**	**1.10**
Grow th	-1.83	7.12	0.60	-0.08	1.65	0.89	0.75	0.67
Credit	1.01	9.63	-0.51	-0.05	1.82	-0.06	-0.01	-0.06
Real Assets & Inflation Hedges	0.46	6.34	-0.39	-0.01	2.57	0.70	0.32	0.30
Risk Reduction & Mitigation	-0.31	13.79	-0.49	0.02	1.21	0.27	0.06	0.08
Overlays & Hedges	0.68	51.44	0.30	0.10	0.00	0.00	0.00	0.10

Portfolio Allocation

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Region



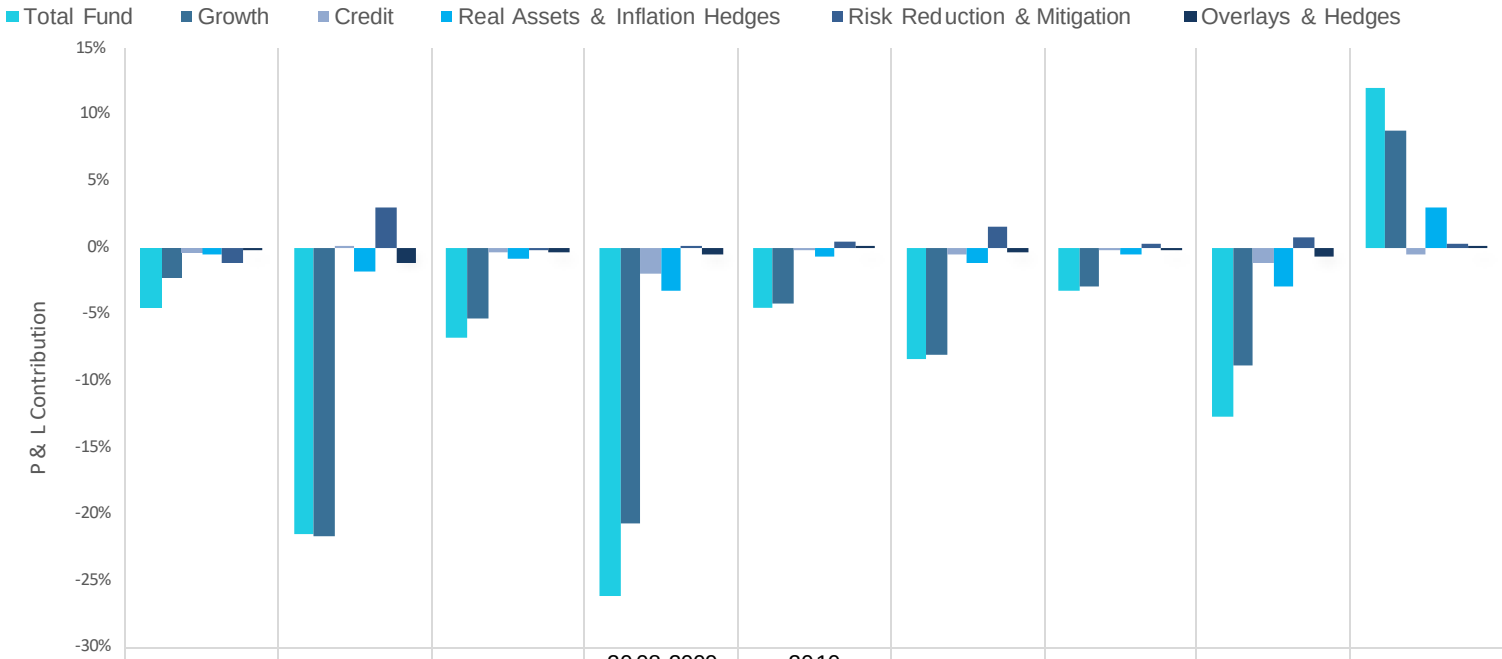
Region	Weight%			Total Risk	Active Risk Contribution	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
Total Fund	**100.00%**	**100.00%**	**0.00%**	**13.83**	**1.10**	**100.00**	**0.01**
North America	72.94%	78.75%	-5.81%	14.26	1.05	95.75	0.02
Asia Pacific	7.64%	8.74%	-1.11%	16.22	0.09	7.74	-0.02
Europe, Middle East, Africa	11.43%	10.88%	0.55%	21.29	0.20	18.39	0.03
Global	4.05%	0.00%	4.05%	7.02	-0.17	-15.15	-0.04
South America	0.81%	0.85%	-0.04%	26.69	0.04	4.01	0.00
Rest Of World	3.14%	0.78%	2.36%	6.32	-0.12	-10.73	-0.05

Stress Tests

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Scenarios by Asset Category



	1994 US Rate Hike	2000-2003 Tech Crash & Recession	2001 Sept 11th	2008-2009 Global Financial Crisis	2010 Periph eral European Bond Crisis	2011 US Debt Ceiling Act	2016 Brexit	2020 COVID March Selloff	2020 COVID Volatility Spike
Total Fund	-4.49%	-21.56%	-6.82%	-26.12%	-4.47%	-8.30%	-3.19%	-12.76%	11.93%
Growth	-2.25%	-21.67%	-5.32%	-20.73%	-4.25%	-7.96%	-2.89%	-8.84%	8.88%
Credit	-0.33%	0.03%	-0.30%	-1.89%	-0.13%	-0.47%	-0.10%	-1.15%	-0.42%
Real Assets & Inflation Hedges	-0.57%	-1.84%	-0.75%	-3.28%	-0.65%	-1.12%	-0.45%	-2.91%	2.95%
Risk Reduction & Mitigation	-1.17%	3.03%	-0.16%	0.22%	0.47%	1.53%	0.29%	0.74%	0.31%
Overlays & Hedges	-0.19%	-1.11%	-0.29%	-0.44%	0.09%	-0.29%	-0.04%	-0.59%	0.22%

Stress Tests

for the quarter ended December 31, 2022

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Los Angeles County Employees Retirement Association

Scenario Descriptions

Historical Scenario	Description
1994 US Rate Hike	In combating inflation, the U.S. Federal Reserve raised its interest rate from 3.25% in February to 5.5% in November 1994.
2000-2003 Tech Crash & Recession	Period of crisis and slow down for technological firms due to a rapid jump in stock prices when a speculative technology bubble began to burst.
2001 Sept 11	The U.S. stock market was closed for a week upon a series of coordinated suicide attacks upon the United States on September 11, 2001.
2008-2009 Global Financial Crisis	Major financial crisis starting September 2008 with the failure of several large U.S.-based financial firms. Extended into 2009, when stock markets reached their lowest.
2010 Peripheral European Bond Crisis	During the Europe sovereign debt crisis, liquidity access for peripheral European countries was deeply affected by their widening budget deficits, higher borrowing costs, and failing banking systems.
2011 US Debt Ceiling Act	Caused by political deadlock about appropriate level of government spending and its consequence on the national debt and deficit. Both debt and equity markets experienced significant volatility.
2016 Brexit	The referendum by British voters to exit the European Union on 23 June 2016 roiled global markets, including currencies, causing the British pound to fall to its lowest level in decades.
2020 COVID March Selloff	Peak and Valley of the MSCI ACWI index when Covid became a Global Pandemic.
2020 COVID Volatility Spike	Period it took for the Cboe Volatility Index (VIX) to revert to pre-pandemic levels.

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Los Angeles County Employees Retirement Association

manager scorecards

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Los Angeles County Employees Retirement Association

PUBLIC MARKETS MANAGER SCORECARD

4th Quarter 2022

	Manager	Market Value (in $ millions)	% of Total Fund	Performance: Risk-Adjusted Return (1 to 5, with 5 the best)		Performance: SCORE	Organization & Operations: SCORE (S+, S, or S-, with S+ the best)	ESG: SCORE (1 to 5, with 5 the best)	Partnership: SCORE (A, B, or C, with A the best)	Fees & Terms: SCORE (1 to 5, with 5 the best)
GROWTH	**GLOBAL EQUITY**									
	Acadian Developed Markets	560.2	0.8%		5		S-	3	B	3
	BTC Euro Tilts	527.8	0.8%		5		S+	4	B	3
	Capital Group Developed Markets	364.2	0.5%		3		S	2	B	3
	Cevian Capital II - Activist	398.3	0.6%		4		S	4	B	1
	Cornercap US SC - EMP	80.6	0.1%		5		S-	1	A	3
	Frontier US SMID Growth	256.2	0.4%		2		S	2	B	1
	Global Alpha	165.5	0.2%		2		S+	3	A	3
	JPMAM Strategic Beta Non-U.S.	550.5	0.8%	*	3		S	2	B	3
	JPMAM Strategic Beta U.S.	3,997.8	5.7%	*	3		S	2	B	3
	Lazard Emerging Markets	368.0	0.5%		2		S-	3	B	1
	SSGA MSCI ACWI IMI	14,270.2	20.4%		3		S	—	B	5
	Systematic US Small Cap Value	186.4	0.3%		4		S-	2	A	3
CREDIT	**HIGH YIELD**									
	Beach Point	280.7	0.4%		5		S	3	B	3
	Brigade Cap Mgmt	624.1	0.9%		4		S	2	B	3
	Pinebridge Investments	449.6	0.6%	*	3		S	4	B	3
	BANK LOANS									
	Bain Capital Credit	416.7	0.6%		5		S	2	B	1
	Credit Suisse Bank Loans	1,154.1	1.6%	*	3		S-	3	B	5
	Crescent Capital	490.9	0.7%		3		S	2	B	3
	EMERGING MARKET DEBT									
	Aberdeen Asset Management	372.8	0.5%		1		S	3	B	3
	Ashmore Investment Management	341.2	0.5%		1		S	3	B	3
REAL ASSETS & INFLATION HEDGES	**NATURAL RESOURCES & COMMODITIES**									
	Credit Suisse Commodity	312.3	0.4%		3		S-	1	A	3
	DWS Natural Resources	671.1	1.0%		2		S	2	A	5
	Neuberger Berman/Gresham	366.2	0.5%		3		S	1	A	1
	INFRASTRUCTURE									
	DWS Infrastructure	2,781.6	4.0%		5		S	2	A	5
	TIPS									
	Blackrock TIPS	1,860.9	2.7%		3		S+	—	B	5

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PUBLIC MARKETS MANAGER SCORECARD

4th Quarter 2022

	Manager	Market Value (in $ millions)	% of Total Fund	Performance: Risk-Adjusted Return	ER	Organization & Operations	ESG	Partnership	Fees & Terms
				1 to 5 (with 5 the best)		*S+, S, or S- (with S+ the best)*	*1 to 5 (with 5 the best)*	*A, B, or C (with A the best)*	*1 to 5 (with 5 the best)*
				SCORE		SCORE	SCORE	SCORE	SCORE
RISK REDUCTION & MITIGATION	**INVESTMENT GRADE BONDS**								
	Allspring/Wells	1,251.5	1.8%	5		S	3	B	5
	BTC US Debt Index Fund	2,905.3	4.1%	4		S+	—	B	5
	Pugh Capital Mgmt	835.2	1.2%	3		S	1	A	3
	LONG-TERM GOVERNMENT BONDS								
	BlackRock	2,856.8	4.1%	* 3		S+	—	B	5
	CASH								
	SSGA Cash	632.2	0.9%	* 3		S+	—	A	5
OVERLAYS & HEDGES	**OVERLAYS**								
	Parametric Cash Overlay	591.0	0.8%	—		S	—	A	5
	HEDGES								
	BTC Passive Currency Hedge	-155.3	-0.2%	—		S+	—	B	5

Exceeds 3-Year Net Excess Return
Meets 3-Year Net Excess Return
Below 3-Year Net Excess Return

For Organization and Partnership
Downgrade from the prior quarter
Upgrade from the prior quarter

Footnotes

- Pillar methodologies in refinement and may evolve over time

Category Descriptions

Performance

- Quarterly score based on Sharpe and Information Ratios, which provide insight into a manager's risk-adjusted performance and performance relative to its benchmark, respectively
- '*' denotes a manager with an inception date of less than 3 years, resulting in a neutral score of 3
- Circle icons reflect trailing 3-year net excess returns against the manager's benchmark above or below a specified range

Organization & Operations

- Includes factors such as organization, professional staff, diversity & inclusion, investment philosophy & process, risk management, legal & compliance framework
- 'S' stands for Satisfactory

ESG

- Evaluates the extent to which material ESG factors are identified, assessed, and incorporated into risk/return analysis and portfolio construction
- '—' denotes passive index funds and cash where ESG scores are not relevant and/or reflect strategies that do not incorporate active decisions, including ESG considerations, in portfolio construction
- '+' denotes mandates where ESG scores are currently under review

Partnership

- Blended score based on:
  - Value added services – e.g., providing education, distributing research, and performing analytics on portfolio
  - Client service – e.g., responsiveness, timeliness, competency, and approach
  - Size of LACERA's investment relative to the firm's assets under management

Fees & Terms

- Compared to a benchmark of median fees by asset category and/or investment structure

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Los Angeles County Employees Retirement Association

PRIVATE MARKETS MANAGER SCORECARD

4th Quarter 2022

				Performance	Organization & Operations	ESG	Partnership	Fees & Terms
				1 to 5 (with 5 the best)	*S+, S, or S- (with S+ the best)*	*1 to 5 (with 5 the best)*	*A, B, or C (with A the best)*	*1 to 5 (with 5 the best)*
	Manager	Market Value (in $ millions)	% of Total Fund	SCORE	SCORE	SCORE	SCORE	SCORE
PRIVATE EQUITY	**GLOBAL/LARGE BUYOUT**							
	Advent International Group	130.1	0.2%	5	S+	3	C	4
	Blackstone Management	222.4	0.3%	1	S-	4	B	5
	CVC Capital Partners	479.5	0.7%	5	S	4	A	4
	Green Equity Investors	402.0	0.6%	3	S+	3	A	4
	Hellman & Friedman	429.8	0.6%	2	S+	3	B	4
	MBK	193.8	0.3%	1	S	4	A	2
	Silver Lake Partners	494.9	0.7%	4	S+	3	A	5
	Thoma Bravo LLC	160.8	0.2%	*	S+	3	B	3
	Vista Equity Partners	823.9	1.2%	3	S-	3	A	2
	MID-MARKET BUYOUT							
	Accel-KKR Capital Partners	203.3	0.3%	3	S+	4	A	3
	BlackFin Capital Partners	30.7	0.0%	1	S	3	B	3
	Carlyle Group	224.1	0.3%	3	S+	4	B	4
	Clearlake Capital	497.7	0.7%	5	S+	4	A	4
	GHO Capital	95.9	0.1%	*	S	3	A	3
	Gilde Partners	126.7	0.2%	5	S	2	A	5
	Harvest Partners	120.7	0.2%	5	S	1	C	3
	Marlin Equity	25.6	0.0%	1	S-	2	C	3
	Novacap	14.2	0.0%	*	S	3	B	3
	Onex Partners	304.9	0.4%	2	S	4	A	5
	PAI	138.4	0.2%	5	S	2	B	4
	Revelstoke	164.8	0.2%	2	S	4	A	2
	Riverside Capital	101.3	0.1%	1	S	3	B	3
	Siris Capital Group	161.5	0.2%	3	S	3	B	4
	Sterling Partners	135.0	0.2%	5	S	3	A	4
	STG Partners	46.0	0.1%	*	S	3	A	3
	Triton	111.1	0.2%	4	S-	3	C	5
	TSG	-0.1	0.0%	*	S+	3	C	2
	Veritas Capital	31.3	0.0%	*	S+	3	B	3
	Vinci Partners	72.0	0.1%	2	S	4	B	5
	Webster Equity Partners	52.1	0.1%	*	S	3	B	3
	Wynnchurch Capital	46.8	0.1%	*	S+	3	C	3
	SMALL BUYOUT							
	AE Industrial Partners	117.9	0.2%	5	S+	3	A	3
	Atlantic Street Capital	41.5	0.1%	5	S	3	A	3
	Clarion	24.6	0.0%	4	S+	2	B	4
	Excellere Partners	116.3	0.2%	2	S-	3	A	3
	Incline Equity Partners	40.3	0.1%	5	S	2	C	4
	Insignia Capital Partners	234.4	0.3%	3	S	1	B	5
	Juggernaut Capital Partners	274.6	0.4%	4	S	3	A	4
	Lightyear Capital	209.3	0.3%	3	S	2	A	5
	Livingbridge	53.2	0.1%	1	S+	4	A	3
	Monteflore Investment	13.6	0.0%	*	S+	4	B	4
	One Rock Capital Partners	217.4	0.3%	2	S	3	A	4
	Palladium Equity Partners	84.2	0.1%	1	S-	4	C	2

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Los Angeles County Employees Retirement Association

PRIVATE MARKETS MANAGER SCORECARD

4th Quarter 2022

	Manager	Market Value (in $ millions)	% of Total Fund	Performance *1 to 5 (with 5 the best)* SCORE	Organization & Operations *S+, S, or S- (with S+ the best)* SCORE	ESG *1 to 5 (with 5 the best)* SCORE	Partnership *A, B, or C (with A the best)* SCORE	Fees & Terms *1 to 5 (with 5 the best)* SCORE
PRIVATE EQUITY (continued)	**GROWTH EQUITY**							
	Australis Partners	81.4	0.1%	1	S-	4	B	5
	Great Hill Partners	-5.8	0.0%	*	S	4	A	4
	JMI Equity	4.4	0.0%	3	S	3	C	2
	RedBird Capital Partners	152.5	0.2%	2	S	4	A	3
	Summit Partners	81.8	0.1%	4	S	4	A	4
	TA Associates	133.3	0.2%	5	S	4	B	4
	Technology Crossover Ventures	4.3	0.0%	5	S	2	B	3
	VENTURE CAPITAL							
	BlueRun Ventures	108.6	0.2%	2	S	2	A	2
	Canaan Partners	173.0	0.2%	4	S	3	A	4
	GGV Capital	500.5	0.7%	2	S	3	A	3
	Institutional Venture Partners	183.4	0.3%	5	S	1	C	4
	Joy Capital	83.8	0.1%	1	S-	2	B	4
	Lilly Asia Ventures	139.7	0.2%	3	S	4	B	2
	Primary Ventures	0.0	0.0%	*	S	2	C	4
	Sinovation Ventures	94.1	0.1%	1	S-	2	C	2
	Storm Ventures LLC	237.3	0.3%	4	S	3	A	4
	Union Square	134.5	0.2%	5	S-	1	B	5
	SPECIAL SITUATIONS							
	Alchemy Partners	36.0	0.1%	1	S	3	B	4
	Black Diamond	145.4	0.2%	1	S	3	B	4
	Centerbridge	176.4	0.3%	5	S	4	A	2
	FUND OF FUNDS							
	Gateway	899.9	1.3%	5	S	3	B	4
	MS GTB Capital Partners	286.4	0.4%	1	S	4	A	2
	J.P. Morgan	487.9	0.7%	3	S+	+	B	4

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Los Angeles County Employees Retirement Association

PRIVATE MARKETS MANAGER SCORECARD

4th Quarter 2022

				Performance	Organization & Operations	ESG	Partnership	Fees & Terms
				1 to 5 (with 5 the best)	*S+, S, or S- (with S+ the best)*	*1 to 5 (with 5 the best)*	*A, B, or C (with A the best)*	*1 to 5 (with 5 the best)*
	Manager	[illegible] (in $ millions)	[illegible]	SCORE	SCORE	SCORE	SCORE	SCORE
REAL ESTATE	**COMMINGLED FUNDS**							
	AERMONT Real Estate Fund IV	26.0	0.0%	2	S	4	B	3
	AEW Value Investors Asia III	30.0	0.0%	2	S	4	B	4
	AG Asia Realty Fund IV	78.0	0.1%	*	S-	3	B	3
	AG Europe Realty Fund II	47.0	0.1%	2	S-	3	B	3
	Bain Capital Real Estate Fund I	76.0	0.1%	5	S	3	B	3
	Bain Capital Real Estate Fund II	39.0	0.1%	*	S	3	B	3
	CapMan Nordic Real Estate Fund II	43.0	0.1%	3	S	4	A	3
	CapMan Nordic Real Estate Fund III	24.0	0.0%	*	S	4	A	3
	CityView Bay Area Fund II	82.0	0.1%	1	S	3	B	3
	CityView Western Fund I, L.P.	215.0	0.3%	4	S	3	B	3
	Core Property Index Fund	130.0	0.2%	4	S	2	A	5
	Europa Fund IV	9.0	0.0%	1	S	3	A	2
	Heitman Asia-Pacific Property Investors	35.0	0.0%	3	S	3	B	4
	Invesco Real Estate Asia Fund	144.0	0.2%	4	S	4	B	5
	Prologis European Logistics Fund (PELF)	197.0	0.3%	5	S	4	A	1
	RREEF Core Plus Industrial Fund (CPIF)	307.0	0.4%	5	S-	3	B	5
	Starwood Capital Hospitality Fund	6.0	0.0%	1	S	3	C	3
	TPG Real Estate Partners III	45.0	0.1%	*	S	3	C	3
	SEPARATE ACCOUNTS							
	Cityview Core I.M.A.	208.0	0.3%	1	S	3	B	2
	Clarion I.M.A.	534.0	0.8%	5	S	3	A	4
	Clarion Takeover Core IMA	360.0	0.5%	*	S	3	A	4
	Clarion Takeover Value IMA	16.0	0.0%	*	S	3	A	3
	Heitman I.M.A.	431.0	0.6%	4	S	3	B	4
	RREEF Core/High Return I.M.A. III	860.0	1.2%	1	S-	3	C	5
	RREEF Takeover I.M.A.	727.0	1.0%	2	S-	3	C	4
	Stockbridge I.M.A.	650.0	0.9%	4	S	3	B	4
	Stockbridge High I.M.A. Vintage 2014	111.0	0.2%	*	S	3	B	5
	Stockbridge Value I.M.A. Vintage 2014	25.0	0.0%	*	S	3	B	3

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Los Angeles County Employees Retirement Association

PRIVATE MARKETS MANAGER SCORECARD

4th Quarter 2022

				Performance	Organization & Operations	ESG	Partnership	Fees & Terms
				1 to 5 (with 5 the best)	*S+, S, or S- (with S+ the best)*	*1 to 5 (with 5 the best)*	*A, B, or C (with A the best)*	*1 to 5 (with 5 the best)*
	Manager	Market Value (in $ millions)	% of Total Fund	SCORE	SCORE	SCORE	SCORE	SCORE
PRIVATE REAL ASSETS (ex. Real Estate)	**NATURAL RESOURCES & COMMODITIES**							
	Cibus Enterprise II	4.2	0.0%	*	S	3	B	3
	Cibus Fund II	15.7	0.0%	*	S	3	B	3
	EMG	82.0	0.1%	3	S	3	B	1
	HiTecVision	66.8	0.1%	*	S	3	A	3
	Orion Mine Finance Onshore III	122.3	0.2%	*	S	4	B	4
	Orion Mineral Royalty Fund I	21.9	0.0%	*	S	4	B	4
	TIAA-CREF Global Agriculture	255.9	0.4%	5	S+	4	A	5
	TIAA-CREF Global Agriculture II	256.9	0.4%	5	S+	4	A	5
	INFRASTRUCTURE							
	Antin Mid Cap	38.0	0.1%	*	S	3	B	2
	Axium Infrastructure Canada II	59.0	0.1%	*	S	4	A	3
	Axium Infrastructure US II	254.4	0.4%	*	S	4	A	3
	DIF CIF III	29.3	0.0%	*	S	3	A	4
	DIF Infrastructure VI	103.0	0.1%	5	S	3	A	2
	Grain Communications Opportunity Fund III	33.2	0.0%	*	S-	3	C	2
	Grain Spectrum Holdings III	47.8	0.1%	2	S-	3	C	2
	KKR Diversified Core Infrastructure Fund	334.4	0.5%	*	S	3	A	4
	Pan-European Infrastructure Fund III	65.4	0.1%	3	S-	3	B	3
	Partners Group Direct Infrastructure 2020	62.9	0.1%	*	S	3	A	3

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Los Angeles County Employees Retirement Association

PRIVATE MARKETS MANAGER SCORECARD

	Market Value (in $ millions)	% of Total Fund	Performance 1 to 5 (with 5 the best) SCORE	Organization & Operations S+, S, or S- (with S+ the best) SCORE	ESG 1 to 5 (with 5 the best) SCORE	Partnership A, B, or C (with A the best) SCORE	Fees & Terms 1 to 5 (with 5 the best) SCORE
	217.1	0.3%	4	S	2	A	5
	650.1	0.9%	5	S+	2	A	2
	642.2	0.9%	5	S	1	A	3
	296.6	0.4%	5	S	3	B	3
	486.2	0.7%	3	S	1	B	3
	578.1	0.8%	4	S	1	B	3
	650.1	0.9%	5	S	1	B	3
	467.0	0.7%	4	S	2	B	4
	384.2	0.5%	*	S	2	A	5
	59.0	0.1%	4	S	3	B	4
	167.0	0.2%	3	S	1	B	3
	647.4	0.9%	1	S-	2	C	4
	124.7	0.2%	5	S	1	B	2
	904.5	1.3%	*	S	2	A	3
	800.4	1.1%	*	S	2	A	3
	90.4	0.1%	5	S	2	B	2
	272.8	0.4%	1	S-	1	C	3
	24.2	0.0%	2	S	1	B	4
	363.0	0.5%	*	S	2	A	4
	22.6	0.0%	*	S	2	A	4
	237.1	0.3%	*	S	2	B	4

For Organization and Partnership

- Downgrade from the prior quarter
- Upgrade from the prior quarter

Footnotes

- Pillar methodologies in refinement and may evolve over time

Category Descriptions

Performance

- Quarterly score based on risk-adjusted performance metrics over time
- '*' denotes a manager with an inception date of less than 3 years

Organization & Operations

- Includes factors such as organization, professional staff, investment philosophy & process, risk management, legal & compliance framework, diversity & inclusion
- 'S' stands for Satisfactory

ESG

- Evaluates the extent to which material ESG factors are identified, assessed, and incorporated into risk/return analysis and portfolio construction
- '+' denotes mandates where ESG scores are currently under review

Partnership

- Assesses the quality of investment manager relationships both quantitatively and qualitatively

Fees & Terms

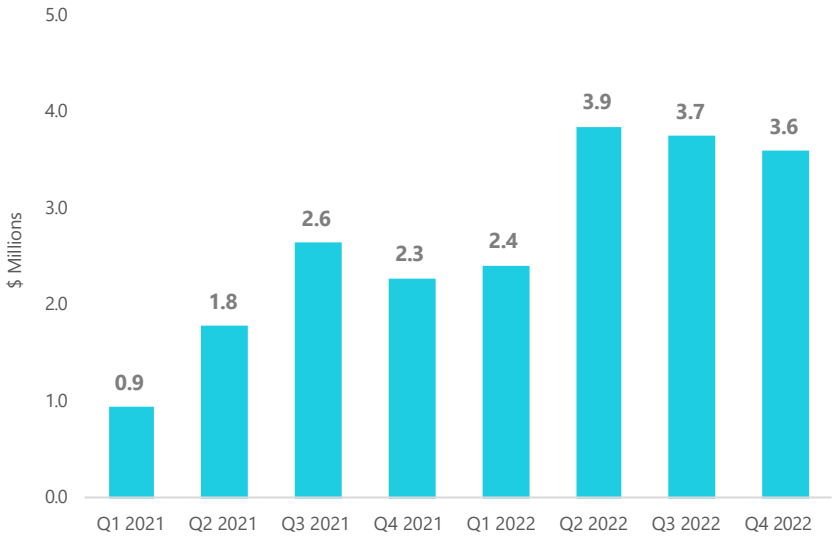
- Compares various fees and terms within each asset category, strategy and/or investment structure

appendix

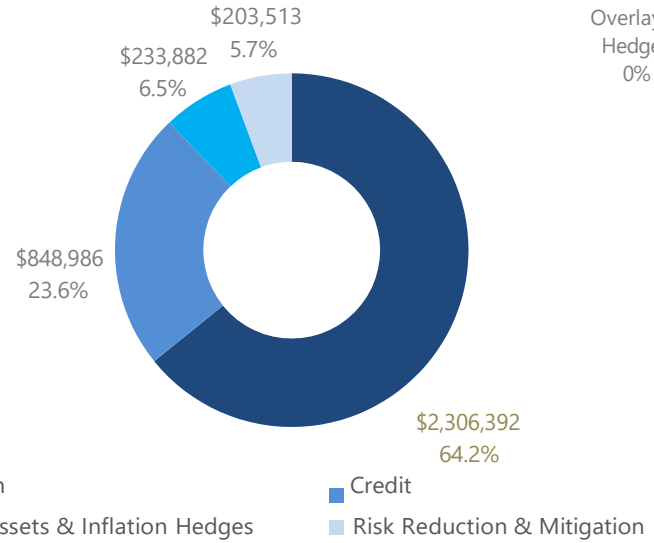
Summary
Securities Lending Income
for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Earnings by Quarter



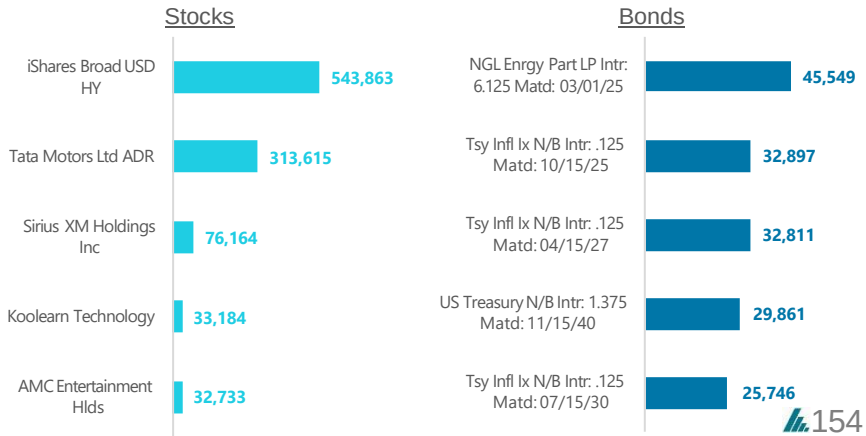
Earnings by Functional Category



Top Earning Funds

	% of Total Fund Earnings	Total Earnings	Cash Earnings	Non-Cash Earnings
MSCI ACWI IMI	49.2%	1,841,290	1,108,691	732,599
Blackrock HY ETF	14.5%	543,862	180,857	363,005
JPMAM Strategic Beta U.S.	6.3%	237,362	150,424	86,938
Blackrock TIPS	5.3%	197,423	132,243	65,180
Brigade Cap Mgmt	4.9%	182,197	176,341	5,856

Top Earning Securities



Public Markets Manager Fees

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Growth

	Average Market Value ($ mm)	Fees[1]	Annualized Effective Rate (bps)
Active			
Acadian Asset Management	$547.1	$516,189	37.7
BTC Europe Alpha Tilts	$512.6	$452,213	35.3
Capital Guardian	$323.8	$280,788	34.7
Cevian Capital	$399.1	$1,079,603	108.2
CornerCap	$82.5	$108,696	52.7
Frontier Capital Management	$261.9	$491,025	75.0
Global Alpha	$159.1	$286,092	71.9
Lazard Asset Management	$344.3	$553,984	64.4
Parametric GE Market Cap	$873.4	$57,154	2.6
Parametric GE Region	$539.9	$35,333	2.6
Systematic	$190.2	$261,477	55.0
Subtotal:	**$4,233.8**	**$4,122,555**	**38.9**
Factor-Based			
JPMAM Strategic Beta Non-US	$534.8	$45,888	3.4
JPMAM Strategic Beta US	$4,090.5	$351,009	3.4
Subtotal:	**$4,625.3**	**$396,897**	**3.4**
Passive			
SSGA MSCI ACWI IMI	$14,291.4	$275,943	0.8
Subtotal:	**$14,291.4**	**$275,943**	**0.8**

[1] Reflects estimated investment management fees.

Public Markets Manager Fees

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Credit

	Average Market Value ($ mm)	Fees[1]	Annualized Effective Rate (bps)
Liquid Credit			
Aberdeen Standard Investments	$357.5	$345,960	38.7
Ashmore Investment Management	$341.2	$424,857	49.8
Bain Capital	$416.7	$570,879	54.8
Beach Point Capital	$279.9	$314,921	45.0
Brigade Capital Management	$626.8	$642,204	41.0
Credit Suisse Bank Loan	$1,145.0	$565,249	19.7
Crescent Capital Group	$490.6	$571,867	46.6
Pinebridge	$448.6	$370,069	33.0
Subtotal:	**$4,106.4**	**$3,806,007**	**37.1**

[1] Reflects estimated investment management fees.

Public Markets Manager Fees

for the quarter ended December 31, 2022

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Real Assets & Inflation Hedges

	Average Market Value ($ mm)	Fees[1]	Annualized Effective Rate (bps)
Natural Resources & Commodities			
Credit Suisse	$314.3	$211,062	26.9
DWS Natural Resources	$708.9	$329,082	18.6
Neuberger Berman/Gresham	$391.7	$362,701	37.0
Subtotal:	**$1,414.9**	**$902,846**	**25.5**
Infrastructure			
DWS Infrastructure	$2,813.3	$1,305,915	18.6
Subtotal:	**$2,813.3**	**$1,305,915**	**18.6**
Treasury Inflation-Protected Securities			
BlackRock TIPS	$1,857.7	$46,825	1.0
Subtotal:	**$1,857.7**	**$46,825**	**1.0**

[1] Reflects estimated investment management fees.

Public Markets Manager Fees

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Reduction & Mitigation

	Average Market Value ($ mm)	Fees[1]	Annualized Effective Rate (bps)
Investment Grade Bonds			
Allspring/Wells	$1,318.7	$342,336	10.4
Pugh Capital Management	$826.3	$279,018	13.5
Subtotal:[2]	**$5,028.3**	**$683,127**	**5.4**
Long-Term Government Bonds			
BlackRock	$2,815.3	$70,865	1.0
Subtotal:	**$2,815.3**	**$70,865**	**1.0**
Cash			
SSGA Cash	$678.4	$67,843	4.0
Subtotal:	**$678.4**	**$67,843**	**4.0**

[1] Reflects estimated investment management fees.
[2] Includes BTC US Debt Index account.

Public Markets Manager Fees

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Overlays & Hedges

	Average Market Value ($ mm)	Fees[1]	Annualized Effective Rate (bps)
Overlays			
Parametric Cash Overlay	$2,553.4	$167,096	2.6
Subtotal:	**$2,553.4**	**$167,096**	**2.6**
Hedges			
BlackRock Developed Markets Currency Hedge	$6,090.9	$230,287	1.5
Subtotal:	**$6,090.9**	**$230,287**	**1.5**

[1] Reflects estimated investment management fees.

Benchmark Definitions

Current Composition

	Weight	Component
Total Fund		
Total Fund Policy Benchmark		
	53%	Growth Policy Benchmark
	11%	Credit Policy Benchmark
	17%	RA & IH Policy Benchmark
	19%	RR & M Policy Benchmark
Growth		
Growth Policy Benchmark		
	60%	Global Equity Policy Benchmark
	32%	Private Equity – Growth Policy BM
	8%	Non-Core Private RE Policy Benchmark
Global Equity Policy Benchmark		
	100%	MSCI ACWI IMI Net
Private Equity – Growth Policy BM		
	100%	MSCI ACWI IMI Net + 200 bps (3-month lagged)
Non-Core Private RE Policy Benchmark		
	100%	NFI ODCE + 225 bps (3-month lagged)
EAFE Custom Index	100%	MSCI EAFE + Canada Net Index

Benchmark Definitions

Current Composition

	Weight	Component
Credit		
Credit Policy Benchmark		
	36%	Liquid Credit Policy Benchmark
	64%	Illiquid Credit Policy Benchmark
Liquid Credit Policy Benchmark		
	40%	Bloomberg U.S. Corporate High Yield
	40%	CS Leveraged Loan Index
	10%	JPMorgan EMBI Global Diversified Index
	5%	JPM GBI-EM Global Diversified Index
	5%	JPM CEMBI Broad Diversified
Illiquid Credit Policy Benchmark		
	100%	Liquid Credit Policy BM + 150 bps (1-month lagged)
Bank Loans Custom Benchmark	100%	CS Leveraged Loan Index
Beachpoint Custom Benchmark	100%	Bloomberg U.S. Corporate High Yield
Brigade Custom Index	100%	Bloomberg U.S. Corporate High Yield
EMD Custom Benchmark	50%	JPMorgan EMBI Global Diversified Index
	25%	JPM CEMBI Broad Diversified
	25%	JPM GBI-EM Global Diversified Index

Benchmark Definitions

Los Angeles County Employees Retirement Association

Current Composition

	Weight	Component
Real Assets & Inflation Hedges		
RA & IH Policy Benchmark		
	35%	Core Private RE Policy Benchmark
	18%	Nat Res & Comm Policy Benchmark
	29%	DJ Brookfield Global Infra Comp
	18%	Bloomberg U.S. Treasury: U.S. TIPS
Core Private RE Policy Benchmark		
	100%	NFI ODCE (3-month lagged)
Nat Res & Comm Policy Benchmark		
	33%	Bloomberg Commodity Index Total Return
	66%	S&P Global Natural Resources Index
Private Equity – Real Assets Custom BM	100%	S&P Glb LargeMidCap Commod & Resources (3-month lagged)
Private Infrastructure Custom BM	100%	DJ Brookfield Global Infra Comp (3-month lagged)
Risk Reduction & Mitigation		
RR & M Policy Benchmark		
	37%	Bloomberg U.S. Aggregate
	32%	Diversified Hedge Funds Policy Benchmark
	26%	Bloomberg U.S. Treasury: Long
	5%	FTSE 3-Month US Treasury Bill
Diversified Hedge Funds Policy Benchmark		
	100%	FTSE 3-Month US Treasury Bill + 250 bps (1-month lagged)
Cash Policy Benchmark		
	100%	FTSE 3-Month US Treasury Bill
Custom Hedge Fund BM	100%	Diversified Hedge Funds Policy Benchmark

Glossary

A

Annual Return
The total return of a security over a specified period, expressed as an annual rate of interest.

Active Risk
The expected standard deviation of the differential return between the portfolio and the benchmark. Active total risk arises from active management, and it is the result of active weights (deviations from the benchmark at the asset level) and therefore active exposures; for passively managed portfolios, it is referred to as “total tracking error.”

Active Risk Contribution
Percent contribution to active total risk (or tracking error). The percent of active total risk that an individual asset or risk source contributes. For example, a % CR to Active Total Risk of 10% indicates that 10% of the portfolio’s active total risk is arising from the active position in that particular asset.

B

Basis Points (bps)
One one-hundredth of one percent. One hundred basis points equal one percent.

Beta
A measure of the volatility of a stock relative to the overall market. A beta of less than one indicates lower risk than the market; a beta of more than one indicates higher risk than the market.

D

Duration
A measure of the price sensitivity of a bond portfolio to changes in interest rates.

Distributed to Paid-in (DPI)
A measure of distributions received relative to contributed capital.

F

Futures Contract

Agreement to buy or sell a specific amount of a commodity or financial instrument at a particular price and a stipulated future date.

H

High Yield Bond

A bond with a low investment quality and credit worthiness, usually with a rating of BB or less.

I

Information Ratio

The excess return (alpha) per unit of active risk (tracking error).

Internal Rate of Return (IRR)

A total rate of return that gives full weight to the size and timing of cash flows over the period measured and fully reflects unrealized gains and losses in addition to realized gains and losses, interest and dividend income.

K

Kaplan & Schoar Public Market Equivalent (KS-PME)

A ratio that benchmarks the performance of a fund against an appropriate public market index while accounting for the timing of a fund's cash flows.

M

MC to Total Tracking Error

This value represents the change in the active risk of an asset's portfolio or group that would result from a one percent increase in the asset's effective position plus an equal short position in the benchmark.

S

Sharpe Ratio

Measures the performance of an investment compared to a risk-free asset, after adjusting for its risk. It is the difference between the returns of the investment and the risk-free return, divided by the standard deviation of the investment.

Standard Deviation

Statistical measure of the degree to which an individual value in a probability distribution tends to vary from the mean of the distribution. The greater the degree of dispersion, the greater the risk.

T

Time-Weighted Rate of Return (TWR)

A measure of the compound rate of growth in a portfolio. Often used to compare the returns of investment managers because it eliminates the distorting effects on growth rates created by inflows and outflows of money.

Total Risk

The total (gross) risk to an asset (or portfolio), which is the standard deviation of the asset's total return distribution, expressed in percent. Total risk is forecasted using MSCI Barra's multiple factor models. The total risk for an asset depends on the asset's exposures to the risk factors, the factor variance/covariance matrix, and the forecast selection risk of the asset.

Total Risk Contribution

The percent of total risk that an individual asset or risk source contributes. For example, a % CR to Total Risk of 10% indicates that 10% of the portfolio's total risk is arising from the portfolio's position in that particular asset.

Total Value to Paid-In (TVPI)

A measure of total value created relative to capital invested.

Tracking Error

The volatility of a manager's excess return. It is measured by subtracting the benchmark return from the manager's return and calculating the standard deviation.

Y

Yield to Maturity

The return a bond earns on the price at which it was purchased if it were held to maturity. It assumes that coupon payments can be reinvested at the yield to maturity.

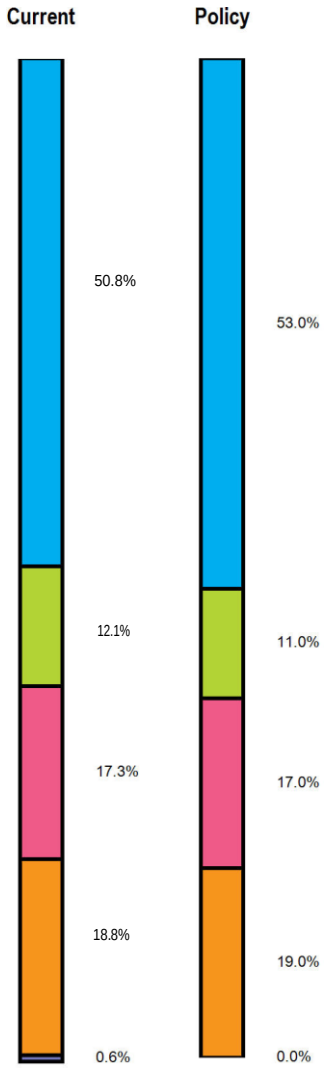
MEKETA
INVESTMENT GROUP

Los Angeles County Employees Retirement Association

December 31, 2022

Fund Evaluation Report

Los Angeles County Employees Retirement Association | December 31, 2022



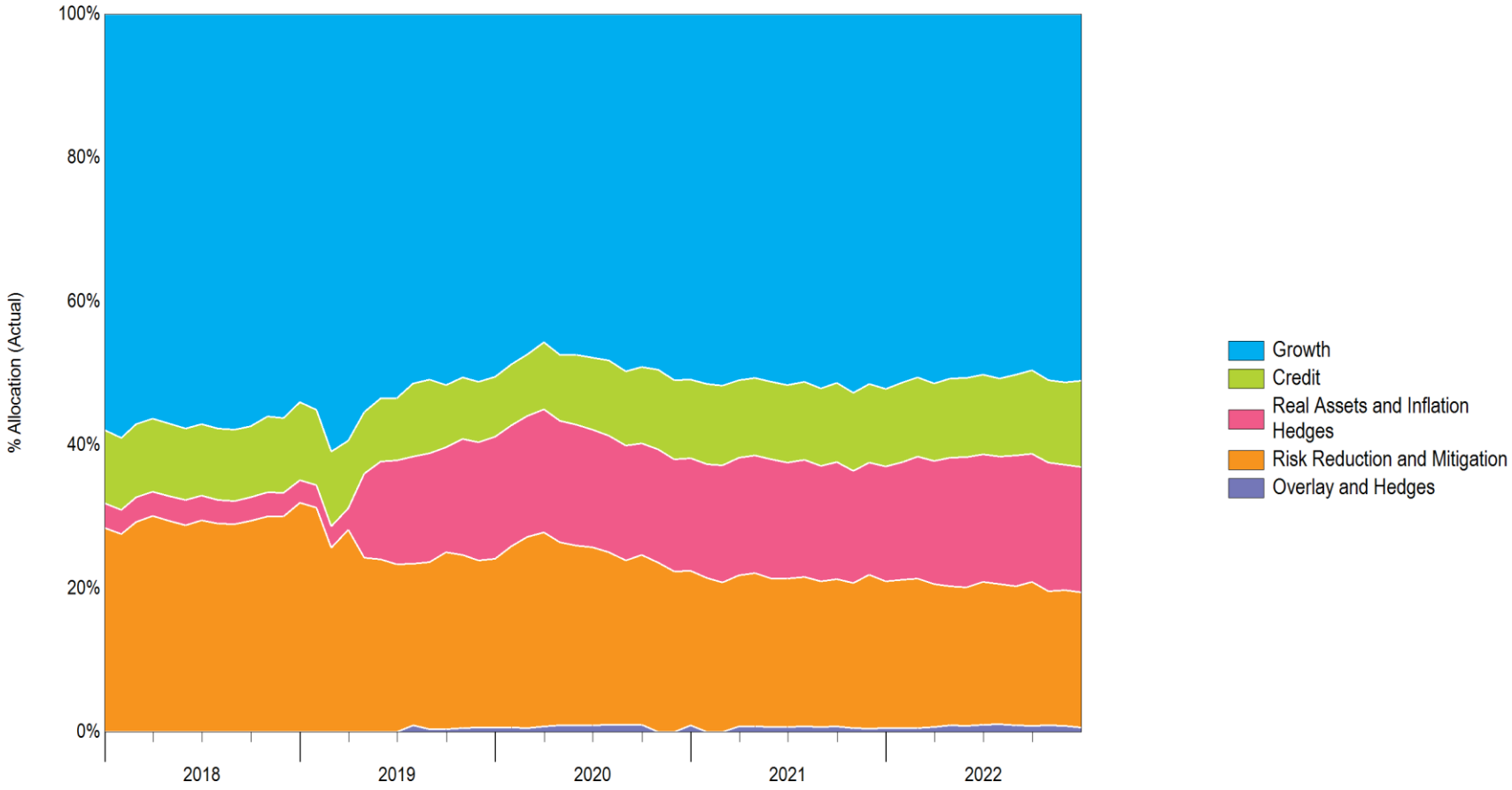
Allocation vs. Targets and Policy

	Current Balance	Current Allocation	Policy	Difference	Policy Range	Within IPS Range?
Growth	**$35,773,280,500**	**50.8%**	**53.0%**	**-2.2%**	**45.0% - 61.0%**	Yes
Global Equity	$21,969,396,862	31.2%	32.0%	-0.8%	25.0% - 39.0%	Yes
Private Equity	$12,732,565,040	18.1%	17.0%	1.1%	12.0% - 20.0%	Yes
Non-Core Private Real Estate	$1,071,318,598	1.5%	4.0%	-2.5%	2.0% - 6.0%	No
Credit	**$8,445,783,572**	**12.1%**	**11.0%**	**1.1%**	**8.0% - 14.0%**	Yes
Liquid Credit[1]	$4,709,316,668	6.7%	4.0%	2.7%	1.0% - 7.0%	Yes
Illiquid Credit[2]	$3,736,447,308	5.3%	7.0%	-1.7%	4.0% - 10.0%	Yes
Real Assets and Inflation Hedges	**$12,222,181,033**	**17.3%**	**17.0%**	**0.3%**	**14.0% - 20.0%**	Yes
Core Real Estate	$4,338,870,749	6.2%	6.0%	0.2%	3.0% - 9.0%	Yes
Natural Resources & Commodities	$2,210,384,505	3.1%	3.0%	0.1%	1.0% - 5.0%	Yes
Infrastructure	$3,811,989,221	5.4%	5.0%	0.4%	2.0% - 6.0%	Yes
TIPS	$1,860,936,558	2.6%	3.0%	-0.4%	0.0% - 6.0%	Yes
Risk Reduction and Mitigation	**$13,202,107,101**	**18.8%**	**19.0%**	**-0.2%**	**13.0% - 25.0%**	Yes
Investment Grade Bonds	$5,002,871,602	7.1%	7.0%	0.1%	1.0% - 13.0%	Yes
Diversified Hedge Funds	$4,402,389,500	6.2%	6.0%	0.2%	2.0% - 8.0%	Yes
Long-Term Government Bonds	$2,856,797,172	4.1%	5.0%	-0.9%	0.0% - 10.0%	Yes
Cash	$940,087,768	1.3%	1.0%	0.3%	0.0% - 3.0%	Yes
Overlays and Hedges	**$435,685,997**	**0.6%**	**0.0%**	**0.6%**	**0.0% - 1.0%**	Yes
Cash Overlay	$591,018,438	0.8%				
Currency Hedge	-$155,332,442	-0.2%				
Total[3]	**$70,079,038,203**	**100.0%**	**100.0%**			

[1] Liquid Credit contains high yield, bank loans, and EM debt.
[2] Illiquid Credit contains credit hedge funds, real estate debt, private debt strategies and private equity-related debt.
[3] Totals may not add up due to rounding.
* The Functional Framework became effective April 1, 2019.

Los Angeles County Employees Retirement Association | December 31, 2022

Asset Allocation History
5 Years Ending December 31, 2022



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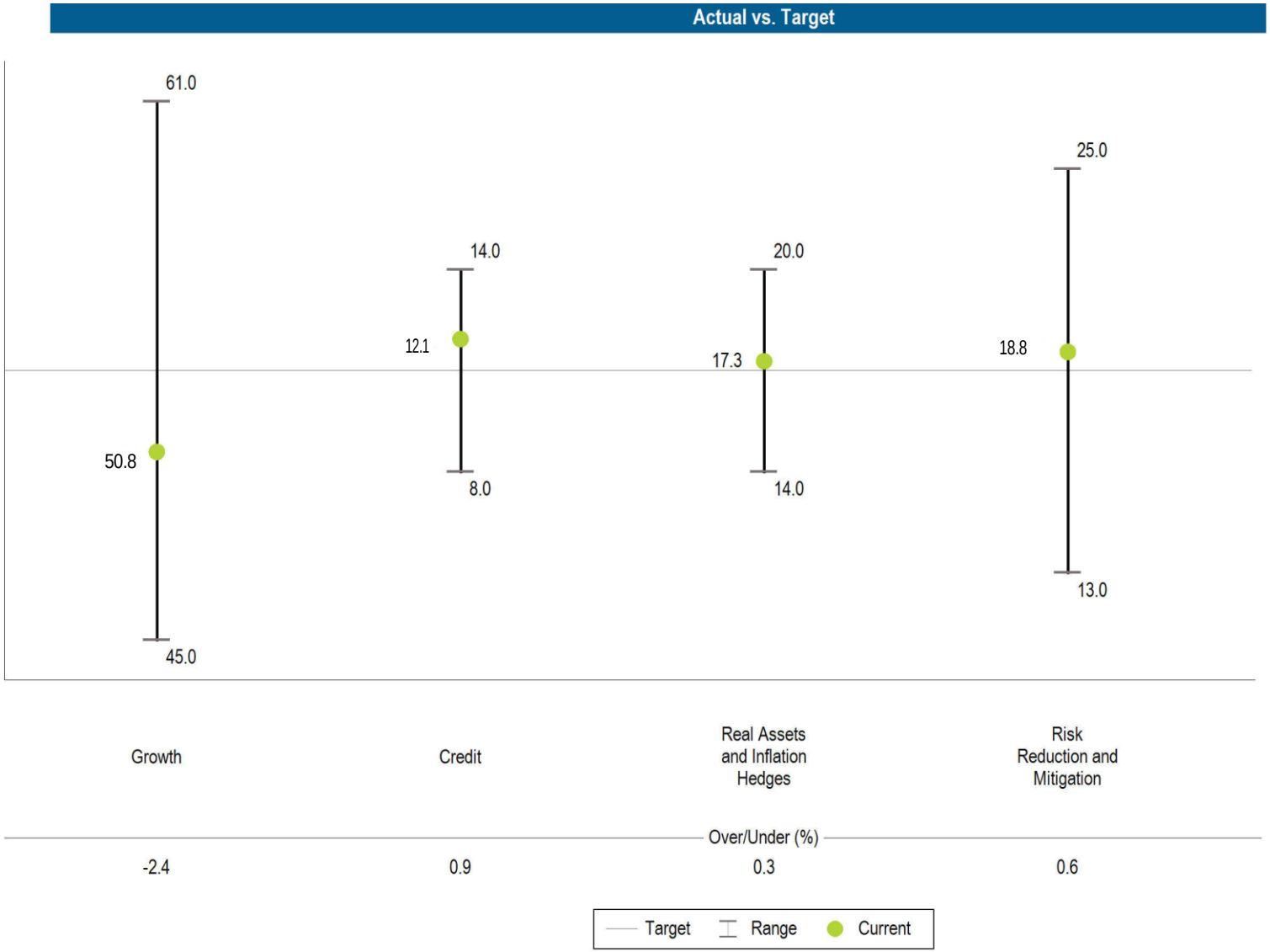
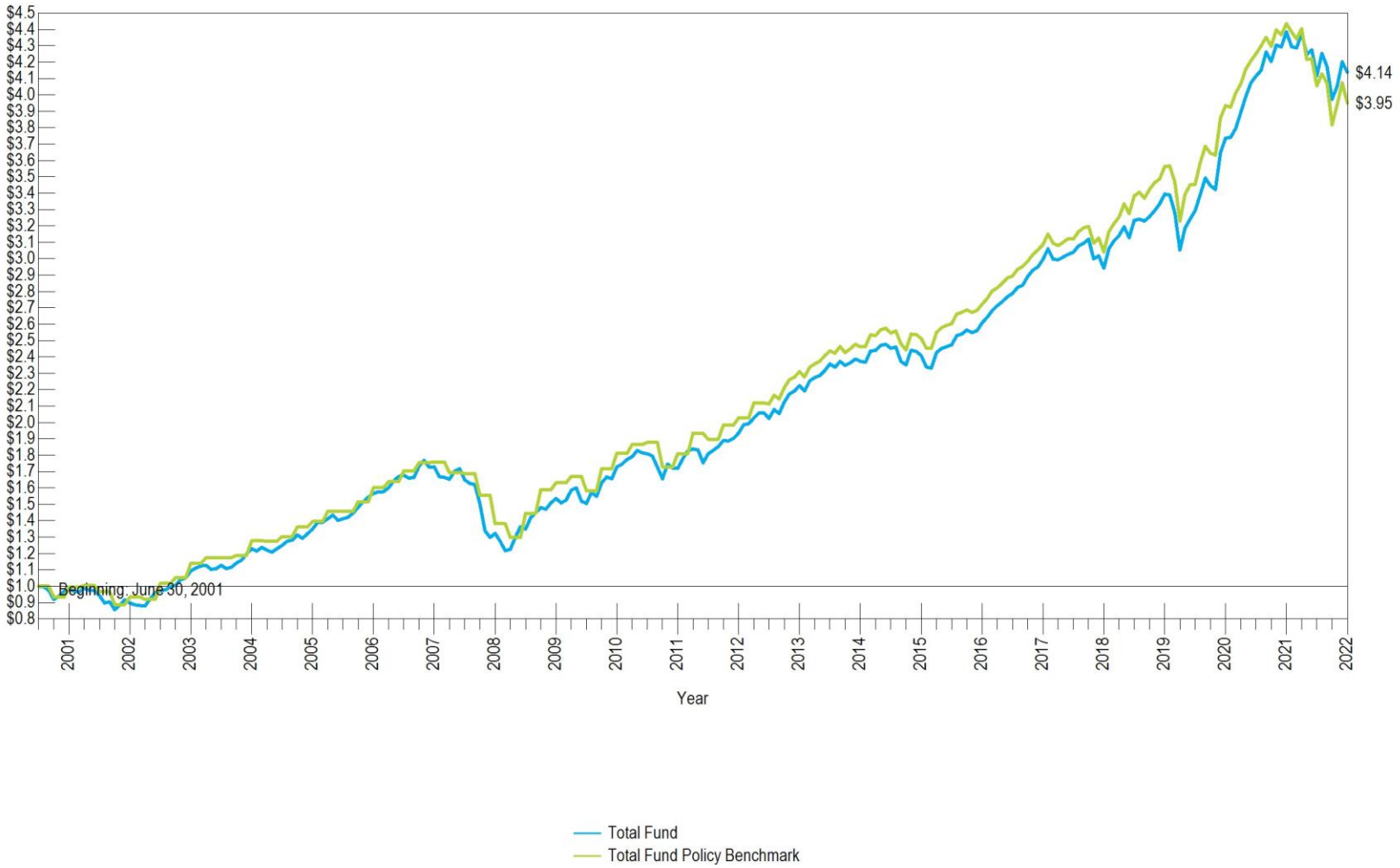


Growth of a Dollar



Los Angeles County Employees Retirement Association | December 31, 2022

Asset Class Performance Summary (Net)

	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD[1] (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Total Fund (Net)	**70,079,038,203**	**100.0**	**-1.5**	**4.1**	**0.5**	**-5.6**	**6.8**	**6.7**	**7.9**
Total Fund Policy Benchmark			*-3.0*	*3.5*	*-2.5*	*-10.9*	*3.5*	*5.1*	*6.9*
Excess Return			1.5	0.6	3.0	5.3	3.3	1.6	1.0
Growth (Net)	**35,773,280,500**	**51.0**	**-2.2**	**6.0**	**0.8**	**-9.7**	**10.0**	**--**	**--**
Growth Custom Blended Benchmark			*-5.3*	*4.0*	*-4.8*	*-17.0*	*5.2*	--	--
Excess Return			3.1	2.0	5.6	7.3	4.8		
Credit (Net)	**8,445,783,572**	**12.1**	**0.2**	**2.2**	**1.6**	**-5.5**	**2.8**	**--**	**--**
Credit Custom Blended Benchmark			*1.8*	*1.9*	*1.0*	*-7.4*	*0.3*	--	--
Excess Return			-1.6	0.3	0.6	1.9	2.5		
Real Assets and Inflation Hedges (Net)	**12,222,181,033**	**17.4**	**-1.0**	**3.9**	**1.7**	**7.8**	**8.1**	**--**	**--**
Real Assets & Inflation Hedges Custom BM			*-1.6*	*5.4*	*2.1*	*6.4*	*8.3*	--	--
Excess Return			0.6	-1.5	-0.4	1.4	-0.2		
Risk Reduction and Mitigation (Net)	**13,202,107,101**	**18.8**	**-0.1**	**1.1**	**-2.7**	**-9.8**	**-1.0**	**--**	**--**
Risk Reduction and Mitigation Custom Blended Benchmark			*-0.4*	*1.1*	*-2.9*	*-11.0*	*-1.9*	--	--
Excess Return			0.3	0.0	0.2	1.2	0.9		
Overlay and Hedges (Net)	**435,685,997**	**0.6**	**-26.4**	**-10.6**	**1.5**	**178.1**	**--**	**--**	**--**

[1] Fiscal Year begins July 1.

* See Glossary for all custom index definitions.

Los Angeles County Employees Retirement Association | December 31, 2022

Trailing Performance

	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Total Fund (Net)	**70,079,038,203**	**100.0**	**-1.5**	**4.1**	**0.5**	**-5.6**	**6.8**	**6.7**	**7.9**
Total Fund (Gross)			**-1.5**	**4.2**	**0.6**	**-5.4**	**7.3**	**7.0**	**8.2**
Total Fund Policy Benchmark			*-3.0*	*3.5*	*-2.5*	*-10.9*	*3.5*	*5.1*	*6.9*
Excess Return (vs. Net)			1.5	0.6	3.0	5.3	3.3	1.6	1.0
Growth (Net)[1]	**35,773,280,500**	**51.0**	**-2.2**	**6.0**	**0.8**	**-9.7**	**10.0**	**--**	**--**
Growth (Gross)			**-2.2**	**6.1**	**1.0**	**-9.4**	**10.5**	**--**	**--**
Growth Custom Blended Benchmark			*-5.3*	*4.0*	*-4.8*	*-17.0*	*5.2*	--	--
Excess Return (vs. Net)			3.1	2.0	5.6	7.3	4.8		
Global Equity (Net)	**21,969,396,862**	**31.3**	**-3.8**	**10.0**	**2.9**	**-17.5**	**4.5**	**5.6**	**8.8**
Global Equity (Gross)			**-3.8**	**10.0**	**2.9**	**-17.4**	**4.7**	**5.7**	**8.9**
Global Equity Custom BM			*-3.8*	*9.8*	*2.6*	*-18.4*	*3.8*	--	--
Excess Return (vs. Net)			0.0	0.2	0.3	0.9	0.7		
Acadian Developed Markets (Net)	560,154,657	0.8	-0.4	14.7	5.4	-15.0	4.3	3.0	7.5
Acadian Developed Markets (Gross)			-0.3	14.8	5.6	-14.7	4.7	3.4	7.9
EAFE Custom Benchmark			*-0.5*	*16.2*	*5.5*	*-14.3*	*1.3*	*1.8*	*4.6*
Excess Return (vs. Net)			0.1	-1.5	-0.1	-0.7	3.0	1.2	2.9
BTC Euro Tilts (Net)	527,751,991	0.8	0.1	18.8	9.3	-12.7	4.1	2.8	6.3
BTC Euro Tilts (Gross)			0.1	19.0	9.5	-12.3	4.5	3.2	6.8
MSCI EUROPE			*0.0*	*19.3*	*7.2*	*-15.1*	*1.4*	*1.9*	*4.6*
Excess Return (vs. Net)			0.1	-0.5	2.1	2.4	2.7	0.9	1.7

[1] Includes accounts that are lagged by 3-months and latest available adjusted for cash flows.

Los Angeles County Employees Retirement Association | December 31, 2022

	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Capital Guardian (Net)	364,176,433	0.5	-1.4	17.5	6.2	-23.4	0.4	3.3	6.0
Capital Guardian (Gross)			-1.3	17.6	6.3	-23.1	0.7	3.7	6.4
EAFE Custom Benchmark			*-0.5*	*16.2*	*5.5*	*-14.3*	*1.3*	*1.8*	*4.6*
Excess Return (vs. Net)			-0.9	1.3	0.7	-9.1	-0.9	1.5	1.4
Cevian Capital (Net)	398,346,642	0.6	-2.2	9.5	11.0	-3.6	9.0	5.6	--
Cevian Capital (Gross)			-2.1	9.8	11.6	-2.6	10.1	6.8	--
MSCI EUROPE			*0.0*	*19.3*	*7.2*	*-15.1*	*1.4*	*1.9*	--
Excess Return (vs. Net)			-2.2	-9.8	3.8	11.5	7.6	3.7	
CornerCap (Net)	80,616,765	0.1	-4.7	11.0	5.2	-7.0	9.1	--	--
CornerCap (Gross)			-4.7	11.1	5.5	-6.5	9.7	--	--
Russell 2000			*-6.5*	*6.2*	*3.9*	*-20.4*	*3.1*	--	--
Excess Return (vs. Net)			1.8	4.8	1.3	13.4	6.0		
Frontier Capital Management (Net)	256,220,515	0.4	-6.4	11.1	6.0	-17.9	4.5	5.0	10.2
Frontier Capital Management (Gross)			-6.4	11.3	6.4	-17.3	5.2	5.7	11.1
Russell 2500			*-5.9*	*7.4*	*4.4*	*-18.4*	*5.0*	*5.9*	*10.0*
Excess Return (vs. Net)			-0.5	3.7	1.6	0.5	-0.5	-0.9	0.2

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Global Alpha IE EMP (Net)	165,539,625	0.2	1.1	15.1	2.1	-19.2	-0.7	--	--
Global Alpha IE EMP (Gross)			1.1	15.3	2.5	-18.6	0.0	--	--
MSCI EAFE Small Cap			*1.1*	*15.8*	*4.4*	*-21.4*	*-0.9*	--	--
Excess Return (vs. Net)			0.0	-0.7	-2.3	2.2	0.2		
JPMAM Strategic BETA NON-U.S. (Net)	550,529,749	0.8	-0.9	14.1	3.4	-14.5	--	--	--
JPMAM Strategic BETA NON-U.S. (Gross)			-0.9	14.1	3.4	-14.5	--	--	--
MSCI ACWI ex USA IMI			*-0.6*	*14.1*	*3.1*	*-16.6*	--	--	--
Excess Return (vs. Net)			-0.3	0.0	0.3	2.1			
JPMAM Strategic BETA U.S. (Net)	3,997,750,770	5.7	-5.9	7.6	2.5	-17.9	--	--	--
JPMAM Strategic BETA U.S. (Gross)			-5.9	7.6	2.5	-17.9	--	--	--
MSCI USA IMI Gross			*-5.9*	*7.2*	*2.4*	*-19.2*	--	--	--
Excess Return (vs. Net)			0.0	0.4	0.1	1.3			
Lazard Emerging Markets (Net)	368,015,753	0.5	2.1	14.5	-1.7	-22.6	-1.0	0.3	--
Lazard Emerging Markets (Gross)			2.2	14.6	-1.4	-22.1	-0.3	1.0	--
MSCI Emerging Markets			*-1.4*	*9.7*	*-3.0*	*-20.1*	*-2.7*	*-1.4*	--
Excess Return (vs. Net)			3.5	4.8	1.3	-2.5	1.7	1.7	

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Parametric GE Market Cap (Net)	100,392,418	0.1	1.1	-6.5	-15.6	-15.6	--	--	--
Parametric GE Market Cap (Gross)			1.2	-6.5	-15.5	-15.4	--	--	--
Parametric GE Region (Net)	88,773,455	0.1	-1.3	-14.8	13.2	-21.6	--	--	--
Parametric GE Region (Gross)			-1.3	-14.8	13.3	-21.4	--	--	--
SSGA MSCI ACWI IMI (Net)	14,270,201,674	20.4	-3.8	10.1	2.6	-17.9	4.5	--	--
SSGA MSCI ACWI IMI (Gross)			-3.8	10.1	2.7	-17.9	4.5	--	--
MSCI ACWI IMI Net (DAILY)			*-3.8*	*9.8*	*2.6*	*-18.4*	*3.9*	--	--
Excess Return (vs. Net)			0.0	0.3	0.0	0.5	0.6		
Systematic Financial Management (Net)	186,369,294	0.3	-5.4	11.8	7.4	-9.9	7.0	--	--
Systematic Financial Management (Gross)			-5.4	12.0	7.7	-9.5	7.6	--	--
Russell 2000			*-6.5*	*6.2*	*3.9*	*-20.4*	*3.1*	--	--
Excess Return (vs. Net)			1.1	5.6	3.5	10.5	3.9		

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Private Equity - Growth (Net)	**12,732,565,040**	**18.2**	**0.3**	**0.0**	**-3.2**	**5.6**	**22.8**	**--**	**--**
Private Equity - Growth (Gross)			**0.4**	**0.2**	**-2.8**	**6.5**	**24.1**	**--**	**--**
Private Equity - Growth Custom BM			*-9.5*	*-6.2*	*-20.6*	*-19.6*	*5.7*	--	--
Excess Return (vs. Net)			9.8	6.2	17.4	25.2	17.1		
Non-Core Private Real Estate (Net)	**1,071,318,598**	**1.5**	**0.4**	**1.9**	**6.7**	**20.5**	**15.3**	**12.6**	**11.9**
Non-Core Private Real Estate (Gross)			**0.5**	**2.1**	**7.0**	**21.0**	**16.4**	**14.2**	**14.1**
Non-Core Private RE Policy BM			*0.3*	*0.9*	*6.0*	*23.6*	*14.4*	*12.3*	*13.1*
Excess Return (vs. Net)			0.1	1.0	0.7	-3.1	0.9	0.3	-1.2
Credit (Net)[1]	**8,445,783,572**	**12.1**	**0.2**	**2.2**	**1.6**	**-5.5**	**2.8**	**--**	**--**
Credit (Gross)			**0.3**	**2.2**	**1.6**	**-5.3**	**3.2**	**--**	**--**
Credit Custom Blended Benchmark			*1.8*	*1.9*	*1.0*	*-7.4*	*0.3*	--	--
Excess Return (vs. Net)			-1.6	0.3	0.6	1.9	2.5		
Liquid Credit (Net)	**4,709,316,668**	**6.7**	**-0.2**	**3.9**	**2.8**	**-8.4**	**--**	**--**	**--**
Liquid Credit (Gross)			**-0.1**	**4.0**	**2.9**	**-8.1**	**--**	**--**	**--**
Liquid Credit Custom BM			*0.1*	*4.1*	*3.4*	*-8.0*	--	--	--
Excess Return (vs. Net)			-0.3	-0.2	-0.6	-0.4			

[1] Includes accounts that are lagged by 1-month, 3-months, and latest available adjusted for cash flows.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
High Yield (Net)	**1,933,617,689**	**2.8**	**-1.1**	**3.4**	**1.9**	**-11.5**	**-0.1**	**--**	**--**
High Yield (Gross)			**-1.1**	**3.5**	**2.0**	**-11.2**	**0.2**	**--**	**--**
BBgBarc US High Yield TR			*-0.6*	*4.2*	*3.5*	*-11.2*	*0.0*	--	--
Excess Return (vs. Net)			-0.5	-0.8	-1.6	-0.3	-0.1		
Beach Point (Net)	280,704,015	0.4	-0.5	4.3	2.9	-11.5	-0.7	2.1	--
Beach Point (Gross)			-0.5	4.5	3.2	-11.1	-0.2	2.6	--
Beach Point Custom BM			*-0.6*	*4.2*	*3.5*	*-11.2*	*0.0*	*2.0*	--
Excess Return (vs. Net)			0.1	0.1	-0.6	-0.3	-0.7	0.1	
BlackRock HY ETF (Net)	578,918,108	0.8	-1.5	4.7	3.3	-10.9	--	--	--
BlackRock HY ETF (Gross)			-1.5	4.7	3.3	-10.9	--	--	--
BBgBarc US High Yield TR			*-0.6*	*4.2*	*3.5*	*-11.2*	--	--	--
Excess Return (vs. Net)			-0.9	0.5	-0.2	0.3			
Brigade Capital Management (Net)	624,145,743	0.9	-1.3	1.3	-1.2	-12.0	1.1	2.2	3.8
Brigade Capital Management (Gross)			-1.2	1.4	-1.0	-11.7	1.5	2.8	4.5
Brigade Custom Index			*-0.6*	*4.2*	*3.5*	*-11.2*	*0.2*	*2.3*	*3.6*
Excess Return (vs. Net)			-0.7	-2.9	-4.7	-0.8	0.9	-0.1	0.2
Pinebridge Investments (Net)	449,588,899	0.6	-0.6	4.2	4.1	-11.4	--	--	--
Pinebridge Investments (Gross)			-0.6	4.3	4.2	-11.1	--	--	--
BBgBarc US High Yield TR			*-0.6*	*4.2*	*3.5*	*-11.2*	--	--	--
Excess Return (vs. Net)			0.0	0.0	0.6	-0.2			

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Bank Loans (Net)	**2,061,646,948**	**2.9**	**0.2**	**2.4**	**3.1**	**-1.9**	**4.4**	**--**	**--**
Bank Loans (Gross)			**0.2**	**2.5**	**3.3**	**-1.6**	**4.8**	**--**	**--**
CS Leveraged Loan Index			*0.4*	*2.3*	*3.5*	*-1.1*	*2.3*	--	--
Excess Return (vs. Net)			-0.2	0.1	-0.4	-0.8	2.1		
Bain Capital (Net)	416,718,964	0.6	0.1	2.0	2.2	-1.4	3.2	3.6	--
Bain Capital (Gross)			0.2	2.1	2.5	-0.8	3.8	4.2	--
Bank Loans Custom Index			*0.4*	*2.3*	*3.5*	*-1.1*	*2.4*	*3.5*	--
Excess Return (vs. Net)			-0.3	-0.3	-1.3	-0.3	0.8	0.1	
Credit Suisse Bank Loans (Net)	1,154,073,205	1.6	0.4	3.5	4.7	-0.4	--	--	--
Credit Suisse Bank Loans (Gross)			0.4	3.5	4.8	-0.2	--	--	--
CS Leveraged Loan Index			*0.4*	*2.3*	*3.5*	*-1.1*	--	--	--
Excess Return (vs. Net)			0.0	1.2	1.2	0.7			
Crescent Capital Group (Net)	490,854,779	0.7	-0.2	0.5	0.4	-5.6	2.5	3.3	--
Crescent Capital Group (Gross)			-0.2	0.6	0.7	-5.2	2.9	3.8	--
Bank Loans Custom Index			*0.4*	*2.3*	*3.5*	*-1.1*	*2.4*	*3.5*	--
Excess Return (vs. Net)			-0.6	-1.8	-3.1	-4.5	0.1	-0.2	

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
EM Debt (Net)	**714,052,031**	**1.0**	**1.2**	**9.6**	**4.1**	**-16.7**	**-6.3**	**-2.7**	**--**
EM Debt (Gross)			**1.3**	**9.7**	**4.4**	**-16.4**	**-5.8**	**-2.3**	**--**
EMD Custom			*11*	*7.3*	*2.9*	*-14.9*	*-4.6*	*-1.0*	--
Excess Return (vs. Net)			0.1	2.3	1.2	-1.8	-1.7	-1.7	
Aberdeen Asset Management (Net)	372,812,975	0.5	0.9	9.6	4.8	-15.9	-5.2	-1.9	--
Aberdeen Asset Management (Gross)			1.0	9.7	5.0	-15.6	-4.9	-1.5	--
EMD Custom			*11*	*7.3*	*2.9*	*-14.9*	*-4.6*	*-1.0*	--
Excess Return (vs. Net)			-0.2	2.3	1.9	-1.0	-0.6	-0.9	
Ashmore Investment Management (Net)	341,239,055	0.5	1.6	9.6	3.4	-17.6	-7.4	-3.6	--
Ashmore Investment Management (Gross)			1.6	9.8	3.6	-17.2	-6.8	-3.1	--
EMD Custom			*11*	*7.3*	*2.9*	*-14.9*	*-4.6*	*-1.0*	--
Excess Return (vs. Net)			0.5	2.3	0.5	-2.7	-2.8	-2.6	

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Illiquid Credit (Net)	**3,736,447,308**	**5.3**	**0.8**	**-0.1**	**-0.1**	**-0.8**	**10.3**	**--**	**--**
Illiquid Credit (Gross)			**0.8**	**-0.1**	**-0.3**	**-0.7**	**10.9**	**--**	**--**
Illiquid Credit Custom BM			*2.8*	*0.7*	*-0.6*	*-5.5*	*1.5*	--	--
Excess Return (vs. Net)			-2.0	-0.8	0.5	4.7	8.8		
Beach Point - Fund III (Net)	154,484,725	0.2	0.5	-4.4	-7.3	-11.9	11.0	9.9	--
Beach Point - Fund III (Gross)			0.5	-5.8	-9.8	-10.3	15.0	14.0	--
Opportunistic Custom Index 1 Month Lag			*1.6*	*0.2*	*-0.8*	*-4.8*	*1.9*	*2.9*	--
Excess Return (vs. Net)			-1.1	-4.6	-6.5	-7.1	9.1	7.0	
Grosvenor OPCRD 2 HFOF (Net)	22,876,487	0.0							
Grosvenor OPCRD 2 HFOF (Gross)									
Grosvenor Custom Benchmark			*2.8*	*0.7*	*-0.6*	*-5.5*	*1.5*	*4.5*	--
Excess Return (vs. Net)									
Lake Cottage (Net)	237,110,000	0.3	0.0	--	--	--	--	--	--
Lake Cottage (Gross)			0.0	--	--	--	--	--	--
Illiquid Credit Custom BM			*2.8*	--	--	--	--	--	--
Excess Return (vs. Net)			-2.8						
Lake Vineyard (Net)	363,040,553	0.5	0.1	0.5	-1.8	--	--	--	--
Lake Vineyard (Gross)			0.1	0.5	-1.8	--	--	--	--
Illiquid Credit Custom BM			*2.8*	*0.7*	*-0.6*	--	--	--	--
Excess Return (vs. Net)			-2.7	-0.2	-1.2				

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Magnetar Credit Fund (Net)	904,460,903	1.3	0.2	-0.2	0.0	-1.1	--	--	--
Magnetar Credit Fund (Gross)			0.2	-0.2	0.0	-1.1	--	--	--
Illiquid Credit Custom BM			*2.8*	*0.7*	*-0.6*	*-5.5*	--	--	--
Excess Return (vs. Net)			-2.6	-0.9	0.6	4.4			
Napier Park (Net)	800,426,250	1.1	1.8	-0.7	-0.5	-5.5	--	--	--
Napier Park (Gross)			1.8	-0.7	-0.5	-5.5	--	--	--
Illiquid Credit Custom BM			*2.8*	*0.7*	*-0.6*	*-5.5*	--	--	--
Excess Return (vs. Net)			-1.0	-1.4	0.1	0.0			
PIMCO Tac Opps (Net)	272,834,325	0.4	2.3	-0.9	-3.3	-6.4	5.5	--	--
PIMCO Tac Opps (Gross)			2.3	-0.9	-3.3	-6.4	5.5	--	--
PIMCO Tac Opps Custom BM			*2.8*	*0.7*	*-0.6*	*-5.5*	*-0.4*	--	--
Excess Return (vs. Net)			-0.5	-1.6	-2.7	-0.9	5.9		
Private Equity - Credit (Net)	215,444,042	0.3	0.0	4.2	2.3	12.8	17.4	--	--
Private Equity - Credit (Gross)			0.0	4.2	2.3	12.8	17.4	--	--
PE-Credit Custom Benchmark			*-4.1*	*-4.2*	*-8.1*	*-12.4*	*-0.8*	--	--
Excess Return (vs. Net)			4.1	8.4	10.4	25.2	18.2		
Real Estate - Credit (Net)	83,190,284	0.1	0.0	3.2	4.1	11.1	10.0	9.7	8.8
Real Estate - Credit (Gross)			0.0	3.2	4.3	11.7	10.8	10.6	9.8
RE Credit BM			*2.8*	*0.7*	*-0.6*	*-5.5*	*0.3*	*2.0*	*3.6*
Excess Return (vs. Net)			-2.8	2.5	4.7	16.6	9.7	7.7	5.2

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Tennenbaum Capital (Net)	647,415,283	0.9	0.9	1.2	2.8	5.4	7.0	7.1	--
Tennenbaum Capital (Gross)			1.0	1.4	3.2	6.2	7.7	7.9	--
CSFB Leveraged Loan Index 1 Month Lagged			*11*	*-0.2*	*11*	*-0.8*	*2.8*	*3.3*	--
Excess Return (vs. Net)			-0.2	1.4	1.7	6.2	4.2	3.8	
IC EM Program (Net)	**22,630,995**	**0.0**	**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
IC EM Program (Gross)			**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
Illiquid Credit Custom BM			*2.8*	--	--	--	--	--	--
Excess Return (vs. Net)			-2.8						
Stable Asset Management - IC (Net)	**22,630,995**	**0.0**	**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
Stable Asset Management - IC (Gross)			**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
Illiquid Credit Custom BM			*2.8*	--	--	--	--	--	--
Excess Return (vs. Net)			-2.8						
Stable Fund Investments - IC (Net)	**22,630,995**	**0.0**	**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
Stable Fund Investments - IC (Gross)			**0.0**	**--**	**--**	**--**	**--**	**--**	**--**
Illiquid Credit Custom BM			*2.8*	--	--	--	--	--	--
Excess Return (vs. Net)			-2.8						
HarbourView (Net)	22,630,995	0.0	0.0	--	--	--	--	--	--
HarbourView (Gross)			0.0	--	--	--	--	--	--
Illiquid Credit Custom BM			*2.8*	--	--	--	--	--	--
Excess Return (vs. Net)			-2.8						

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Real Assets and Inflation Hedges (Net)[1]	**12,222,181,033**	**17.4**	**-1.0**	**3.9**	**1.7**	**7.8**	**8.1**	**--**	**--**
Real Assets and Inflation Hedges (Gross)			**-1.0**	**4.1**	**1.9**	**8.2**	**8.5**	**--**	**--**
Real Assets & Inflation Hedges Custom BM			*-1.6*	*5.4*	*2.1*	*6.4*	*8.3*	--	--
Excess Return (vs. Net)			0.6	-1.5	-0.4	1.4	-0.2		
Core Private Real Estate (Net)	**4,338,870,749**	**6.2**	**0.2**	**1.7**	**6.8**	**23.7**	**11.3**	**9.1**	**9.1**
Core Private Real Estate (Gross)			**0.2**	**2.0**	**7.2**	**24.6**	**12.0**	**9.8**	**9.8**
Core Private Real Estate Custom BM			*0.1*	*0.3*	*4.9*	*21.0*	*11.7*	*9.7*	*10.4*
Excess Return (vs. Net)			0.1	1.4	1.9	2.7	-0.4	-0.6	-1.3
Natural Resources and Commodities (Net)	**2,210,384,505**	**3.2**	**-2.1**	**4.4**	**0.8**	**12.3**	**11.8**	**6.3**	**-0.6**
Natural Resources and Commodities (Gross)			**-2.1**	**4.5**	**0.9**	**12.6**	**12.2**	**6.6**	**-0.3**
Natural Resources & Commodities Custom BM			*-2.9*	*12.0*	*7.0*	*12.0*	*12.9*	*6.9*	*-1.1*
Excess Return (vs. Net)			0.8	-7.6	-6.2	0.3	-1.1	-0.6	0.5
Public Natural Resources and Commodities (Net)	**1,371,394,816**	**2.0**	**-3.3**	**6.1**	**2.1**	**12.6**	**--**	**--**	**--**
Public Natural Resources and Commodities (Gross)			**-3.3**	**6.1**	**2.2**	**12.9**	**--**	**--**	**--**
Natural Resources & Commodities Custom BM			*-2.9*	*12.0*	*7.0*	*12.0*	--	--	--
Excess Return (vs. Net)			-0.4	-5.9	-4.9	0.6			
Credit Suisse Commodity (Net)	312,306,204	0.4	-2.3	1.4	-2.0	17.0	14.0	7.0	-0.7
Credit Suisse Commodity (Gross)			-2.3	1.5	-1.9	17.3	14.3	7.3	-0.5
Bloomberg Commodity Index TR USD			*-2.4*	*2.2*	*-2.0*	*16.1*	*12.7*	*6.4*	*-1.3*
Excess Return (vs. Net)			0.1	-0.8	0.0	0.9	1.3	0.6	0.6

[1] Includes accounts that are lagged by 3-months and latest available adjusted for cash flows.
Private natural resources and infrastructure funds reflect early-stage life cycle performance.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
DWS Natural Resources (Net)	671,051,260	1.0	-4.1	13.1	9.4	9.1	12.0	--	--
DWS Natural Resources (Gross)			-4.1	13.2	9.5	9.3	12.2	--	--
S&P Global Large/MidCap Commodities & Resources			*-3.7*	*14.0*	*12.4*	*15.5*	*14.4*	--	--
Excess Return (vs. Net)			-0.4	-0.9	-3.0	-6.4	-2.4		
Neuberger Berman/ Gresham (Net)	366,223,800	0.5	-2.8	1.2	-3.5	17.0	12.0	6.5	-0.6
Neuberger Berman/ Gresham (Gross)			-2.7	1.3	-3.3	17.4	12.4	6.9	-0.2
Bloomberg Commodity Index TR USD			*-2.4*	*2.2*	*-2.0*	*16.1*	*12.7*	*6.4*	*-1.3*
Excess Return (vs. Net)			-0.4	-1.0	-1.5	0.9	-0.7	0.1	0.7
PIMCO Commodities (Net)	21,813,552	0.0							
PIMCO Commodities (Gross)									
Bloomberg Commodity Index TR USD			*-2.4*	*2.2*	*-2.0*	*16.1*	*12.7*	*6.4*	*-1.3*
Excess Return (vs. Net)									
Private Natural Resources and Commodities (Net)	**838,989,689**	**1.2**	**0.1**	**1.0**	**-2.1**	**10.0**	**-6.7**	**--**	**--**
Private Natural Resources and Commodities (Gross)			**0.2**	**1.0**	**-2.0**	**10.7**	**-5.1**	**--**	**--**
PE - Real Assets Custom BM			*-7.6*	*-1.3*	*-16.2*	*9.7*	*14.2*	--	--
Excess Return (vs. Net)			7.7	2.3	14.1	0.3	-20.9		
Cibus Enterprise II (Net)	4,182,868	0.0	-4.9	-4.9	-11.5	--	--	--	--
Cibus Enterprise II (Gross)			-4.9	-4.9	-11.5	--	--	--	--
PE - Real Assets Custom BM			*-7.6*	*-1.3*	*-16.2*	--	--	--	--
Excess Return (vs. Net)			2.7	-3.6	4.7				

Private natural resources and infrastructure funds reflect early-stage life cycle performance.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Cibus Co-Invest V (Net)	15,052,454	0.0	0.0	--	--	--	--	--	--
Cibus Co-Invest V (Gross)			0.0	--	--	--	--	--	--
PE - Real Assets Custom BM			-7.6	--	--	--	--	--	--
Excess Return (vs. Net)			7.6						
Cibus Fund II (Net)	15,656,862	0.0	-6.1	-6.1	-12.0	--	--	--	--
Cibus Fund II (Gross)			-6.1	-6.1	-12.0	--	--	--	--
PE - Real Assets Custom BM			-7.6	-1.3	-16.2	--	--	--	--
Excess Return (vs. Net)			1.5	-4.8	4.2				
HiTecVision New Energy (Net)	66,808,958	0.1	3.7	13.7	--	--	--	--	--
HiTecVision New Energy (Gross)			3.7	13.7	--	--	--	--	--
PE - Real Assets Custom BM			-7.6	-1.3	--	--	--	--	--
Excess Return (vs. Net)			11.3	15.0					
Orion Mine Finance Fund III (Net)	122,255,021	0.2	0.0	2.3	-1.2	5.4	--	--	--
Orion Mine Finance Fund III (Gross)			0.0	2.3	-1.2	5.4	--	--	--
PE - Real Assets Custom BM			-7.6	-1.3	-16.2	9.7	--	--	--
Excess Return (vs. Net)			7.6	3.6	15.0	-4.3			
Orion Mining Royalty Fund I (Net)	20,229,818	0.0	0.0	-7.6	-12.4	-11.4	--	--	--
Orion Mining Royalty Fund I (Gross)			0.0	-7.6	-12.4	-11.4	--	--	--
PE - Real Assets Custom BM			-7.6	-1.3	-16.2	9.7	--	--	--
Excess Return (vs. Net)			7.6	-6.3	3.8	-21.1			

Private natural resources and infrastructure funds reflect early-stage life cycle performance.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
PE - Real Assets & Inflation Hedges (Net)	81,982,636	0.1	0.0	1.8	-0.2	11.0	-5.6	--	--
PE - Real Assets & Inflation Hedges (Gross)			0.4	2.2	0.6	16.6	-4.1	--	--
PE - Real Assets Custom BM			*-7.6*	*-1.3*	*-16.2*	*9.7*	*14.2*	--	--
Excess Return (vs. Net)			7.6	3.1	16.0	1.3	-19.8		
TIAA-CREF Global Agriculture (Net)	255,887,540	0.4	0.0	-0.9	-3.7	12.5	--	--	--
TIAA-CREF Global Agriculture (Gross)			0.0	-0.9	-3.7	12.5	--	--	--
PE - Real Assets Custom BM			*-7.6*	*-1.3*	*-16.2*	*9.7*	--	--	--
Excess Return (vs. Net)			7.6	0.4	12.5	2.8			
TIAA-CREF Global Agriculture II (Net)	256,933,531	0.4	0.0	0.2	-2.2	9.8	--	--	--
TIAA-CREF Global Agriculture II (Gross)			0.0	0.2	-2.2	9.8	--	--	--
PE - Real Assets Custom BM			*-7.6*	*-1.3*	*-16.2*	*9.7*	--	--	--
Excess Return (vs. Net)			7.6	1.5	14.0	0.1			
Infrastructure (Net)	**3,811,989,221**	**5.4**	**-2.0**	**7.2**	**-1.0**	**-4.6**	**4.9**	**--**	**--**
Infrastructure (Gross)			**-2.0**	**7.2**	**-0.9**	**-4.5**	**5.1**	**--**	**--**
DJ Brookfield Global Infrastructure Comp TR			*-3.2*	*9.7*	*-1.5*	*-4.2*	*1.2*	--	--
Excess Return (vs. Net)			1.2	-2.5	0.5	-0.4	3.7		
Public Infrastructure (Net)	**2,781,556,615**	**4.0**	**-2.9**	**8.5**	**-1.7**	**-6.3**	**4.6**	**--**	**--**
Public Infrastructure (Gross)			**-2.9**	**8.5**	**-1.6**	**-6.2**	**4.9**	**--**	**--**
DJ Brookfield Global Infrastructure Comp TR			*-3.2*	*9.7*	*-1.5*	*-4.2*	*1.2*	--	--
Excess Return (vs. Net)			0.3	-1.2	-0.2	-2.1	3.4		

Private natural resources and infrastructure funds reflect early-stage life cycle performance.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
DWS Infrastructure (Net)	2,781,556,615	4.0	-2.9	8.5	-1.7	-6.3	4.6	--	--
DWS Infrastructure (Gross)			-2.9	8.5	-1.6	-6.2	4.8	--	--
DJ Brookfield Global Infrastructure Comp TR			*-3.2*	*9.7*	*-1.5*	*-4.2*	*1.2*	--	--
Excess Return (vs. Net)			0.3	-1.2	-0.2	-2.1	3.4		
Private Infrastructure (Net)	**1,030,432,606**	**1.5**	**0.8**	**3.6**	**2.9**	**2.3**	**--**	**--**	**--**
Private Infrastructure (Gross)			**0.9**	**3.7**	**3.0**	**2.3**	**--**	**--**	**--**
Private Infrastructure Policy BM			*-12.3*	*-10.2*	*-16.7*	*-7.2*	--	--	--
Excess Return (vs. Net)			13.1	13.8	19.6	9.5			
Antin Mid Cap (Net)	37,989,309	0.1	3.7	12.5	5.1	-10.9	--	--	--
Antin Mid Cap (Gross)			3.7	12.5	5.1	-10.9	--	--	--
DJ Brookfield Global Infrastructure Comp TR			*-3.2*	*9.7*	*-1.5*	*-4.2*	--	--	--
Excess Return (vs. Net)			6.9	2.8	6.6	-6.7			
Axium Infrastructure (Net)	254,444,519	0.4	0.0	1.9	3.3	2.4	--	--	--
Axium Infrastructure (Gross)			0.2	2.1	3.7	3.1	--	--	--
Private Infrastructure Policy BM			*-12.3*	*-10.2*	*-16.7*	*-7.2*	--	--	--
Excess Return (vs. Net)			12.3	12.1	20.0	9.6			
Axium Infrastructure Canada (Net)	58,992,312	0.1	0.1	1.4	1.4	--	--	--	--
Axium Infrastructure Canada (Gross)			0.1	1.6	1.6	--	--	--	--
Private Infrastructure Policy BM			*-12.3*	*-10.2*	*-16.7*	--	--	--	--
Excess Return (vs. Net)			12.4	11.6	18.1				

Private natural resources and infrastructure funds reflect early-stage life cycle performance.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
DIF CIF III (Net)	39,680,912	0.1	0.5	2.2	5.2	--	--	--	--
DIF CIF III (Gross)			0.5	2.2	5.2	--	--	--	--
Private Infrastructure Policy BM			-12.3	-10.2	-16.7	--	--	--	--
Excess Return (vs. Net)			12.8	12.4	21.9				
DIF Infrastructure VI (Net)	102,985,702	0.1	3.6	14.4	11.6	13.6	--	--	--
DIF Infrastructure VI (Gross)			3.6	14.2	11.4	12.9	--	--	--
Private Infrastructure Policy BM			-12.3	-10.2	-16.7	-7.2	--	--	--
Excess Return (vs. Net)			15.9	24.6	28.3	20.8			
Grain Communications Opportunity III (Net)	33,248,608	0.0	0.0	1.3	-2.4	-9.8	--	--	--
Grain Communications Opportunity III (Gross)			0.0	1.3	-2.4	-9.8	--	--	--
Private Infrastructure Policy BM			-12.3	-10.2	-16.7	-7.2	--	--	--
Excess Return (vs. Net)			12.3	11.5	14.3	-2.6			
Grain Spectrum Holdings III (Net)	47,763,311	0.1	0.0	-0.1	-0.3	-0.6	--	--	--
Grain Spectrum Holdings III (Gross)			0.0	-0.1	-0.3	-0.6	--	--	--
Private Infrastructure Policy BM			-12.3	-10.2	-16.7	-7.2	--	--	--
Excess Return (vs. Net)			12.3	10.1	16.4	6.6			
KKR DCIF (Net)	327,031,574	0.5	0.0	1.1	1.9	--	--	--	--
KKR DCIF (Gross)			0.0	1.1	1.9	--	--	--	--
Private Infrastructure Policy BM			-12.3	-10.2	-16.7	--	--	--	--
Excess Return (vs. Net)			12.3	11.3	18.6				

Los Angeles County Employees Retirement Association | December 31, 2022

	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Pan European Infrastructure Fund III (Net)	65,352,632	0.1	3.7	8.7	4.9	7.1	--	--	--
Pan European Infrastructure Fund III (Gross)			4.1	9.1	5.3	7.5	--	--	--
Private Infrastructure Policy BM			*-12.3*	*-10.2*	*-16.7*	*-7.2*	--	--	--
Excess Return (vs. Net)			16.0	18.9	21.6	14.3			
Partners Grp Direct Infra 2020 (Net)	62,943,726	0.1	0.0	5.2	2.7	--	--	--	--
Partners Grp Direct Infra 2020 (Gross)			-0.1	5.1	2.5	--	--	--	--
Private Infrastructure Policy BM			*-12.3*	*-10.2*	*-16.7*	--	--	--	--
Excess Return (vs. Net)			12.3	15.4	19.4				
TIPS (Net)	**1,860,936,558**	**2.7**	**-0.4**	**2.1**	**-3.6**	**-11.9**	**1.1**	**--**	**--**
TIPS (Gross)			**-0.4**	**2.1**	**-3.6**	**-11.9**	**1.2**	**--**	**--**
BBgBarc US TIPS TR			*-1.0*	*2.0*	*-3.2*	*-11.8*	*1.2*	--	--
Excess Return (vs. Net)			0.6	0.1	-0.4	-0.1	-0.1		
Blackrock TIPS (Net)	1,860,936,558	2.7	-0.4	2.1	-3.6	-11.9	1.1	--	--
Blackrock TIPS (Gross)			-0.4	2.1	-3.6	-11.9	1.1	--	--
BBgBarc US TIPS TR			*-1.0*	*2.0*	*-3.2*	*-11.8*	*1.2*	--	--
Excess Return (vs. Net)			0.6	0.1	-0.4	-0.1	-0.1		

[1] Includes accounts that are lagged by 1-month.

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Risk Reduction and Mitigation (Net)	**13,202,107,101**	**18.8**	**-0.1**	**1.1**	**-2.7**	**-9.8**	**-1.0**	**--**	**--**
Risk Reduction and Mitigation (Gross)			**-0.1**	**1.1**	**-2.7**	**-9.8**	**-0.9**	**--**	**--**
Risk Reduction and Mitigation Custom Blended Benchmark			*-0.4*	*1.1*	*-2.9*	*-11.0*	*-1.9*	--	--
Excess Return (vs. Net)			0.3	0.0	0.2	1.2	0.9		
Investment Grade Bonds (Net)	**5,002,871,602**	**7.1**	**-0.4**	**1.8**	**-3.0**	**-13.1**	**-2.6**	**0.2**	**1.5**
Investment Grade Bonds (Gross)			**-0.4**	**1.9**	**-3.0**	**-13.0**	**-2.5**	**0.2**	**1.6**
BBgBarc US Aggregate TR			*-0.5*	*1.9*	*-3.0*	*-13.0*	*-2.7*	*0.0*	*1.1*
Excess Return (vs. Net)			0.1	-0.1	0.0	-0.1	0.1	0.2	0.4
Allspring/Wells (Net)	1,251,510,761	1.8	0.0	2.1	-2.8	-13.0	-2.2	0.4	1.4
Allspring/Wells (Gross)			0.0	2.1	-2.8	-12.9	-2.1	0.5	1.5
BBgBarc US Aggregate TR			*-0.5*	*1.9*	*-3.0*	*-13.0*	*-2.7*	*0.0*	*1.1*
Excess Return (vs. Net)			0.5	0.2	0.2	0.0	0.5	0.4	0.3
BTC US Debt Index (Net)	2,905,302,767	4.1	-0.6	1.7	-3.1	-13.0	-2.7	0.1	1.1
BTC US Debt Index (Gross)			-0.6	1.7	-3.1	-13.0	-2.7	0.1	1.2
BBgBarc US Aggregate TR			*-0.5*	*1.9*	*-3.0*	*-13.0*	*-2.7*	*0.0*	*1.1*
Excess Return (vs. Net)			-0.1	-0.2	-0.1	0.0	0.0	0.1	0.0
Member Home Loan Program (MHLP) (Net)	10,899,917	0.0	0.4	1.2	2.4	4.8	5.2	6.7	5.3
Member Home Loan Program (MHLP) (Gross)			0.4	1.2	2.6	5.1	5.5	7.0	5.5

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Pugh Capital Management (Net)	835,158,160	1.2	-0.1	1.9	-3.0	-13.2	-2.6	0.1	1.1
Pugh Capital Management (Gross)			-0.1	2.0	-2.9	-13.1	-2.4	0.2	1.3
BBgBarc US Aggregate TR			*-0.5*	*1.9*	*-3.0*	*-13.0*	*-2.7*	*0.0*	*1.1*
Excess Return (vs. Net)			0.4	0.0	0.0	-0.2	0.1	0.1	0.0
Long-Term Government Bonds (Net)	**2,856,797,172**	**4.1**	**-1.1**	**-0.6**	**-10.7**	**-28.9**	**--**	**--**	**--**
Long-Term Government Bonds (Gross)			**-1.1**	**-0.6**	**-10.7**	**-28.9**	**--**	**--**	**--**
Bloomberg U.S. Treasury: Long			*-1.7*	*-0.6*	*-10.2*	*-29.2*	--	--	--
Excess Return (vs. Net)			0.6	0.0	-0.5	0.3			
Blackrock Long Treasury Bonds (Net)	2,856,797,172	4.1	-1.1	-0.6	-10.7	-28.9	--	--	--
Blackrock Long Treasury Bonds (Gross)			-1.1	-0.6	-10.7	-28.9	--	--	--
Bloomberg U.S. Treasury: Long			*-1.7*	*-0.6*	*-10.2*	*-29.2*	--	--	--
Excess Return (vs. Net)			0.6	0.0	-0.5	0.3			
Diversified Hedge Fund Portfolio (Net)	**4,402,364,377**	**6.3**	**0.8**	**1.4**	**2.7**	**5.8**	**7.3**	**--**	**--**
Diversified Hedge Fund Portfolio (Gross)			**0.8**	**1.4**	**2.7**	**5.8**	**7.3**	**--**	**--**
Diversified Hedge Funds Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	*3.2*	--	--
Excess Return (vs. Net)			0.3	0.0	0.4	2.1	4.1		
LACERA HF Direct (Net)	**3,987,451,195**	**5.7**	**0.8**	**1.4**	**3.1**	**6.4**	**7.4**	**--**	**--**
LACERA HF Direct (Gross)			**0.8**	**1.4**	**3.1**	**6.4**	**7.4**	**--**	**--**
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	*3.2*	--	--
Excess Return (vs. Net)			0.3	0.0	0.8	2.7	4.2		

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
AM Asia Strategies Fund (Net)	217,076,850	0.3	5.9	-2.0	-1.3	-3.9	--	--	--
AM Asia Strategies Fund (Gross)			5.9	-2.0	-1.3	-3.9	--	--	--
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			5.4	-3.4	-3.6	-7.6			
Brevan Howard Master Fund (Net)	650,101,100	0.9	-1.1	0.4	4.0	18.5	--	--	--
Brevan Howard Master Fund (Gross)			-1.1	0.4	4.0	18.5	--	--	--
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			-1.6	-1.0	1.7	14.8			
Capula GRV (Net)	642,237,220	0.9	0.7	2.6	5.7	12.0	6.7	--	--
Capula GRV (Gross)			0.7	2.6	5.7	12.0	6.7	--	--
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	*3.2*	--	--
Excess Return (vs. Net)			0.2	1.2	3.4	8.3	3.5		
Caxton Global Investments (Net)	296,606,250	0.4	-0.4	1.5	2.5	15.7	--	--	--
Caxton Global Investments (Gross)			-0.4	1.5	2.5	15.7	--	--	--
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			-0.9	0.1	0.2	12.0			
DK Institutional Partners (Net)	486,247,950	0.7	0.8	-0.1	0.0	-1.3	5.2	--	--
DK Institutional Partners (Gross)			0.8	-0.1	0.0	-1.3	5.2	--	--
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	*3.2*	--	--
Excess Return (vs. Net)			0.3	-1.5	-2.3	-5.0	2.0		

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
HBK Multistrategy (Net)	578,073,000	0.8	2.7	4.1	5.3	3.9	6.9	--	--
HBK Multistrategy (Gross)			2.7	4.1	5.3	3.9	6.9	--	--
Hedge Fund Custom BM			0.5	1.4	2.3	3.7	3.2	--	--
Excess Return (vs. Net)			2.2	2.7	3.0	0.2	3.7		
Hudson Bay Fund (Net)	650,093,950	0.9	0.5	1.4	2.9	3.0	--	--	--
Hudson Bay Fund (Gross)			0.5	1.4	2.9	3.0	--	--	--
Hedge Fund Custom BM			0.5	1.4	2.3	3.7	--	--	--
Excess Return (vs. Net)			0.0	0.0	0.6	-0.7			
Polar (Net)	467,014,875	0.7	0.7	1.2	1.7	1.0	--	--	--
Polar (Gross)			0.7	1.2	1.7	1.0	--	--	--
Hedge Fund Custom BM			0.5	1.4	2.3	3.7	--	--	--
Excess Return (vs. Net)			0.2	-0.2	-0.6	-2.7			

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	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Hedge Fund Emerging Managers Program (Net)	**384,235,834**	**0.5**	**0.3**	**1.8**	**-0.5**	**-0.4**	**--**	**--**	**--**
Hedge Fund Emerging Managers Program (Gross)			**0.3**	**1.9**	**-0.3**	**-0.1**	**--**	**--**	**--**
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			-0.2	0.4	-2.8	-4.1			
Stable Asset Management (Net)	**384,235,834**	**0.5**	**0.3**	**1.8**	**-0.5**	**-0.4**	**--**	**--**	**--**
Stable Asset Management (Gross)			**0.3**	**1.9**	**-0.3**	**-0.1**	**--**	**--**	**--**
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			-0.2	0.4	-2.8	-4.1			
Stable Fund Investments (Net)	**384,260,959**	**0.5**	**0.3**	**1.9**	**-0.4**	**-0.2**	**--**	**--**	**--**
Stable Fund Investments (Gross)			**0.3**	**1.9**	**-0.4**	**-0.2**	**--**	**--**	**--**
Hedge Fund Custom BM			*0.5*	*1.4*	*2.3*	*3.7*	--	--	--
Excess Return (vs. Net)			-0.2	0.5	-2.7	-3.9			
Cash (Net)	**940,087,768**	**1.3**	**0.5**	**1.3**	**2.3**	**3.2**	**1.7**	**1.9**	**1.3**
Cash (Gross)			**0.5**	**1.3**	**2.3**	**3.2**	**1.7**	**2.0**	**1.3**
Cash Custom BM			*0.3*	*0.9*	*1.3*	*1.5*	*0.7*	*1.3*	*0.8*
Excess Return (vs. Net)			0.2	0.4	1.0	1.7	1.0	0.6	0.5
SSGA Cash (Net)			0.0	0.5	1.1	1.3	--	--	--
SSGA Cash (Gross)			0.0	0.6	1.2	1.4	--	--	--
Cash Custom BM			*0.3*	*0.9*	*1.3*	*1.5*	--	--	--
Excess Return (vs. Net)			-0.3	-0.4	-0.2	-0.2			

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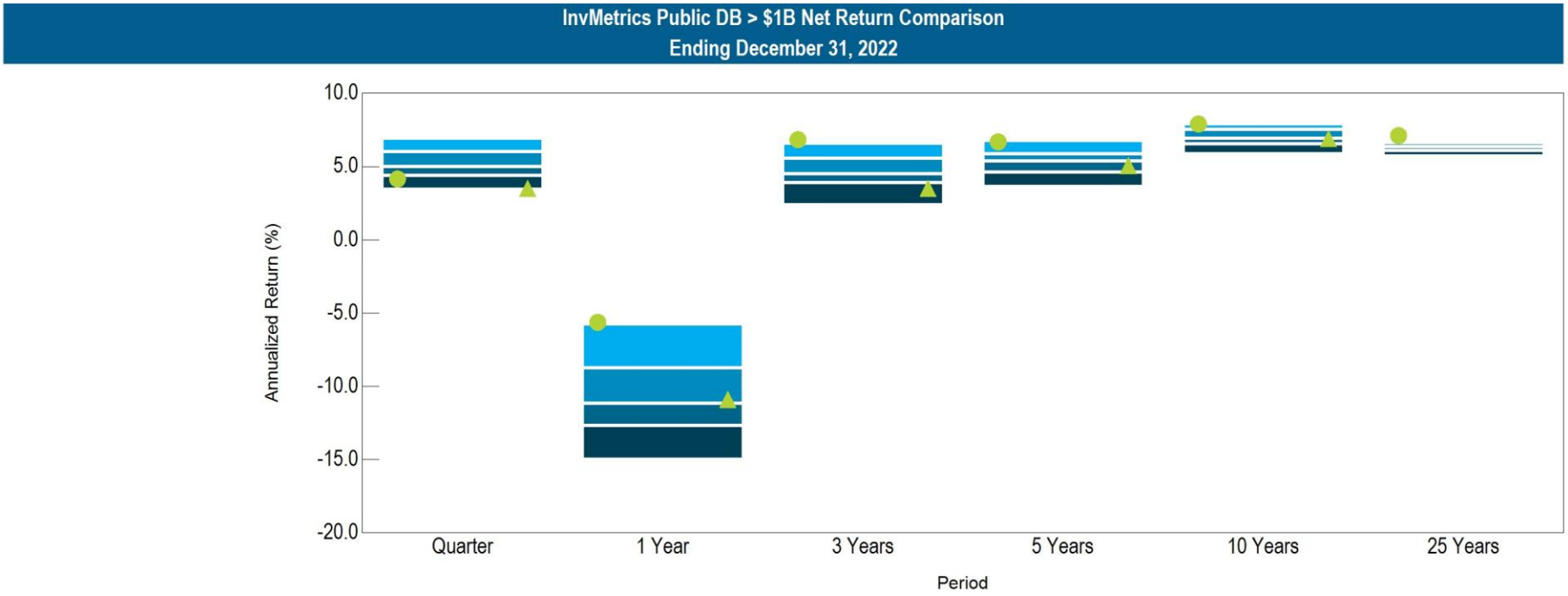
	Market Value ($)	% of Portfolio	1 Mo (%)	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
Overlay and Hedges (Net)	**435,685,997**	**0.6**	**-26.4**	**-10.6**	**1.5**	**178.1**	**--**	**--**	**--**
Overlay and Hedges (Gross)			**-26.4**	**-10.6**	**1.6**	**178.9**	**--**	**--**	**--**
Cash Overlay (Net)	**591,018,438**	**0.8**	**-10.6**	**39.4**	**12.5**	**79.5**	**--**	**--**	**--**
Cash Overlay (Gross)			**-10.6**	**39.4**	**12.6**	**79.7**	**--**	**--**	**--**
Cash Overlay (Net)	591,018,438	0.8	-10.6	39.4	12.5	79.5	--	--	--
Cash Overlay (Gross)			-10.6	39.4	12.6	79.7	--	--	--
Total Overlay Policy BM			*-2.8*	*6.6*	*0.5*	*-14.6*	--	--	--
Excess Return (vs. Net)			-7.8	32.8	12.0	94.1			
Currency Hedge (Net)	**-155,332,442**	**-0.2**	**1.3**	**-0.7**	**2.6**	**7.4**	**--**	**--**	**--**
Currency Hedge (Gross)			**1.3**	**-0.7**	**2.6**	**7.4**	**--**	**--**	**--**
Currency Hedge (Net)	-155,332,442	-0.2	-1.3	-3.2	0.0	4.7	--	--	--
Currency Hedge (Gross)			-1.3	-3.2	0.0	4.7	--	--	--



	Return (Rank)											
5th Percentile	6.9		-5.8		6.6		6.8		7.9		6.8	
25th Percentile	6.0		-8.7		5.6		5.9		7.5		6.7	
Median	5.0		-11.1		4.5		5.4		6.9		6.4	
75th Percentile	4.4		-12.7		3.9		4.6		6.6		6.1	
95th Percentile	3.5		-15.0		2.4		3.7		5.9		5.7	
# of Portfolios	59		59		57		57		54		31	
● Total Fund	4.1	(82)	-5.6	(4)	6.8	(5)	6.7	(7)	7.9	(6)	7.1	(1)
▲ Total Fund Policy Benchmark	3.5	(95)	-10.9	(50)	3.5	(85)	5.1	(59)	6.9	(54)	--	(--)

Benchmark History

As of December 31, 2022

Total Fund		
10/1/2021	Present	51% Growth Custom Blended Benchmark / 11% Credit Custom Blended Benchmark / 17% Real Assets & Inflation Hedges Custom BM / 21% Risk Reduction and Mitigation Custom Blended Benchmark
10/1/2019	9/30/2021	35% Global Equity Custom BM / 10% PE-Credit Custom Benchmark / 2% Non-Core Private RE Policy BM / 3% Bloomberg U.S. High Yield / 4% Credit Suisse Leveraged Loans / 2% EMD Custom / 3% Illiquid Credit Custom BM / 7% Core Private Real Estate Custom BM / 4% Natural Resources & Commodities Custom BM / 3% DJ Brookfield Global Infrastructure Comp TR / 3% Bloomberg U.S. TIPS Index / 19% Bloomberg US Aggregate TR / 4% Diversified Hedge Funds Custom BM / 1% Citigroup 3-Month U.S. Treasury Bill Index
1/1/2019	9/30/2019	41% Global Equity Custom BM / 10% PE-Credit Custom Benchmark / 1% Non-Core Private RE Policy BM / 4% Bloomberg U.S. High Yield / 3% Credit Suisse Leveraged Loans / 1% EMD Custom / 2% Illiquid Credit Custom BM / 8% Core Private Real Estate Custom BM / 3% Natural Resources & Commodities Custom BM / 2% DJ Brookfield Global Infrastructure Comp TR / 2% Bloomberg U.S. TIPS Index / 19% Bloomberg US Aggregate TR / 3% Diversified Hedge Funds Custom BM / 1% Citigroup 3-Month U.S. Treasury Bill Index
10/1/2018	12/31/2018	22.7% Russell 3000 / 18.7% Custom MSCI ACWI IMI Net 50% Hedge / 27.8% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 5.0% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
7/1/2018	9/30/2018	23.1% Russell 3000 / 20.3% Custom MSCI ACWI IMI Net 50% Hedge / 26.6% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 4.2% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
1/1/2018	6/30/2018	22.4% Russell 3000 / 21.0% Custom MSCI ACWI IMI Net 50% Hedge / 26.6% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 4.2% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
10/1/2017	12/31/2017	23.5% Russell 3000 / 21.9% Custom MSCI ACWI IMI Net 50% Hedge / 25.4% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.4% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
7/1/2017	9/30/2017	23.7% Russell 3000 / 21.7% Custom MSCI ACWI IMI Net 50% Hedge / 25.4% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.4% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
4/1/2017	6/30/2017	24.1% Russell 3000 / 21.3% Custom MSCI ACWI IMI Net 50% Hedge / 25.4% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.4% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
1/1/2017	3/31/2017	24.4% Russell 3000 / 21.0% Custom MSCI ACWI IMI Net 50% Hedge / 25.4% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.4% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
10/1/2016	12/31/2016	23.8% Russell 3000 / 21.6% Custom MSCI ACWI IMI Net 50% Hedge / 25.4% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.4% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
7/1/2016	9/30/2016	24.5% Russell 3000 / 21.4% Custom MSCI ACWI IMI Net 50% Hedge / 25.1% Bloomberg US Universal TR / 10% Private Equity Target / 11% Real Estate Target / 3.2% Hedge Fund Custom Index / 2.8% Bloomberg Commodity Index TR USD / 2% FTSE T-Bill 6 Months TR
10/1/2015	6/30/2016	3% Bloomberg Commodity Index TR USD / 25.5% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 22.5% Bloomberg US Universal TR / 11% Private Equity Target / 23% Custom MSCI ACWI IMI Net 50% Hedge / 3% 3-month U.S. T-Bill Index + 5% (1M-lag)

4/1/2015	9/30/2015	3% Bloomberg Commodity Index TR USD / 25% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 22.5% Bloomberg US Universal TR / 11% Private Equity Target / 23.5% Custom MSCI ACWI IMI Net 50% Hedge / 3% 3-month U.S. T-Bill Index + 5% (1M-lag)
1/1/2015	3/31/2015	3% Bloomberg Commodity Index TR USD / 25.5% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 22.5% Bloomberg US Universal TR / 11% Private Equity Target / 23% Custom MSCI ACWI IMI Net 50% Hedge / 3% 3-month U.S. T-Bill Index + 5% (1M-lag)
10/1/2014	12/31/2014	3% Bloomberg Commodity Index TR USD / 25% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 23% Bloomberg US Universal TR / 11% Private Equity Target / 24% Custom MSCI ACWI IMI Net 50% Hedge / 2% 3-month U.S. T-Bill Index + 5% (1M-lag)
1/1/2014	9/30/2014	3% Bloomberg Commodity Index TR USD / 24% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 23% Bloomberg US Universal TR / 11% Private Equity Target / 25% Custom MSCI ACWI IMI Net 50% Hedge / 2% 3-month U.S. T-Bill Index + 5% (1M-lag)
10/1/2013	12/31/2013	3% Bloomberg Commodity Index TR USD / 24% Russell 3000 / 10% Real Estate Target / 2% FTSE T-Bill 6 Months TR / 24% Bloomberg US Universal TR / 10% Private Equity Target / 26% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
4/1/2013	9/30/2013	3% Bloomberg Commodity Index TR USD / 24% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 24% Bloomberg US Universal TR / 10% Private Equity Target / 26% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
1/1/2013	3/31/2013	3% Bloomberg Commodity Index TR USD / 23% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 24% Bloomberg US Universal TR / 10% Private Equity Target / 27% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
10/1/2012	12/31/2012	3% Bloomberg Commodity Index TR USD / 24% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 24% Bloomberg US Universal TR / 10% Private Equity Target / 26% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
1/1/2012	9/30/2012	3% Bloomberg Commodity Index TR USD / 24% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 27% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
10/1/2011	12/31/2011	3% Bloomberg Commodity Index TR USD / 23% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 28% Custom MSCI ACWI IMI Net 50% Hedge / 1% 3-month U.S. T-Bill Index + 5% (1M-lag)
4/1/2011	9/30/2011	3% Bloomberg Commodity Index TR USD / 23% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 29% Custom MSCI ACWI IMI Net 50% Hedge
1/1/2011	3/31/2011	3% Bloomberg Commodity Index TR USD / 22% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 30% Custom MSCI ACWI IMI Net 50% Hedge
10/1/2010	12/31/2010	3% Bloomberg Commodity Index TR USD / 23% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 29% Custom MSCI ACWI IMI Net 50% Hedge
7/1/2010	9/30/2010	3% Bloomberg Commodity Index TR USD / 26% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 26% Custom MSCI ACWI IMI Net 50% Hedge
4/1/2010	6/30/2010	3% Bloomberg Commodity Index TR USD / 26% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 26% MSCI ACWI ex USA IMI
1/1/2010	3/31/2010	3% Bloomberg Commodity Index TR USD / 29% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 26% Bloomberg US Universal TR / 7% Private Equity Target / 23% MSCI ACWI ex USA IMI
4/1/2009	12/31/2009	2% Bloomberg Commodity Index TR USD / 30% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 28% Bloomberg US Universal TR / 7% Private Equity Target / 21% MSCI ACWI ex USA IMI
10/1/2008	3/31/2009	2% Bloomberg Commodity Index TR USD / 30% Russell 3000 / 10% NCREIF Property Index - 25 bps / 2% FTSE T-Bill 6 Months TR / 1.96% Bloomberg US High Yield BA/B TR / 26.04% Bloomberg US Aggregate TR / 7% Private Equity Target / 21% MSCI ACWI ex USA IMI
3/1/2001	9/30/2008	100% LACERA TF Blended Benchmark

Custom Benchmarks Glossary

Bank Loans Custom Index: Credit Suisse Leveraged Loan Index.

Beach Point Custom BM: BBg Barc US Corporate High Yield Index

Brigade Custom Index: BBg Barc US Corporate High Yield Index.

Cash Custom BM: FTSE 3-month Treasury Bill.

Core & Value-Added Real Estate Custom BM: NFI ODCE + 50 bps (3-month lag).

Custom Liquid Credit BM: 40% BBg Barc US Corporate High Yield Index / 40% Credit Suisse Leveraged Loans / 10% JP Morgan EMBI GD / 5% JP Morgan GBI – EM GD / 5% JP Morgan CEMBI BD.

Diversified Hedge Funds Custom BM: FTSE 3-Month U.S. Treasury Bill Index + 250 bps (1-month lag).

EAFE Custom Index: MSCI EAFE + Canada (Net).

EMD Custom: 50% JP Morgan EMBI + 25% JP Morgan GBI-EM GD + 25% JP Morgan CEMBI BD.

Global Equity Custom BM: MSCI ACWI IMI Index

Grosvenor Custom BM: 100% Illiquid Credit Custom BM.

Growth Custom Blended BM:~74.5%Global Equity Custom BM/ 21.3% Private Equity- Growth Custom BM/ 4.3% Opportunistic Real Estate Custom BM.

Hedge Fund Custom Index: 100% Diversified Hedge Funds Custom BM.

Illiquid Credit Custom BM: Custom Liquid Credit BM + 150 bps (1-month lag).

MSCI EM IMI Custom Index: MSCI EM IMI (Net)

Natural Resources & Commodities Custom BM: 50% Bloomberg Commodity Index / 50% S&P Global Large MidCap Commodity and Resources Index.

Opportunistic Real Estate Custom BM: NFI ODCE + 300 bps (3-month lag).

PE – Credit Custom Benchmark: BBgBarc US Agg Index + 250bps (3-month lag).

Private Equity - Growth Custom BM:MSCI ACWI IMI Index + 200 bps (3-month lag).

PE – Real Assets Custom BM:S&P Global LargeMidCap Commodity and Resources (3-month lag).

Real Assets and Inflation Hedges Custom Blended BM: ~41.2% Core & Value-Added Real Estate Custom BM/ 23.5% Natural Resources & Commodities Custom BM / 17.6% DJ Brookfield Global Infrastructure / 17.6% BBg Barc US TSY TIPS.

Risk Reduction and Mitigation Custom Blended BM: ~79.2% BBg Barc Agg / 16.7% Diversified Hedge Funds Custom BM / 4.2% FTSE 3-month Treasury Bill.

Securitized Custom Index: Barclays Securitized Bond Index + 400 bps.

Opportunistic Custom Index 1-Month Lag: 50% Barclays U.S. High Yield Index / 50% Credit Suisse Leveraged Loan Index (1-month lag).

50% FX Hedge Index: 50% MSCI World ex US IMI FX Hedged index 50% Zero Return.

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE"RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM", "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD–LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

FOR INFORMATION ONLY

March 1, 2023

TO: Trustees – Board of Investments

FROM: Jude Pérez, Principal Investment Officer

FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **OPEB QUARTERLY PERFORMANCE BOOK**

Attached is the OPEB Master Trust quarterly performance book as of December 31, 2022. The report includes both performance and risk sections utilizing data from our platform providers, Solovis and MSCI BarraOne, respectively.

Noted and Reviewed:

Jonathan Grabel
Chief Investment Officer

Attachments

LACERA

Los Angeles County Employees Retirement Association

Investments Division

OPEB MASTER TRUST

PERFORMANCE REPORT

For the quarter ended
December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Table of Contents

LACERA

Los Angeles County Employees Retirement Association

opeb trust

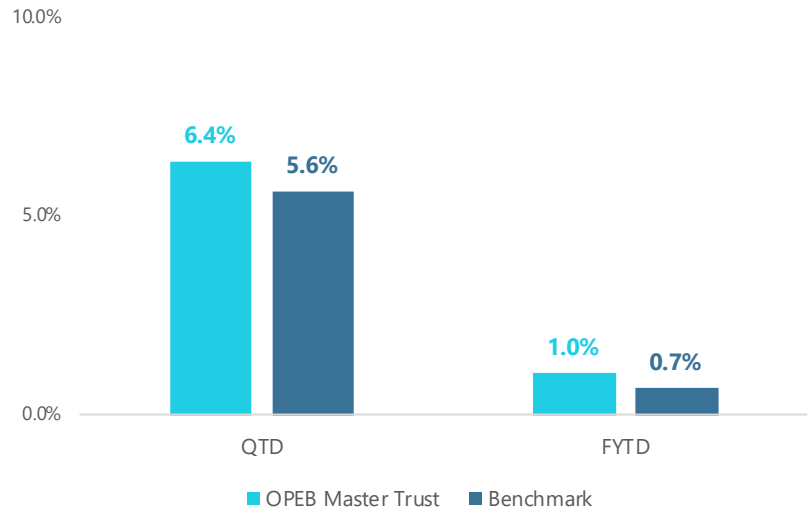
Quarterly Snapshot

for the quarter ended December 31, 2022

LACERA

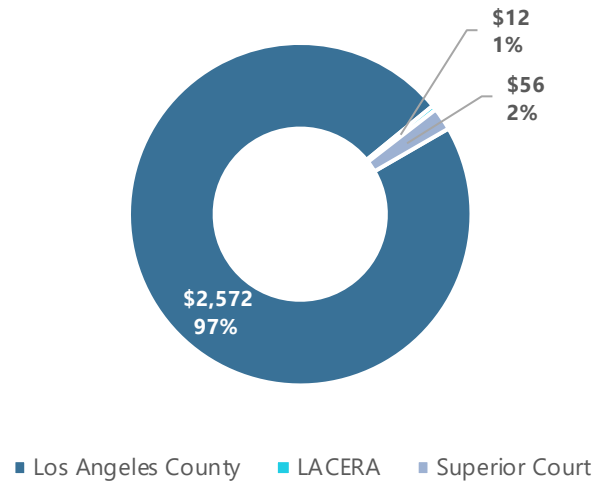
Los Angeles County Employees Retirement Association

Performance (net)



Sub-Trust Ownership

(mm)



Ending Market Value	Sharpe Ratio[1]	Batting Average[2]	Standard Deviation[1]	Tracking Error[1]
2,641	0.2	58%	15.1	1.2
↑ 11% from prior quarter	↑ 8% from prior quarter	↑ 46% from prior quarter	↑ 3% from prior quarter	↑ 9% from prior quarter

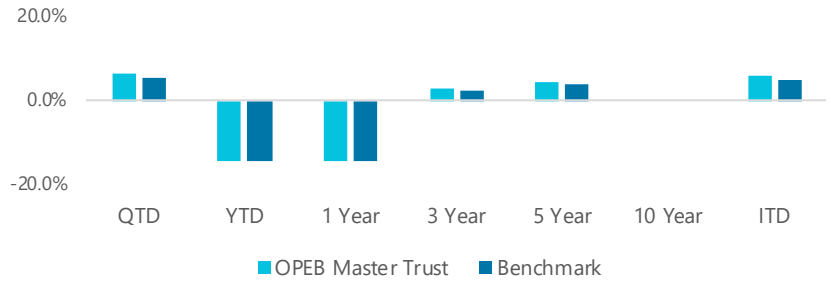
[1] 3-year annualized.
[2] Percentage of managers that outperformed the benchmark for the quarter.

Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Performance (net)

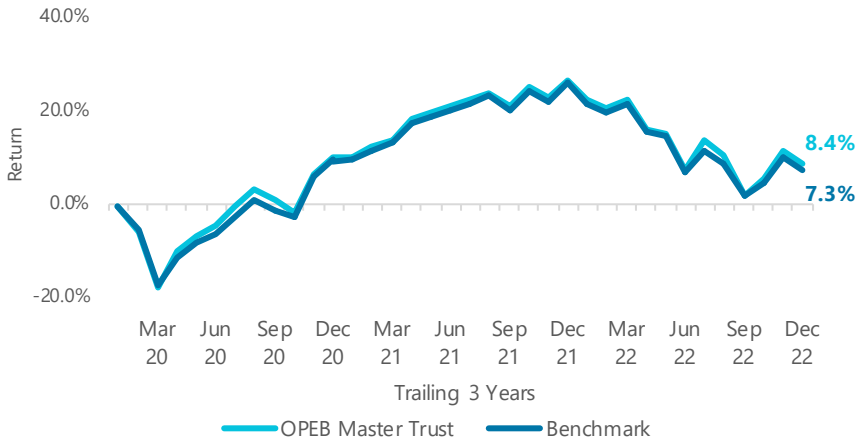


	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
OPEB Master Trust	**6.4%**	**-14.3%**	**-14.3%**	**2.7%**	**4.1%**	**--**	**5.7%**
Benchmark	5.6%	-14.7%	-14.7%	2.4%	3.7%	--	4.8%
Excess	0.8%	0.4%	0.4%	0.3%	0.4%	--	0.9%
Sub-Trusts							
Los Angeles County	6.4%	-14.3%	-14.3%	2.7%	4.1%	--	5.2%
LACERA	6.4%	-14.4%	-14.4%	2.7%	4.1%	--	5.2%
Superior Court	6.4%	-14.3%	-14.3%	2.6%	4.0%	--	6.2%

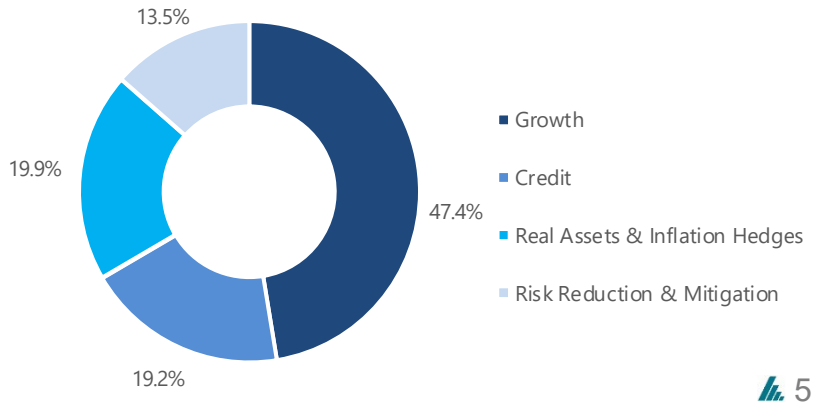
Functional Category

	QTD	FYTD	1 Year	3 Year	5 Year
OPEB Growth	**9.9%**	**2.7%**	**-18.2%**	**4.1%**	**5.2%**
OPEB Growth Policy Benchmark	9.0%	1.3%	-19.4%	3.5%	4.7%
Excess	0.9%	1.4%	1.2%	0.7%	0.5%
OPEB Credit	**4.5%**	**4.2%**	**-6.0%**	**-0.4%**	**--**
OPEB Credit Policy Benchmark	3.4%	3.1%	-7.5%	-0.3%	--
Excess	1.1%	1.2%	1.6%	-0.1%	--
OPEB Real Assets & Inflation Hedges	**3.4%**	**-4.6%**	**-14.0%**	**2.9%**	**--**
OPEB RA & IH Policy Benchmark	2.9%	0.4%	-9.9%	4.4%	--
Excess	0.5%	-5.0%	-4.1%	-1.5%	--
OPEB Risk Reduction & Mitigation	**1.5%**	**-2.3%**	**-10.3%**	**-2.0%**	**0.8%**
OPEB RR & M Policy Benchmark	1.3%	-3.7%	-11.7%	-2.5%	0.4%
Excess	0.2%	1.4%	1.4%	0.5%	0.4%

Cumulative Return



Exposure

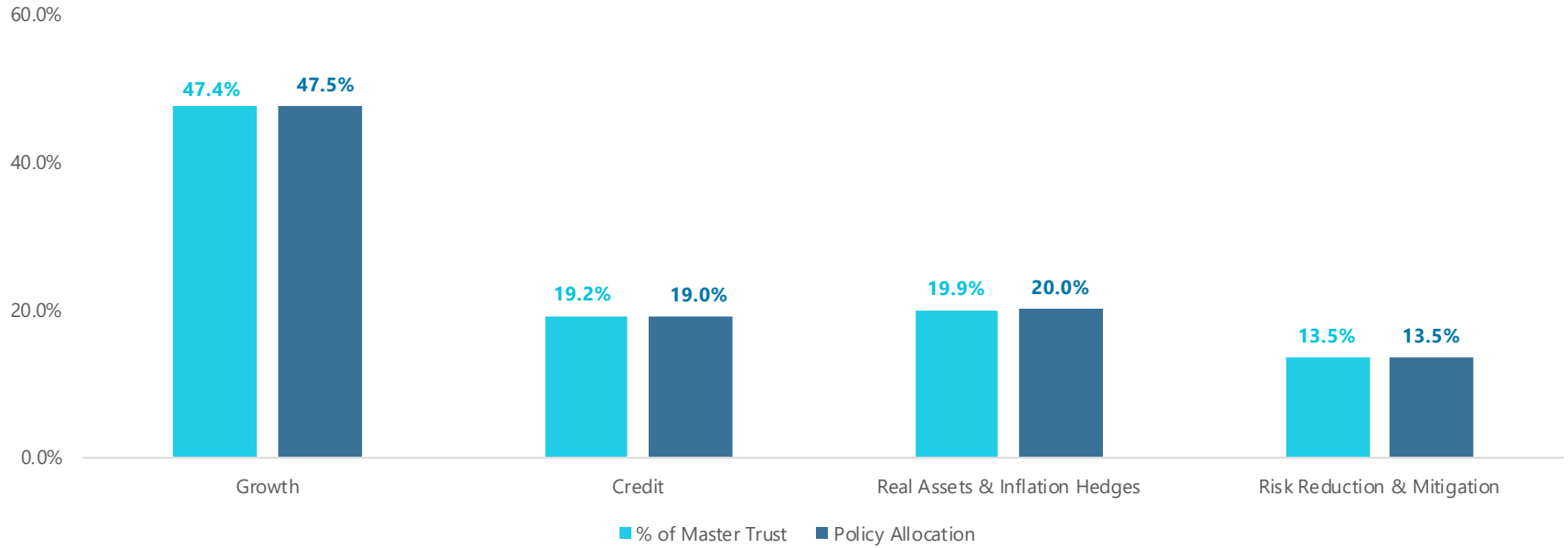


Asset Allocation

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Actual vs. Policy[1]



	Ending Market Value (mm)	% of Master Trust	Policy Allocation	Over / Under (%)	Over / Under (mm)
LACERA Master OPEB Trust Fund	**2,529**	**100.0%**	**100.0%**		
Growth	1,199	47.4%	47.5%	-0.1%	-2
Credit	484	19.2%	19.0%	0.2%	4
Real Assets & Inflation Hedges	504	19.9%	20.0%	-0.1%	-2
Risk Reduction & Mitigation	342	13.5%	13.5%	0.0%	0

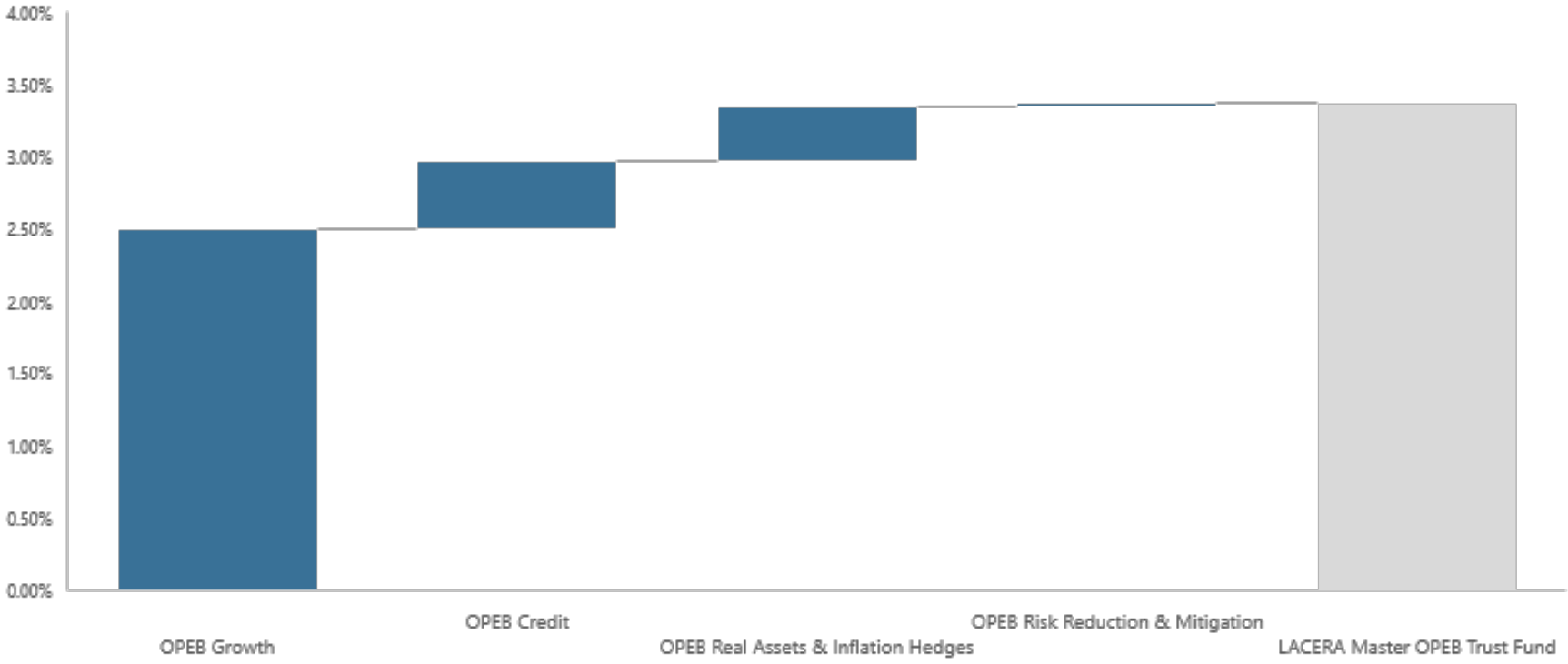
[1] Total market value excludes cash balances held in ownership funds.

Contribution to Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

QTD Contribution to Return



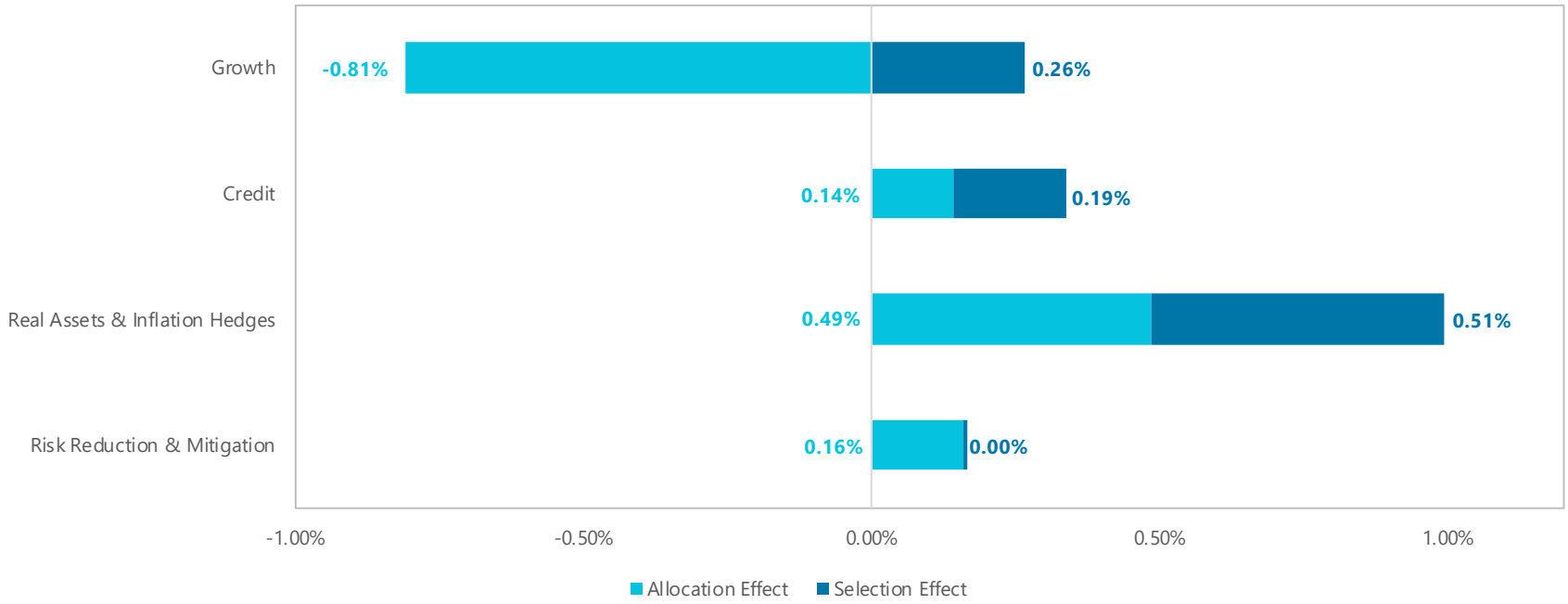
Functional Category		Contributors		Detractors
OPEB Growth	2.50%	OPEB Global Equities	4.74%	
OPEB Credit	0.47%	OPEB BTC REITs	0.48%	
OPEB Real Assets & Inflation Hedges	0.37%	OPEB BTC EM Debt	0.33%	
OPEB Risk Reduction & Mitigation	0.04%	OPEB BlackRock Bank Loans	0.33%	
LACERA Master OPEB Trust Fund	3.37%	OPEB BTC High Yield Bonds	0.24%	

Return Attribution

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

QTD Performance Attribution[1,2]



	Ending Market Value (mm)	% of Master Trust	Policy Allocation	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Total Value Add
LACERA Master OPEB Trust Fund	**2,529**	**100.0%**	**100.0%**	**6.4%**	**5.6%**	**-0.02%**	**0.97%**	**0.26%**
Growth	1,199	47.4%	47.5%	9.9%	9.0%	-0.81%	0.26%	-0.52%
Credit	484	19.2%	19.0%	4.5%	3.4%	0.14%	0.19%	0.28%
Real Assets & Inflation Hedges	504	19.9%	20.0%	3.4%	2.9%	0.49%	0.51%	0.32%
Risk Reduction & Mitigation	342	13.5%	13.5%	1.5%	1.3%	0.16%	0.00%	0.19%

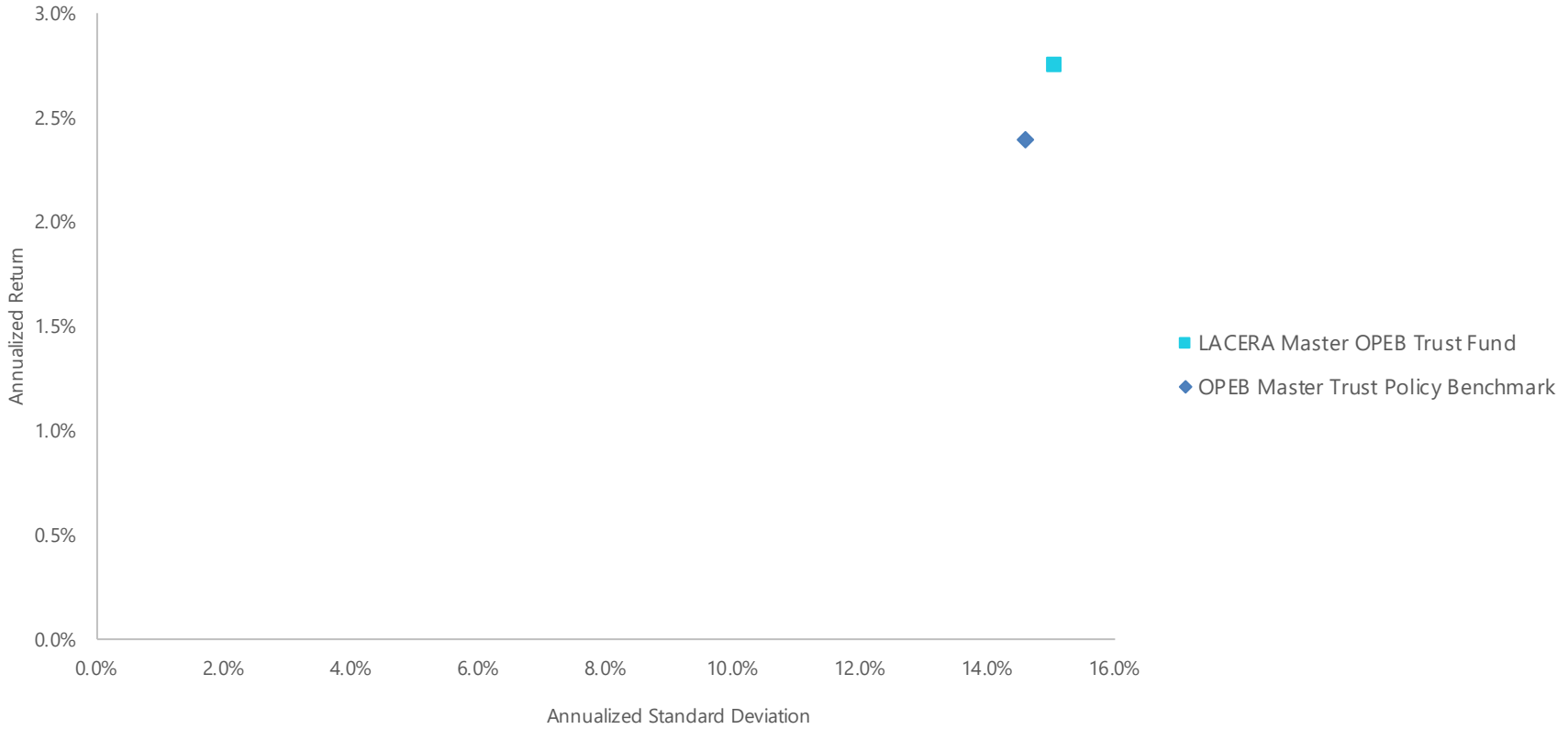
[1] Total market value excludes cash balances held in ownership funds.
[2] Total Value Add includes Interaction Effect.

Risk vs. Return

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

3 Year (Annualized)



	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Beta	Tracking Error
LACERA Master OPEB Trust Fund	**2.7%**	**15.0%**				
OPEB Master Trust Policy Benchmark	2.4%	14.6%	0.21	0.28	1.03	1.3%

Performance Detail

for the quarter ended December 31, 2022

LACERA

Los Angeles County Employees Retirement Association

Annualized Net Returns

	% of Total Fund	Ending Market Value (mm)	Prior Quarter Ending MV (mm)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD	Inception Date
OPEB Master Trust	**100.0%**	**2,641**	**2,378**	**6.4%**	**-14.3%**	**-14.3%**	**2.7%**	**4.1%**	**--**	**5.7%**	**Feb-2013**
OPEB Master Trust Policy Benchmark				5.6%	-14.7%	-14.7%	2.4%	3.7%	--	4.8%	
Sub-Trusts											
Los Angeles County	97.4%	2,572	2,315	6.4%	-14.3%	-14.3%	2.7%	4.1%	--	5.2%	Feb-2013
LACERA	0.4%	12	11	6.4%	-14.4%	-14.4%	2.7%	4.1%	--	5.2%	Feb-2013
Superior Court	2.1%	56	53	6.4%	-14.3%	-14.3%	2.6%	4.0%	--	6.2%	Jul-2016
LACERA Master OPEB Trust Fund	**100.0%**	**2,529**	**2,378**	**6.4%**	**-14.3%**	**-14.3%**	**2.7%**	**4.2%**	**--**	**5.2%**	**Feb-2013**
OPEB Master Trust Policy Benchmark				5.6%	-14.7%	-14.7%	2.4%	3.7%	--	4.8%	
OPEB Growth	**47.4%**	**1,199**	**1,107**	**9.9%**	**-18.2%**	**-18.2%**	**4.1%**	**5.2%**	**--**	**8.7%**	**Jul-2016**
OPEB Growth Policy Benchmark				9.0%	-19.4%	-19.4%	3.5%	4.7%	--	8.2%	
OPEB Global Equities	47.4%	1,199	1,107	9.9%	-18.2%	-18.2%	4.1%	5.2%	--	6.7%	Mar-2014
MSCI ACWI IMI Net				9.8%	-18.4%	-18.4%	3.9%	5.0%	--	6.3%	
OPEB Credit	**19.2%**	**484**	**465**	**4.5%**	**-6.0%**	**-6.0%**	**-0.4%**	**--**	**--**	**1.8%**	**Jul-2018**
OPEB Credit Policy Benchmark				3.4%	-7.5%	-7.5%	-0.3%	--	--	1.9%	
OPEB Liquid Credit	19.2%	484	465	4.5%	-6.0%	-6.0%	-0.4%	--	--	-4.9%	Oct-2021
OPEB Liquid Credit Policy Benchmark				3.8%	-7.1%	-7.1%	--	--	--	-5.4%	
OPEB BlackRock Bank Loans	9.6%	243	235	3.2%	0.1%	0.1%	2.2%	--	--	3.0%	Jul-2018
S&P/LSTA Leverage Loan				2.7%	-0.6%	-0.6%	2.5%	--	--	3.2%	
OPEB BTC EM Debt LC	3.9%	99	91	8.4%	-11.7%	-11.7%	-6.5%	--	--	-1.8%	Jul-2018
JPM GBI-EM Global Diversified				8.5%	-11.7%	-11.7%	-6.1%	--	--	-1.3%	
OPEB BTC High Yield Bonds	5.7%	143	139	4.0%	-11.5%	-11.5%	-0.6%	--	--	2.1%	Jul-2018
BBG BC US Corporate HY Index				4.2%	-11.2%	-11.2%	0.0%	--	--	2.5%	
OPEB Real Assets & Inflation Hedges	**19.9%**	**504**	**472**	**3.4%**	**-14.0%**	**-14.0%**	**2.9%**	**--**	**--**	**3.9%**	**Jul-2018**
OPEB RA & IH Policy Benchmark				2.9%	-9.9%	-9.9%	4.4%	--	--	5.0%	
OPEB BTC Commodities	3.8%	96	94	2.1%	16.4%	16.4%	12.7%	--	--	7.2%	Jul-2018
Bloomberg Commodity Index Total Return				2.2%	16.1%	16.1%	12.7%	--	--	7.2%	
OPEB BTC REITS	10.1%	256	234	4.8%	-26.0%	-26.0%	-1.4%	--	--	2.2%	Jul-2018
DJ US Select Real Estate Securities				4.7%	-26.0%	-26.0%	-1.4%	--	--	2.3%	
OPEB BTC TIPS	6.0%	151	144	1.9%	-12.0%	-12.0%	1.2%	--	--	2.4%	Jul-2018
Bloomberg U.S. Treasury: U.S. TIPS				2.0%	-11.8%	-11.8%	1.2%	--	--	2.3%	
OPEB Risk Reduction & Mitigation	**13.5%**	**342**	**333**	**1.5%**	**-10.3%**	**-10.3%**	**-2.0%**	**0.8%**	**--**	**0.9%**	**Jul-2016**
OPEB RR & M Policy Benchmark				1.3%	-11.7%	-11.7%	-2.5%	0.4%	--	0.4%	
OPEB BTC Investment Grade Bonds	9.0%	227	266	1.7%	-13.1%	-13.1%	-2.7%	--	--	0.4%	Jul-2018
BBG BARC Aggregate Bond Index				1.9%	-13.0%	-13.0%	-2.7%	--	--	0.4%	
OPEB Cash	2.0%	51	0	--	--	--	--	--	--	0.4%	Dec-2022
OPEB Cash Policy Benchmark				--	--	--	--	--	--	0.6%	
OPEB LTG Bonds	2.5%	64	0	--	--	--	--	--	--	0.1%	Dec-2022
Bloomberg U.S. Treasury: Long				--	--	--	--	--	--	-0.6%	

LACERA

Los Angeles County Employees Retirement Association

risk reports

Summary

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Risk Summary

	Value
Total Risk	**12.22**
Benchmark Risk	12.06
Active Risk	1.31
Portfolio Beta	1.01
Effective Duration	1.88

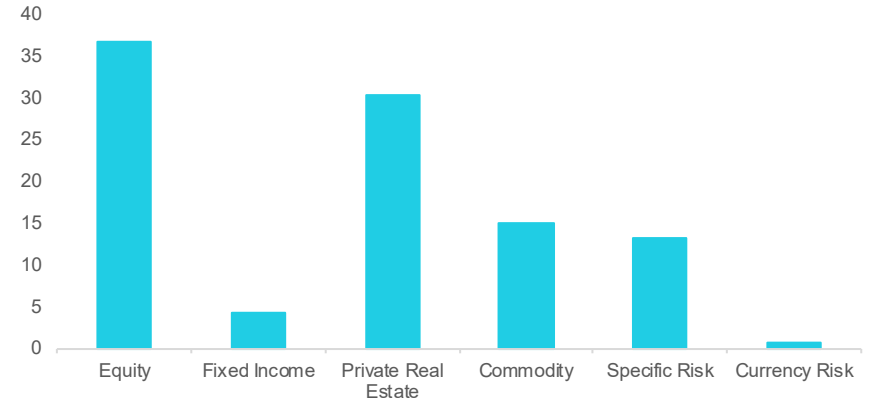
Contribution to Risk

	Mkt Value (mm)	Weight%	Total Risk	Risk Contribution	%CR to TR
Total Fund	**2,529**	**100.0%**	**12.22**	**12.22**	**100.00**
Growth	1,199	47.4%	18.80	8.77	71.75
Credit	484	19.2%	5.23	0.81	6.60
Real Assets & Inflation Hedges	504	19.9%	13.40	2.46	20.15
Risk Reduction & Mitigation	342	13.5%	7.13	0.18	1.51

Risk Decomposition

	Portfolio			Active		
Risk Source	Risk Contribution	%Risk	Correlation	Risk Contribution	%Risk	Correlation
Total Risk	**12.22**	**100.00**	**1.00**	**1.31**	**100.00**	**1.00**
Local Market Risk	11.42	93.48	1.00	1.30	99.36	0.99
Common Factor Risk	11.39	93.17	0.99	1.13	86.22	0.93
Equity	10.39	85.05	0.98	0.48	36.69	0.30
Fixed Income	0.99	8.10	0.56	0.06	4.24	0.18
Private Real Estate	0.00	0.00	0.00	0.40	30.22	0.30
Commodity	0.00	0.00	0.00	0.20	14.96	0.33
Specific Risk	0.04	0.31	0.06	0.17	13.14	0.36
Currency Risk	0.80	6.52	0.61	0.01	0.64	0.06

Active Risk from Risk Factors

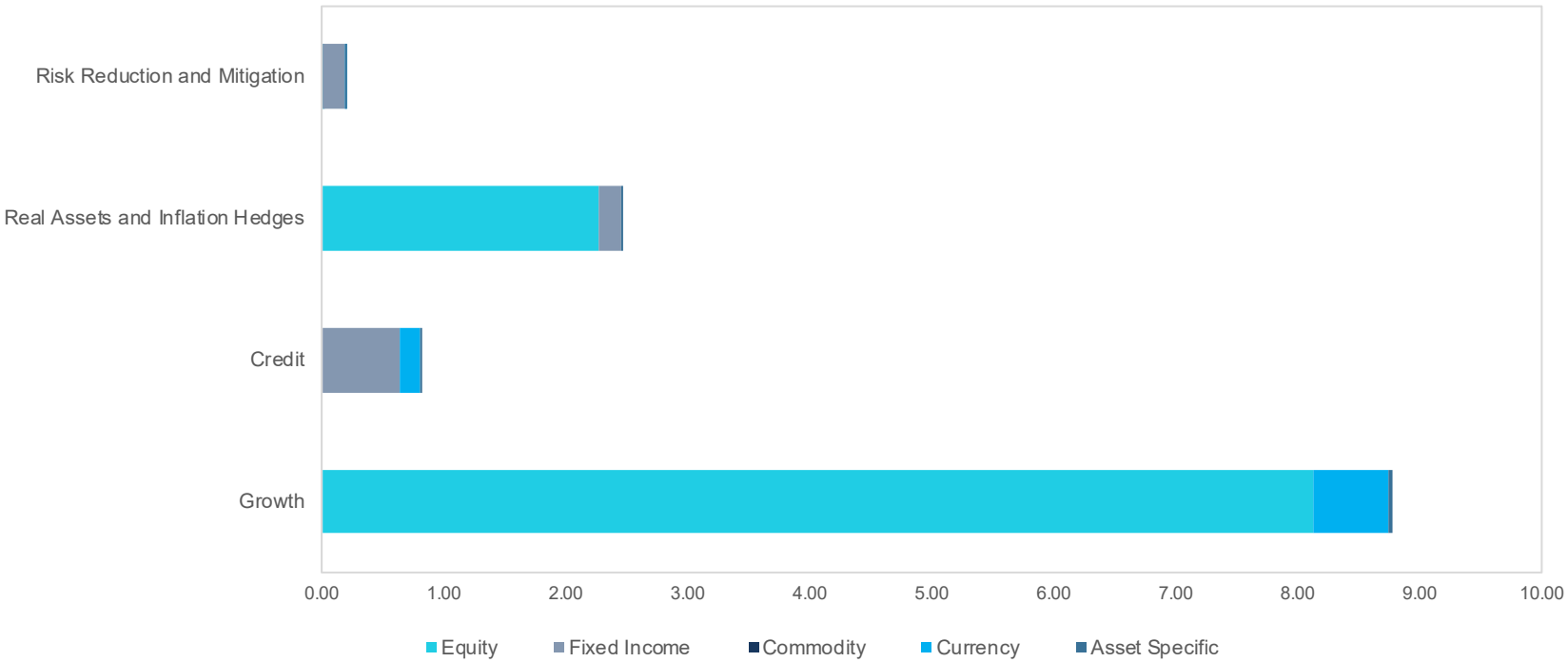


Risk Contribution Breakdown

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Risk Type



Functional Category	Mkt Value	Weight%	Total Risk	%CR to Total Risk	Port Risk Contribution	Equity	Fixed Income	Currency	Asset Specific
Total Fund	**2,529**	**100.0%**	**12.22**	**100.00**	**12.22**	**10.39**	**0.99**	**0.80**	**0.04**
Grow th	1,199	47.4%	18.80	71.75	8.77	8.12	0.00	0.63	0.02
Credit	484	19.2%	5.23	6.60	0.81	0.00	0.63	0.17	0.01
Real Assets & Inflation Hedges	504	19.9%	13.40	20.15	2.46	2.27	0.18	0.00	0.01
Risk Reduction & Mitigation	342	13.5%	7.13	1.51	0.18	0.00	0.18	0.00	0.00

Allocation Selection

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Active Total Risk

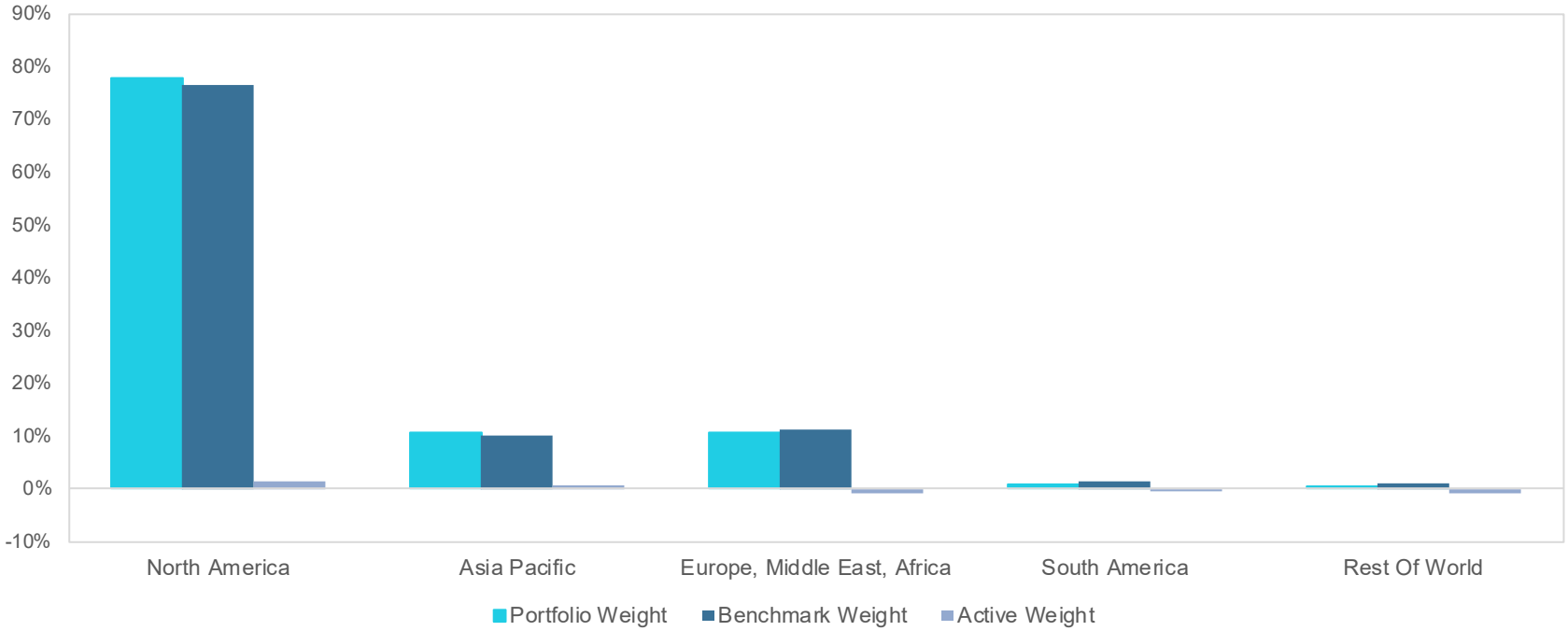
Functional Category	Active Weight%	Allocation			Selection			Active
		Volatility	Correlation	Risk Contribution	Volatility	Correlation	Risk Contribution	Risk Contribution
Active Total Risk				**0.00**			**1.31**	**1.31**
Growth	-0.08	7.38	0.22	0.00	0.10	-0.14	-0.01	-0.01
Credit	0.15	8.30	-0.10	0.00	2.20	0.28	0.12	0.12
Real Assets & Inflation Hedges	-0.08	5.99	-0.55	0.00	6.35	0.94	1.19	1.19
Risk Reduction & Mitigation	0.01	12.79	0.01	0.00	0.41	0.09	0.00	0.00

Portfolio Allocation

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

By Region



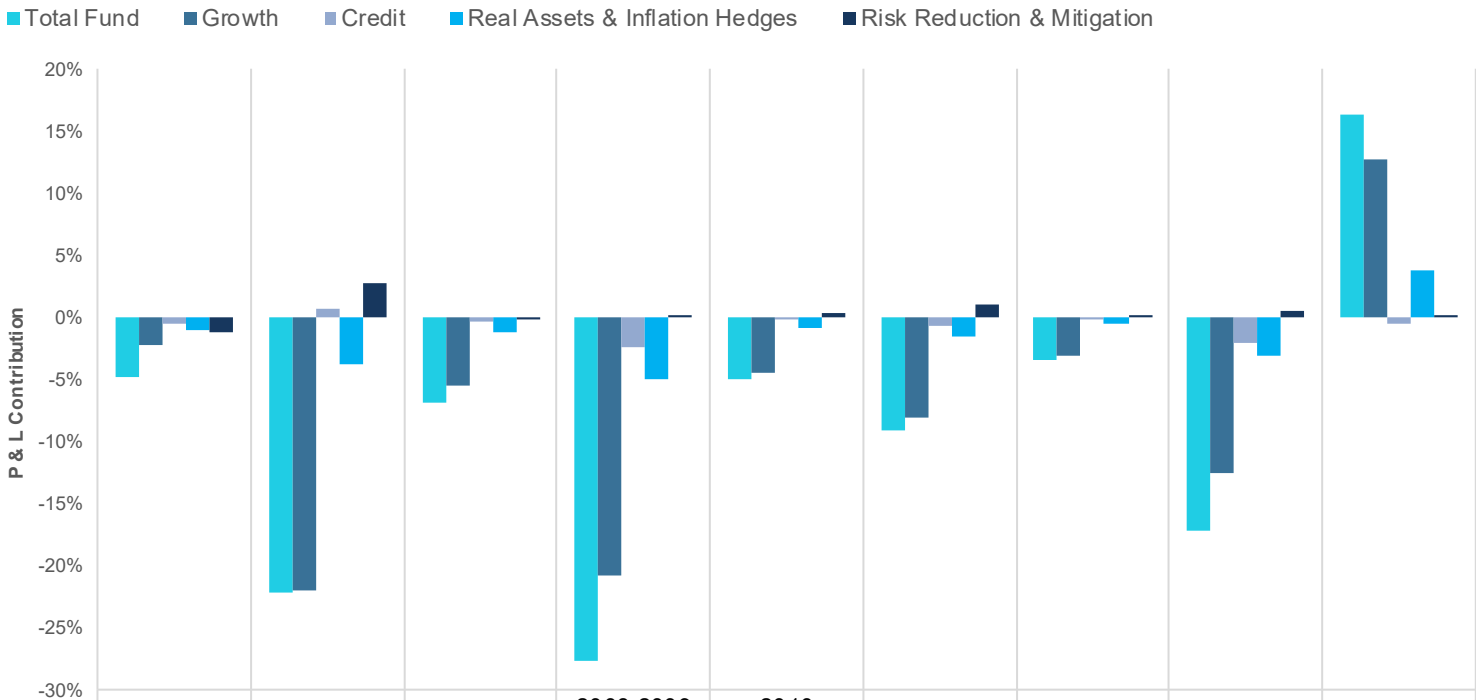
Region	Weight%			Total Risk	Active Risk Contribution	% of Active TR	MC to Total Tracking Error
	Portfolio	Benchmark	Active				
Total Fund	**100.00%**	**100.00%**	**0.00%**	**12.22**	**1.31**	**100.00**	**0.01**
North America	77.72%	76.46%	1.26%	11.78	1.21	92.76	-0.01
Asia Pacific	10.44%	9.97%	0.47%	14.59	0.01	0.49	0.00
Europe, Middle East, Africa	10.56%	11.26%	-0.70%	18.11	0.09	6.68	-0.02
South America	0.93%	1.20%	-0.26%	20.04	0.00	-0.06	0.00
Rest Of World	0.34%	1.11%	-0.77%	8.50	0.00	0.13	0.00

Stress Tests

for the quarter ended December 31, 2022

Los Angeles County Employees Retirement Association

Scenarios by Asset Category



	1994 US Rate Hike	2000-2003 Tech Crash & Recession	2001 Sept 11th	2008-2009 Global Financial Crisis	2010 Peripheral European Bond Crisis	2011 US Debt Ceiling Act	2016 Brexit	2020 COVID March Selloff	2020 COVID Volatility Spike
Total Fund	-4.79%	-22.10%	-6.80%	-27.69%	-4.88%	-8.99%	-3.41%	-17.05%	16.37%
Growth	-2.15%	-22.02%	-5.41%	-20.78%	-4.38%	-8.05%	-2.98%	-12.55%	12.69%
Credit	-0.49%	0.82%	-0.21%	-2.29%	-0.19%	-0.62%	-0.15%	-2.07%	-0.46%
Real Assets & Inflation Hedges	-1.04%	-3.74%	-1.11%	-4.86%	-0.73%	-1.45%	-0.53%	-2.99%	3.89%
Risk Reduction & Mitigation	-1.11%	2.84%	-0.07%	0.24%	0.43%	1.14%	0.26%	0.56%	0.25%

Stress Tests

for the quarter ended December 31, 2022

LACERA
Los Angeles County Employees Retirement Association

Scenario Descriptions

Historical Scenario	Description
1994 US Rate Hike	In combating inflation, the U.S. Federal Reserve raised its interest rate from 3.25% in February to 5.5% in November 1994.
2000-2003 Tech Crash & Recession	Period of crisis and slowdown for technological firms due to a rapid jump in stock prices when a speculative technology bubble began to burst.
2001 Sept 11	The U.S. stock market was closed for a week upon a series of coordinated suicide attacks upon the United States on September 11, 2001.
2008-2009 Global Financial Crisis	Major financial crisis starting September 2008 with the failure of several large U.S.-based financial firms. Extended into 2009, when stock markets reached their lowest.
2010 Peripheral European Bond Crisis	During the Europe sovereign debt crisis, liquidity access for peripheral European countries was deeply affected by their widening budget deficits, higher borrowing costs, and failing banking systems.
2011 US Debt Ceiling Act	Caused by political deadlock about appropriate level of government spending and its consequence on the national debt and deficit. Both debt and equity markets experienced significant volatility.
2016 Brexit	The referendum by British voters to exit the European Union on 23 June 2016 roiled global markets, including currencies, causing the British pound to fall to its lowest level in decades.
2020 COVID March Selloff	Peak and Valley of the MSCI ACWI index when Covid became a Global Pandemic.
2020 COVID Volatility Spike	Period it took for the Cboe Volatility Index (VIX) to revert to pre-pandemic levels.

appendix

Benchmark Definitions

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Los Angeles County Employees Retirement Association

Current Composition

	Weight	Component
Master Trust		
OPEB Master Trust Policy Benchmark		
	48%	OPEB Growth Policy Benchmark
	19%	OPEB Credit Policy Benchmark
	20%	OPEB RA & IH Policy Benchmark
	14%	OPEB RR & M Policy Benchmark
Growth		
OPEB Growth Policy Benchmark		
	95%	MSCI ACWI IMI Net
	5%	OPEB Private Equity Custom Benchmark
Credit		
OPEB Credit Policy Benchmark		
	87%	OPEB Liquid Credit Policy Benchmark
	13%	OPEB Illiquid Credit Policy Benchmark
OPEB Liquid Credit Policy Benchmark		
	38%	Bloomberg U.S. Corporate High Yield
	46%	CS Leveraged Loan Index
	8%	JPMorgan EMBI Global Diversified Index
	4%	JPM GBI-EM Global Diversified Index
	4%	JPM CEMBI Broad Diversified
Real Assets & Inflation Hedges		
OPEB RA & IH Policy Benchmark		
	45%	OPEB Real Estate Custom Benchmark
	5%	S&P Global Natural Resources Index
	15%	Bloomberg Commodity Index Total Return
	5%	DJ Brookfield Global Infra Comp
	30%	Bloomberg U.S. Treasury: U.S. TIPS
Risk Reduction & Mitigation		
OPEB RR & M Policy Benchmark		
	67%	Bloomberg U.S. Aggregate
	19%	Bloomberg U.S. Treasury: Long
	15%	OPEB Cash Policy Benchmark
OPEB Cash Policy Benchmark		
	100%	FTSE 3-Month US Treasury Bill

Glossary

A

Annual Return
The total return of a security over a specified period, expressed as an annual rate of interest.

Active Risk
The expected standard deviation of the differential return between the portfolio and the benchmark. Active total risk arises from active management, and it is the result of active weights (deviations from the benchmark at the asset level) and therefore active exposures; for passively managed portfolios, it is referred to as "total tracking error."

Active Risk Contribution
Percent contribution to active total risk (or tracking error). The percent of active total risk that an individual asset or risk source contributes. For example, a % CR to Active Total Risk of 10% indicates that 10% of the portfolio's active total risk is arising from the active position in that particular asset.

B

Basis Points (bps)
One one-hundredth of one percent. One hundred basis points equal one percent.

Beta
A measure of the volatility of a stock relative to the overall market. A beta of less than one indicates lower risk than the market; a beta of more than one indicates higher risk than the market.

D

Duration
A measure of the price sensitivity of a bond portfolio to changes in interest rates.

Glossary

F

Futures Contract
Agreement to buy or sell a specific amount of a commodity or financial instrument at a particular price and a stipulated future date.

H

High Yield Bond
A bond with a low investment quality and credit worthiness, usually with a rating of BB or less.

I

Information Ratio
The excess return (alpha) per unit of active risk (tracking error).

Internal Rate of Return (IRR)
A total rate of return that gives full weight to the size and timing of cash flows over the period measured and fully reflects unrealized gains and losses in addition to realized gains and losses, interest and dividend income.

Glossary

M

MC to Total Tracking Error
This value represents the change in the active risk of an asset's portfolio or group that would result from a one percent increase in the asset's effective position plus an equal short position in the benchmark.

S

Sharpe Ratio
Average return earned in excess of the risk-free rate per unit of total risk.

Standard Deviation
Statistical measure of the degree to which an individual value in a probability distribution tends to vary from the mean of the distribution. The greater the degree of dispersion, the greater the risk.

T

Time-Weighted Return (TWR)
A measure of the compound rate of growth in a portfolio. Often used to compare the returns of investment managers because it eliminates the distorting effects on growth rates created by inflows and outflows of money.

Total Risk
The total (gross) risk to an asset (or portfolio), which is the standard deviation of the asset's total return distribution, expressed in percent. Total risk is forecasted using MSCI Barra's multiple factor models. The total risk for an asset depends on the asset's exposures to the risk factors, the factor variance/covariance matrix, and the forecast selection risk of the asset.

Total Risk Contribution
The percent of total risk that an individual asset or risk source contributes. For example, a % CR to Total Risk of 10% indicates that 10% of the portfolio's total risk is arising from the portfolio's position in that particular asset.

Glossary

Y

Yield to Maturity

The return a bond earns on the price at which it was purchased if it were held to maturity. It assumes that coupon payments can be reinvested at the yield to maturity.

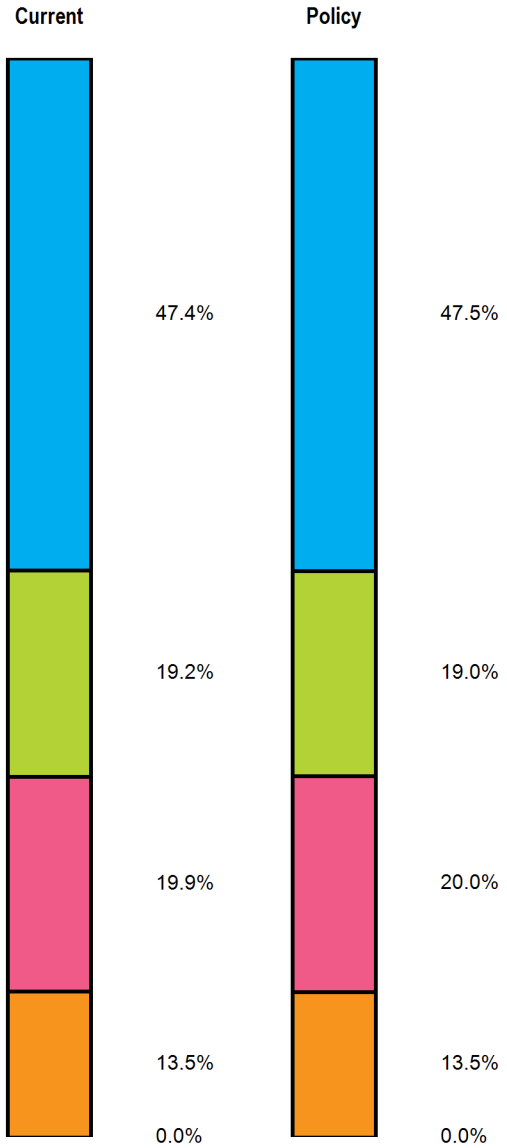
MEKETA
INVESTMENT GROUP

LACERA: OPEB Master Trust

December 31, 2022

Fund Evaluation Report

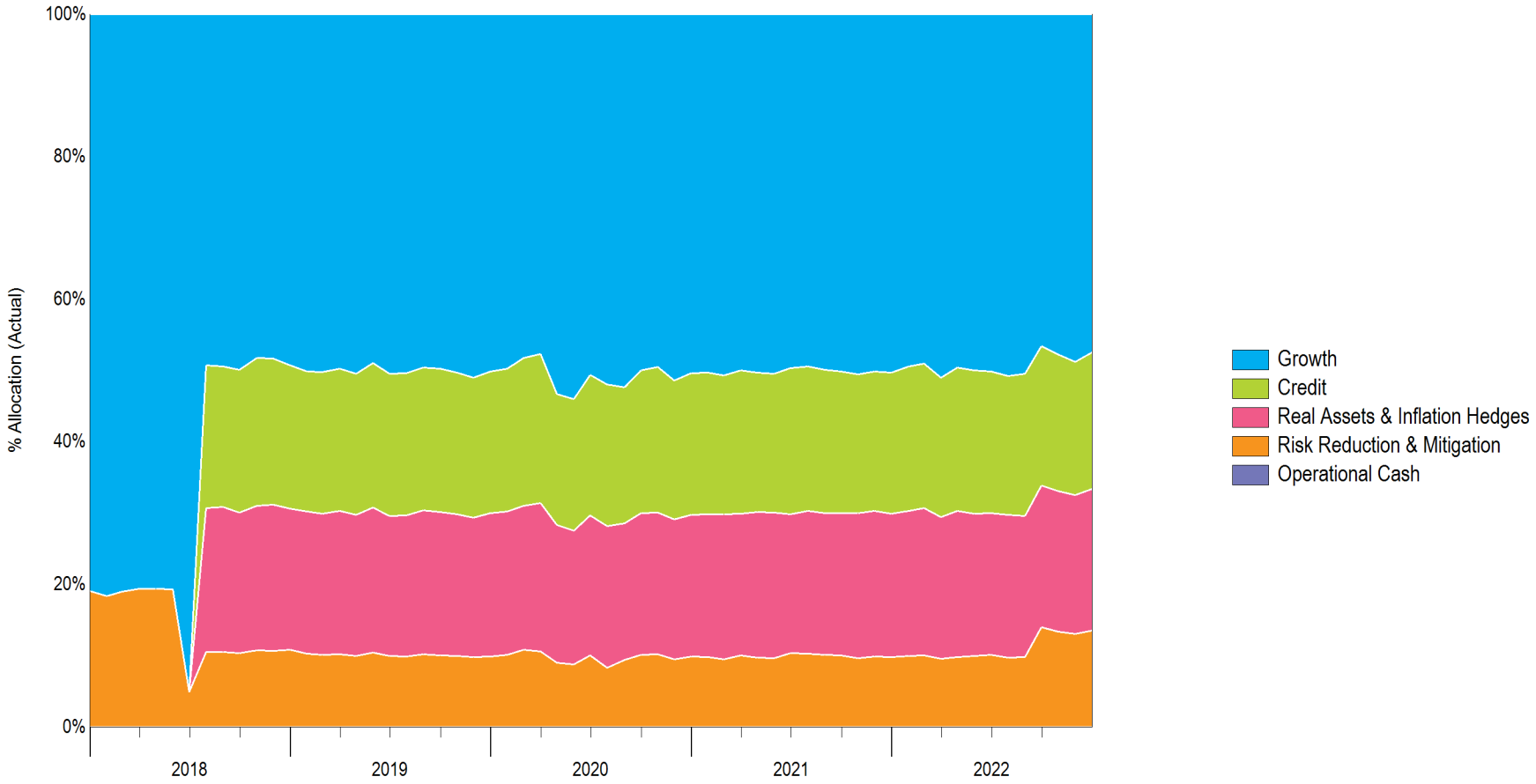
LACERA Master OPEB Trust Fund | As of December 31, 2022



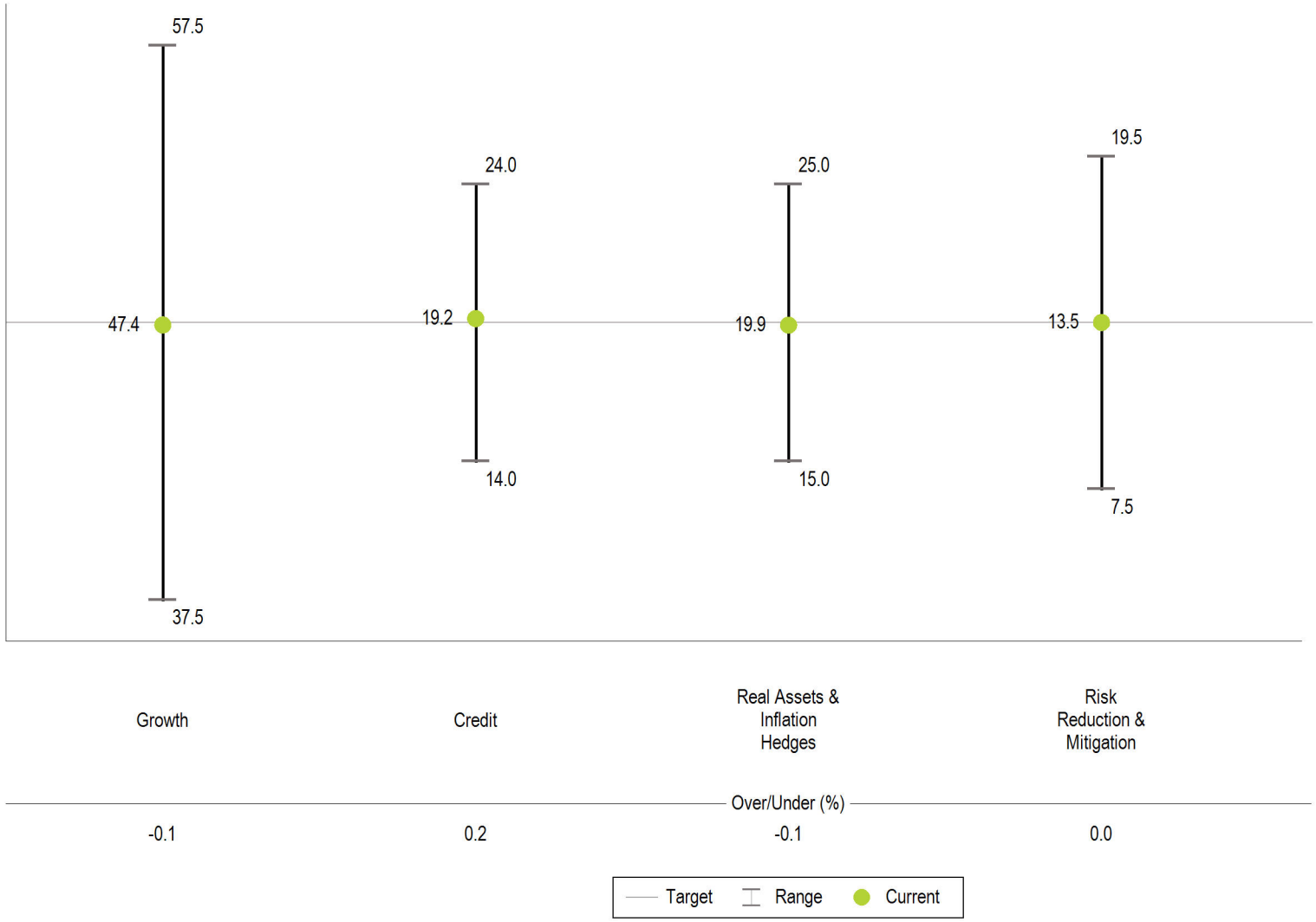
Allocation vs. Target	Current Balance	Current Allocation	Policy	Policy Range	Within IPS Range?
Growth	**$1,199,193,740**	**47.4%**	**47.5%**	**37.5% - 57.5%**	**Yes**
Global Equity	$1,199,193,740	47.4%	45.0%	35.0% - 55.0%	Yes
Private Equity	$0	0.0%	2.5%	0.0% - 100.0%	Yes
Credit	**$484,330,694**	**19.2%**	**19.0%**	**14.0% - 24.0%**	**Yes**
Liquid Credit	$484,330,694	19.2%	16.5%	11.5% - 21.5%	Yes
Illiquid Credit	$0	0.0%	2.5%	0.0% - 100.0%	Yes
Real Assets & Inflation Hedges	**$503,628,133**	**19.9%**	**20.0%**	**15.0% - 25.0%**	**Yes**
Real Estate	$256,412,974	10.1%	9.0%	5.0% - 13.0%	Yes
Natural Resources	$0	0.0%	1.0%	0.0% - 100.0%	Yes
Commodities	$96,346,488	3.8%	3.0%	1.0% - 5.0%	Yes
Infrastructure	$0	0.0%	1.0%	0.0% - 100.0%	Yes
TIPS	$150,868,671	6.0%	6.0%	2.0% - 10.0%	Yes
Risk Reduction & Mitigation	**$341,917,233**	**13.5%**	**13.5%**	**7.5% - 19.5%**	**Yes**
Investment Grade Bonds	$226,579,644	9.0%	9.0%	5.0% - 13.0%	Yes
Long-Term Government Bonds	$64,288,353	2.5%	2.5%	0.0% - 100.0%	Yes
Cash	$50,820,726	2.0%	2.0%	0.0% - 4.0%	Yes
Operational Cash[2]	**$550**	**0.0%**	**0.0%**		
Total[1]	**$2,640,582,527**	**100.0%**	**100.0%**		

[1]Total market value includes cash held at the participant level.
[2] includes unsettled trade activity.

Asset Allocation History
5 Years Ending December 31, 2022



Actual vs. Target



Trailing Net Performance

	Market Value[1] ($)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
OPEB Master Trust (Net)	**2,640,582,527**	**100.0**	**6.4**	**1.0**	**-14.3**	**2.7**	**4.1**
OPEB Master Trust (Gross)			**6.4**	**1.0**	**-14.3**	**2.7**	**4.1**
Custom OPEB Master Trust BM			*5.6*	*0.7*	*-14.7*	*2.4*	*3.7*
Excess Return (vs. Net)			0.8	0.3	0.4	0.3	0.4
LACERA Master OPEB Trust Fund (Net)	**2,529,069,799**	**95.8**	**6.4**	**0.8**	**-14.3**	**2.7**	**4.2**
LACERA Master OPEB Trust Fund (Gross)			**6.4**	**0.8**	**-14.3**	**2.7**	**4.2**
Custom OPEB Master Trust BM			*5.6*	*0.7*	*-14.7*	*2.4*	*3.7*
Excess Return (vs. Net)			0.8	0.1	0.4	0.3	0.5
Growth (Net)	**1,199,193,740**	**45.4**	**9.9**	**2.7**	**-18.2**	**4.1**	**5.2**
Growth (Gross)			**9.9**	**2.7**	**-18.2**	**4.1**	**5.3**
OPEB Global Equity (Net)	1,199,193,740	45.4	9.9	2.7	-18.2	4.1	5.2
OPEB Global Equity (Gross)			9.9	2.7	-18.2	4.1	5.3
MSCI ACWI IMI Net (DAILY)			*9.8*	*2.6*	*-18.4*	*3.9*	*5.0*
Excess Return (vs. Net)			0.1	0.1	0.2	0.2	0.2

Fiscal Year begins July 1.

[1]Total market value includes cash held at the participant level.

The OPEB Master Trust started in February 2013

MEKETA

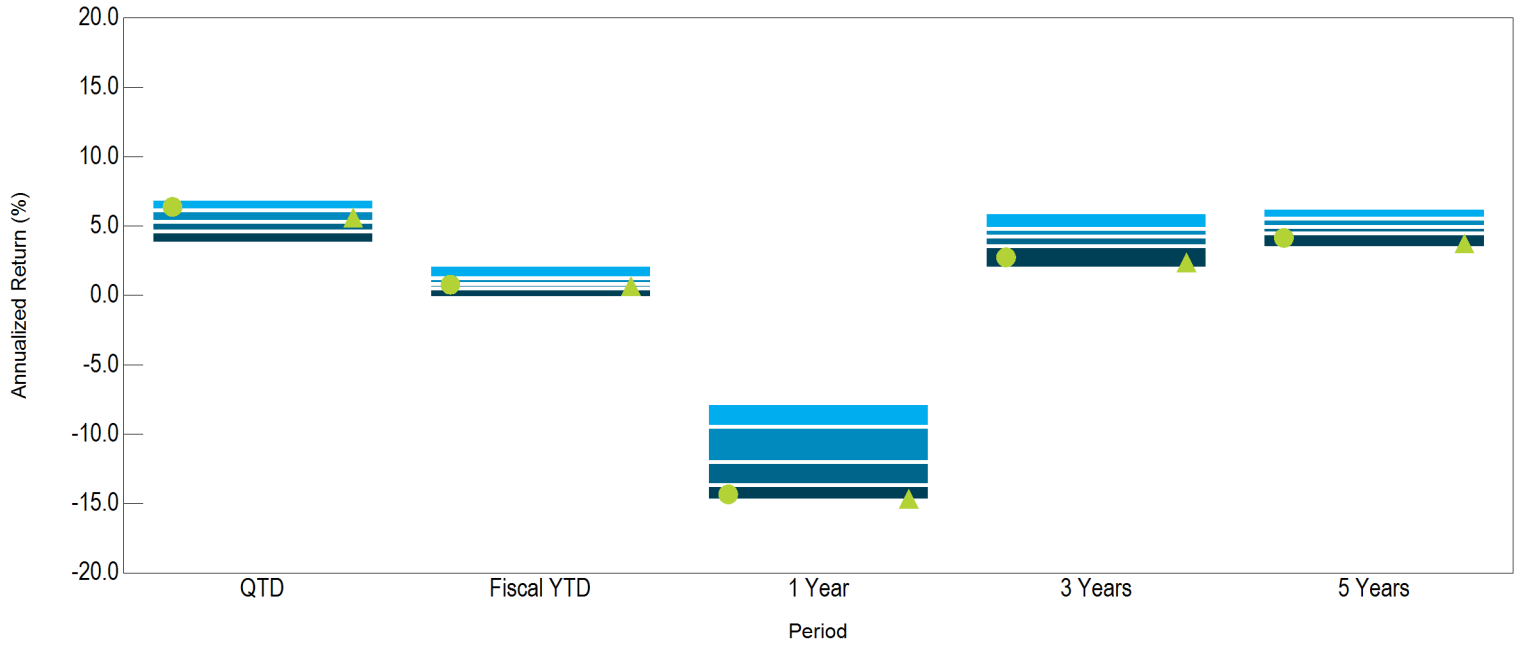
LACERA Master OPEB Trust Fund | As of December 31, 2022

	Market Value ($)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Credit (Net)	**484,330,694**	**18.3**	**4.5**	**4.2**	**-6.0**	**-0.4**	--
Credit (Gross)			**4.5**	**4.3**	**-5.9**	**-0.3**	--
Liquid Credit (Net)	**484,330,694**	**18.3**	**4.5**	**4.2**	**-6.0**	--	--
Liquid Credit (Gross)			**4.5**	**4.2**	**-6.0**	--	--
OPEB Liquid Credit BM			*3.8*	*3.5*	*-7.2*	--	--
Excess Return (vs. Net)			0.7	0.7	1.2		
OPEB BTC Bank Loans (Net)	242,705,789	9.2	3.2	5.2	0.1	2.2	--
OPEB BTC Bank Loans (Gross)			3.2	5.2	-0.3	2.1	--
S&P/LSTA Leveraged Loan TR			*2.7*	*4.1*	*-0.6*	*2.6*	--
Excess Return (vs. Net)			0.5	1.1	0.7	-0.4	
OPEB BTC EM Debt LC (Net)	98,546,841	3.7	8.4	3.1	-11.7	-6.5	--
OPEB BTC EM Debt LC (Gross)			8.4	3.2	-11.6	-6.4	--
JPM GBI-EM Global Diversified Index			*8.5*	*3.3*	*-11.7*	*-6.1*	--
Excess Return (vs. Net)			-0.1	-0.2	0.0	-0.4	
OPEB BTC High Yield Bonds (Net)	143,078,064	5.4	4.0	3.1	-11.6	-0.6	--
OPEB BTC High Yield Bonds (Gross)			4.0	3.1	-11.4	-0.5	--
BBgBarc US High Yield TR			*4.2*	*3.5*	*-11.2*	*0.0*	--
Excess Return (vs. Net)			-0.2	-0.4	-0.4	-0.6	

	Market Value ($)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Real Assets & Inflation Hedges (Net)	**503,628,133**	**19.1**	**3.4**	**-4.6**	**-14.0**	**2.9**	--
Real Assets & Inflation Hedges (Gross)			**3.4**	**-4.5**	**-13.9**	**2.9**	--
OPEB BTC Commodities (Net)	96,346,488	3.6	2.1	-2.2	16.4	12.7	--
OPEB BTC Commodities (Gross)			2.1	-2.1	15.9	12.6	--
Bloomberg Commodity Index TR USD			*2.2*	*-2.0*	*16.1*	*12.7*	--
Excess Return (vs. Net)			-0.1	-0.2	0.3	0.0	
OPEB BTC REITs (Net)	256,412,974	9.7	4.8	-6.1	-26.0	-1.4	--
OPEB BTC REITs (Gross)			4.8	-6.1	-26.0	-1.3	--
DJ US Select REIT TR USD			*4.7*	*-6.2*	*-26.0*	*-1.4*	--
Excess Return (vs. Net)			0.1	0.1	0.0	0.0	
OPEB BTC TIPS (Net)	150,868,671	5.7	1.9	-3.4	-11.9	1.2	--
OPEB BTC TIPS (Gross)			1.9	-3.4	-11.9	1.2	--
BBgBarc US TIPS TR			*2.0*	*-3.2*	*-11.8*	*1.2*	--
Excess Return (vs. Net)			-0.1	-0.2	-0.1	0.0	

	Market Value ($)	% of Portfolio	QTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Risk Reduction & Mitigation (Net)	**341,917,233**	**12.9**	**1.5**	**-2.3**	**-10.3**	**-2.0**	**0.8**
Risk Reduction & Mitigation (Gross)			**1.5**	**-2.3**	**-10.3**	**-2.0**	**0.8**
OPEB BTC Investment Grade Bonds (Net)	226,579,644	8.6	1.7	-3.2	-13.1	-2.7	--
OPEB BTC Investment Grade Bonds (Gross)			1.7	-3.2	-13.1	-2.7	--
BBgBarc US Aggregate TR			*1.9*	*-3.0*	*-13.0*	*-2.7*	--
Excess Return (vs. Net)			-0.2	-0.2	-0.1	0.0	
OPEB LTG Bonds (Net)	64,288,353	2.4	0.1	--	--	--	--
OPEB LTG Bonds (Gross)			0.1	--	--	--	--
Bloomberg US Treasury Long TR			*-0.6*	--	--	--	--
Excess Return (vs. Net)			0.7				
OPEB Cash (Net)	50,820,726	1.9	0.9	1.4	1.6	0.9	1.6
OPEB Cash (Gross)			0.9	1.5	1.7	1.0	1.7
Custom Cash BM			*0.9*	*1.3*	*1.5*	*0.8*	*1.3*
Excess Return (vs. Net)			0.0	0.1	0.1	0.1	0.3
Operational Cash (Net)	**550**	**0.0**					
Operational Cash (Gross)							

InvMetrics Public DB $1-5B (net) USD Return Comparison



	Return (Rank)									
5th Percentile	6.9		2.2		-7.8		6.0		6.3	
25th Percentile	6.1		1.3		-9.5		4.8		5.6	
Median	5.3		0.9		-12.0		4.3		4.9	
75th Percentile	4.7		0.5		-13.6		3.6		4.5	
95th Percentile	3.8		-0.2		-14.8		2.0		3.4	
# of Portfolios	36		36		36		35		35	
● LACERA Master OPEB Trust Fund	6.4	(16)	0.8	(57)	-14.3	(86)	2.7	(89)	4.2	(81)
▲ Custom OPEB Master Trust BM	5.6	(43)	0.7	(67)	-14.7	(94)	2.4	(92)	3.7	(91)

Benchmark History As of December 31, 2022		
Total Fund		
10/01/2021	Present	Custom OBEP Master Trust BM
2/28/2013	9/30/21	Custom OPEB Master Trust BM
2/01/2014	6/30/2018	80% MSCI ACWI IMI Net / 20% FTSE 6M T-Bill Index
2/01/2013	1/31/2014	FTSE 6M T-Bill Index

Custom OPEB Total Fund:50% Custom OBEP MT Growth, 20% Custom OBEP MT Credit Pool, 10% Custom OBEP MT RR & M Pool, 20% Custom OBEP MT RA & IH Pool.

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE"RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM", "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD–LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

FOR INFORMATION ONLY

February 24, 2023

TO: Trustees - Board of Investments

FROM: Vache Mahseredjian, CFA, CAIA, FRM, ASA
Principal Investment Officer

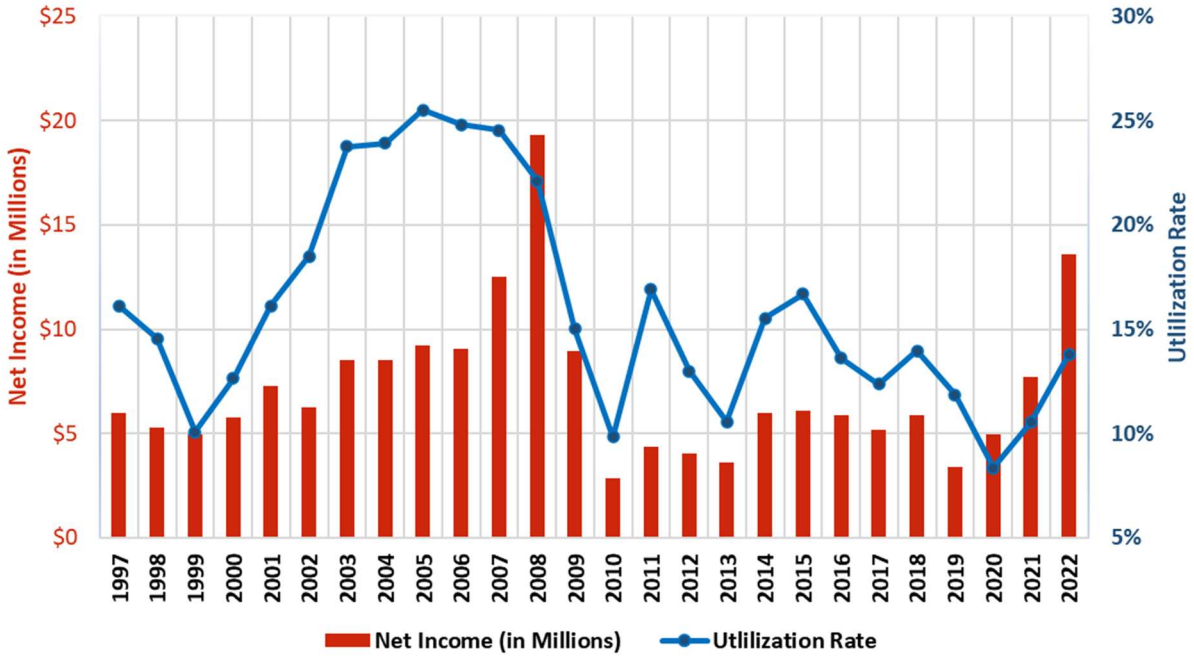
FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **SECURITIES LENDING PROGRAM—2022 ANNUAL REVIEW**

EXECUTIVE SUMMARY

During calendar year 2022, LACERA's Securities Lending Program ("Program") generated $13.5 million in net income, an increase of $5.8 million (75%) compared to the prior year. As shown in **Chart 1,** this was the highest net income generated by the Program since 2008. The increase reflects a higher utilization rate[1] and higher earnings on loan balances.

Chart 1
Net Income and Utilization Rate



[1] Utilization rate is the value of securities on loan divided by the value of securities available to lend.

BACKGROUND

To generate additional income for the Fund, LACERA lends securities to qualified borrowers (brokers/dealers) in exchange for cash and non-cash collateral, typically U.S. Treasury securities, as well as U.S. and non-U.S. equities. When cash collateral is received, it is invested in short-term debt instruments; therefore, in the case of cash collateral, income generated from securities lending has two sources: lending and reinvestment. When non-cash collateral is received, the borrower pays a fee, so income is generated only from the lending activity. **Attachment A** provides an overview of securities lending and **Attachment B** summarizes the risks in securities lending.

In 2019, LACERA issued an RFP for securities lending services and in 2020, the Board of Investments ("BOI") approved a recommendation to consolidate the Program by selecting LACERA's custodian, State Street, as the sole securities lending agent.[2] The Program transition was implemented in the first half of 2021; therefore, 2022 was the first full year under a consolidated program. Benefits of consolidating the program with our custodian include:

- An improved income split. Income generated from securities lending is shared with the lending agent, and one outcome of the RFP is that LACERA now retains a higher portion, 90%, while State Street gets 10%.
- Reduced fee for management of the collateral pool. As noted above, when cash is received in return for lending a security, that cash is invested in short-term money market instruments. Previously, State Street charged one basis point[3] for managing cash received from their own lending activity, and five basis points for reinvesting cash received from the other lender's activity. Now that State Street is the sole lender, our cash management fee is one basis point on all cash balances in the Program.
- Reduced expenses. Previously, State Street could charge up to $200,000 per year for expenses involved in third party lending support. Now that State Street is the sole lender, those charges are eliminated.
- Improved communication between LACERA and the securities lending agent in terms of restricting specific securities or recalling them from borrowers to support LACERA's corporate governance initiatives.
- Greater operational efficiency. Securities lending is essentially making a collateralized loan. When cash is the collateral received in return for lending a security, the lending and reinvesting activities must be coordinated so that when the borrower returns a security, there is sufficient liquidity in the collateral pool to return the borrower's cash. When there were two lending agents, sometimes the communication between the lending and reinvesting agents was delayed. Now that both activities reside within State Street, communication and coordination are improved, thereby reducing operational risk.

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[2] Previously, the Program had two service providers: Goldman Sachs Agency Lending ("GSAL") was LACERA's lending agent for corporate bonds and domestic equities, and State Street lent LACERA's non-U.S. equities, U.S. Treasuries, and U.S. agency securities.

[3] A basis point is one-one hundredth of a percent, or 1% of 1%. It is equivalent to diving by 10,000 so for example, one basis point of a million dollars is one hundred dollars.

SECURITIES LENDING PROGRAM PERFORMANCE

A. Lending Volume

Table 1 shows the monthly average lendable base and the average market value of securities on loan in 2022. Although the market value of securities available for lending decreased last year—reflecting the price declines in stocks and bonds—the value of securities on loan increased in the first part of the year, reflecting higher loan demand from broker-dealers. In the fourth quarter of 2022, when markets rallied, lending demand decreased slightly. For the entire year, the average daily value of securities on loan was $3.5 billion, reflecting an average utilization rate of 13.8%.

Table 1

	Total (in millions)		
2022	**Avg Lendable**	**Avg on Loan**	**Utilization**
Jan	28,366.1	3,238.7	**11.4%**
Feb	27,529.5	3,478.5	**12.6%**
Mar	27,173.4	3,899.2	**14.3%**
Apr	26,747.4	3,958.1	**14.8%**
May	25,229.0	3,880.6	**15.4%**
Jun	24,208.5	3,796.1	**15.7%**
Jul	24,243.2	3,579.4	**14.8%**
Aug	25,124.8	3,419.5	**13.6%**
Sep	23,979.8	3,185.8	**13.3%**
Oct	22,875.2	3,161.6	**13.8%**
Nov	24,229.9	3,291.5	**13.6%**
Dec	24,579.6	2,970.5	**12.1%**
	25,357.2	**3,488.3**	**13.8%**

Table 2 compares the average lendable balance and the average amount on loan for 2022 to the 2021 figures. Note again that although the average lendable balance declined from year to year, the utilization rate increased.

Table 2

Program Size	Program Totals
2021 Average Lendable	$28,065.8
2022 Average Lendable	$25,357.2
% Change from 2021	-9.7%
2021 Average on Loan	$2,847.9
2022 Average on Loan	$3,488.3
% Change from 2021	22.5%
2021 Utilization (%)	10.1%
2022 Utilization (%)	13.8%
Difference	3.6%

B. Lending Income

As shown in **Table 3**, the Program generated $13.5 million of income in 2022, an increase of $5.8 million compared to the previous year's results. In percentage terms, the Program generated 39 basis points of income for each dollar on loan. Given the utilization rate of 13.8% (in **Table 1**), the income can also be viewed as five basis points of the average lendable balance.

As noted above, when cash collateral is received, securities lending income has two sources: lending and reinvestment. When non-cash collateral is received, income is generated only from the lending demand. As shown in **Table 3**, the total income of $13.5 million consists of $11.2 million from lending demand; of this $11.2 million, $5.0 million was from cash collateral and $6.2 million was from non-cash collateral. Therefore, the total income from cash collateral lending equals the $5.0 million from lending demand, plus $2.3 million from reinvestment, for a total of $7.3 million, equivalent to 54% of the $13.5 million total. Total Income from non-cash collateral lending was $6.2 million (46% of the total).

Table 3

2022	Earnings from Lending	Earnings from Reinvestment	Total Earnings
Jan	$608,745	$103,796	$712,541
Feb	$609,600	$108,142	$717,742
Mar	$807,441	$140,657	$948,097
Apr	$919,577	$175,550	$1,095,127
May	$1,212,163	$200,372	$1,412,535
Jun	$1,128,588	$176,568	$1,305,156
Jul	$1,067,998	$222,290	$1,290,288
Aug	$1,054,457	$193,737	$1,248,195
Sep	$1,004,266	$169,447	$1,173,713
Oct	$970,661	$237,695	$1,208,356
Nov	$1,082,410	$243,765	$1,326,175
Dec	$739,563	$287,267	$1,026,830
Total	**$11,205,468**	**$2,259,286**	**$13,464,754**

Table 4 provides a breakdown of the lending income by asset class. Domestic equity generated the most income ($8.0 million), representing 59% of the program total. This figure is a bit misleading, however, as the single biggest income generator for the year was an iShares high yield bond ETF (USHY), which accounted for almost $2.7 million in earnings. This reflects the fact that ETFs—even bond ETFs—are classified as equities in the Program.

Table 4

2022	Earnings from Lending	Earnings from Reinvestment	Total Earnings
Domestic Equity	$6,736,460	$1,229,808	**$7,966,268**
Int'l Equity	$2,578,508	$170,465	**$2,748,974**
Corporate Bonds	$945,281	$330,405	**$1,275,686**
Agencies	$576,684	$174,825	**$751,510**
Treasuries	$368,535	$353,783	**$722,317**
TOTAL	**$11,205,468**	**$2,259,286**	**$13,464,754**

It should be noted that State Street identified an accounting error in late 2022 that overstated income by approximately $249,000. This error will be remedied by offsets in 2023. State Street's error was a result of manual processing that has since been modified via additional safeguards to mitigate the likelihood of future errors.

The appendix of LACERA's quarterly performance book contains information on the securities lending program. Included there is a summary of earnings by quarter, by functional category, top earning funds, and top earning securities. Since all the information in this annual update memo is contained in the quarterly performance book—and with greater frequency and detail—going forward, the report in the quarterly performance book will replace this memo.

CONCLUSION

LACERA's Securities Lending Program generated $13.5 million in net income during calendar year 2022, an increase of $5.8 million compared to the prior year. This was the highest net income generated by the Program since 2008. The $13.5 million in income represents a return of 39 basis points on the average daily amount on loan of $3.5 billion.

Attachments:

Attachment A – What is Securities Lending?
Attachment B – What are the Risks in Securities Lending?

Noted and Reviewed:

Jonathan Grabel
Chief Investment Officer

VM:st

Attachment A

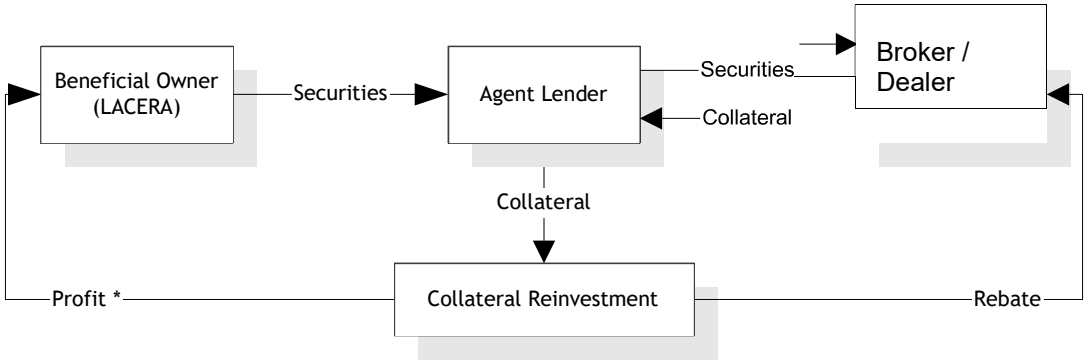
WHAT IS SECURITIES LENDING?

In a securities lending transaction, a beneficial owner (such as LACERA) lends its securities to qualified borrowers (such as broker/dealers) in exchange for collateral (either cash or other securities). Cash collateral is invested in short-term, high quality fixed income instruments with the purpose of maximizing investment earnings at the lowest level of risk. When the borrower returns the securities to the beneficial owner, the collateral is returned to the borrower with interest – this is known as the **rebate**. Earnings from the reinvestment of collateral in excess of the rebate represent the profit or securities lending income. In the case of non-cash collateral, the beneficial owner is paid a pre-negotiated lending fee.

There are two types of service relationships: an agency relationship and a principal relationship.

FIGURE 1 illustrates the flow of securities in an agency relationship.

FIGURE 1
THIRD PARTY / CUSTODIAN AGENT RELATIONSHIP



* Profit is split between LACERA and Agent Lender.

In an agency relationship, the agent (an intermediary between the beneficial owner and broker/dealers) is responsible for lending the securities to a qualified group of borrowers and for obtaining the collateral from the borrower. At the time the loan is initiated, the agent also negotiates the rebate that will eventually be paid to the borrower when the loaned securities are returned to the beneficial owner. The collateral is then invested in short-term securities by the agent or by a designated cash manager. Earnings from cash reinvestment minus the rebate paid to the borrower are divided between the agent and the beneficial owner based on a pre-determined split.

LACERA previously had two agency relationships: State Street (custodian agent), and Goldman Sachs Agency Lending (GSAL – third-party lending agent). During the course of 2021, the program was consolidated with State Street.

Attachment B

WHAT ARE THE RISKS IN SECURITIES LENDING?

There are three key risks inherent in securities lending: 1) borrower default risk, 2) cash reinvestment risk, and 3) operational risk.

Borrower Default Risk

This is the risk that a borrower encounters financial difficulty and is unable to return the securities on loan. In this case, LACERA's lending agent can use the cash collateral and purchase the security in the open market. When cash is accepted as collateral, domestic loans are collateralized at 102% while international loans carry 105% collateral. Non-cash collateral has higher requirements depending on the type of security—collateral required for such loans can be as high as 108% or 109%. All loans are marked-to-market daily.

LACERA's lending agreements require our lending agents to provide borrower default indemnification in the event a borrower does not return securities on loan. The terms of the lending agreements entitle LACERA to terminate all loans upon the occurrence of default and purchase a like amount of "replacement securities." In the event the purchase price of replacement securities exceeds the amount of collateral, the lending agent is liable to LACERA for the amount of such excess, with interest. Either LACERA or the borrower of the security can terminate a loan on demand.

Cash Reinvestment Risk

This is the risk that the earnings generated by cash reinvestment are not sufficient to cover the rebate paid to the borrower. There are two key sources of risk in the reinvestment of cash: credit risk and interest rate risk. Credit risk is the risk that the investment depreciates as a result of a credit quality downgrade or bond issuer default. Interest rate risk occurs when the return on the portfolio is less than the rebate rate. To manage these risks, securities lending cash portfolios are well-diversified and invested in highly liquid, high credit quality, short-term fixed income securities. LACERA's cash collateral account is managed in a separate account with customized guidelines.

Operational Risk

This risk includes: 1) sell fail risk—failure by a borrower to return a loaned security that LACERA's investment manager has sold, 2) mark-to-market—failure to conduct daily market valuations and maintain appropriate collateral in the event of borrower default, 3) failure to collect income in the form of dividends or interest paid on loaned securities, and 4) corporate actions—failure to ensure accurate adjustments and maintain collateral levels as a result of stock splits and stock dividends.

Utilizing entities with highly sophisticated and advanced trading systems mitigates these risks. Additionally, borrower loan levels, mark-to-market activities, and investment guideline compliance are among the risks routinely monitored by staff.

LACERA

FOR INFORMATION ONLY

February 27, 2023

TO: Trustees,
Board of Investments

FROM: Christine Roseland
Senior Staff Counsel

FOR: March 8, 2023 Board of Investments Meeting

SUBJECT: **Legal Projects**

Attached is the monthly report on the status of Board-directed investment-related projects handled by the Legal Division as of February 27, 2023.

Attachment

c: Santos H. Kreimann
Luis A. Lugo
Jonathan Grabel
Esmeralda Del Bosque
Vache Mahseredjian
Jude Perez
Jim Rice
Christopher Wagner
Scott Zdrazil
Steven Rice
John Harrington
Earl Buehner
Margo McCabe
Lisa Garcia

LACERA Legal Division
Board of Investments Projects
Monthly Status Report - Pending as of February 27, 2023

	Project/ Investment	Description	Amount	Board Approval Date	Completion Status	% Complete	Notes
EQUITIES	Leading Edge Investment Advisors (LEIA)	Investment Management Agreement for Global Equity Emerging Manager Program	$500,000,000	October 12, 2022	In Progress	25%	Legal negotiations in process.
	New Alpha Asset Management (New Alpha)	Investment Management Agreement for Global Equity Emerging Manager Program	$500,000,000	October 12, 2022	In Progress	25%	Legal negotiations in process.
OPEB	Hamilton Lane	Investment Management Agreement	$500,000,000	August 10, 2022	In Progress	70%	Legal negotiations in process.
PORTFOLIO ANALYTICS	State Street Bank and Trust Co.	Global Custody and Commercial Banking Services Agreement for LACERA's Pension Plan and OPEB Master Trust	$72,000,000,000	August 10, 2022	In Progress	60%	Legal negotiations in process.
REAL ESTATE	Clarion Lion Property Fund	Subscription	$600,000,000	February 8, 2023	In Progress	15%	Legal negotiations in process.
REAL ASSETS	Sprott Private Resource Streaming and Royalty Annex (US), LP & Sprott Private Resource Streaming and Royalty (LACERA Co-Invest), LP	Subscription	$150,000,000	January 11, 2023	In Progress	70%	Legal negotiations in process.

LACERA

FOR INFORMATION ONLY

February 21, 2023

TO: Each Trustee
Board of Retirement
Board of Investments

FROM: Ted Granger TG
Interim Chief Financial Officer

FOR: March 1, 2023 Board of Retirement Meeting
March 8, 2023 Board of Investments Meeting

SUBJECT: **MONTHLY TRAVEL & EDUCATION REPORT – JANUARY 2023**

Attached for your review is the Trustee Travel & Education Report. This report includes all events (i.e., attended and canceled) from the beginning of the fiscal year through January 2023. Staff travel and education reports are provided to the Chief Executive Officer monthly and to the Boards quarterly.

REVIEWED AND APPROVED:

Santos H. Kreimann
Chief Executive Officer

TG/EW/SC/se

Attachments

c: L. Lugo
J. Popowich
L. Guglielmo
J. Grabel
S. Rice
R. Van Nortrick

LACERA

TRUSTEE TRAVEL AND EDUCATION REPORT

FOR FISCAL YEAR 2022 - 2023

JANUARY 2023

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Alan Bernstein				
A	1	Edu - CII Fall 2022 Conference - Boston MA	09/21/2022 - 09/23/2022	Attended
	2	Edu - NCPERS 2022 Public Safety Conference - Nashville TN	10/23/2022 - 10/26/2022	Attended
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
V	-	Edu - NACD: The Theranos Implosion - VIRTUAL	09/28/2022 - 09/28/2022	Attended
X	-	Edu - NCPERS 2023 Legislative Conference - Washington, DC MD	01/22/2023 - 01/24/2023	Canceled
Elizabeth Ginsberg				
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
V	-	Edu - NACD Cyber-Risk Oversight Certificate - At Your Own Pace - VIRTUAL	11/04/2022 - 11/04/2022	Attended
Vivian Gray				
A	1	Edu - CII Fall 2022 Conference - Boston MA	09/21/2022 - 09/23/2022	Attended
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA	08/21/2022 - 08/23/2022	Attended
	-	Admin - SACRS Board of Directors Meeting - Los Angeles CA	08/22/2022 - 08/22/2022	Attended
	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Admin - SACRS Program Committee & Board of Directors Meeting - Santa Barbara CA	09/26/2022 - 09/27/2022	Attended
	-	Admin - SACRS Board of Directors Meeting - San Diego CA	12/01/2022 - 12/01/2022	Attended
	-	Admin - SACRS Board of Directors Meeting - Sacramento CA	01/09/2023 - 01/10/2023	Attended
V	-	Edu - The Global Conversation on Gender Diversity - VIRTUAL	11/02/2022 - 11/02/2022	Attended
	-	Edu - 50/50 Women on Boards - VIRTUAL	11/02/2022 - 11/02/2022	Attended
X	-	Edu - TLF Annual Convening 2022 - Cambridge MA	07/18/2022 - 07/20/2022	Canceled
	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Canceled
	-	Edu - NCPERS 2023 Legislative Conference - Washington, DC MD	01/22/2023 - 01/24/2023	Canceled
David Green				
A	1	Edu - PPI 2022 Summer Roundtable - Canada, Vancouver	07/13/2022 - 07/15/2022	Attended
	2	Edu - NCPERS 2023 Legislative Conference - Washington, DC MD	01/22/2023 - 01/24/2023	Attended
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Jason Green				
C	-	Edu - NCPERS 2023 Legislative Conference - Washington, DC MD	01/22/2023 - 01/24/2023	Attended
	-	Admin - Federal Engagement Visit with Congress - Washington, DC MD	01/24/2023 - 01/25/2023	Attended
Elizabeth Greenwood				
A	1	Edu - 16th Annual Small and Emerging Managers (SEM) Conference - Chicago IL	10/12/2022 - 10/13/2022	Attended

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TRUSTEE TRAVEL AND EDUCATION REPORT

FOR FISCAL YEAR 2022 - 2023

JANUARY 2023

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Patrick Jones				
A	1	Edu - Leading in Artificial Intelligence: Exploring Technology and Policy - Harvard Kennedy School - Cambridge MA	07/17/2022 - 07/22/2022	Attended
	2	Edu - 2022 Infrastructure Investor America Forum - New York NY	12/06/2022 - 12/07/2022	Attended
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Onyx Jones				
A	1	Edu - SACRS Public Pension Investment Management Program - San Francisco CA	07/17/2022 - 07/20/2022	Attended
	2	Edu - 2022 CALAPRS Principles of Pension Governance for Trustees - Tiburon CA	08/29/2022 - 09/01/2022	Attended
	3	Edu - 2022 SuperReturn Summit Africa - Cape Town, South Africa	12/05/2022 - 12/07/2022	Attended
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Edu - Women in Institutional Investments Network - Los Angeles CA	10/12/2022 - 10/12/2022	Attended
V	-	Edu - The World to Africa Webinar - VIRTUAL	07/27/2022 - 07/27/2022	Attended
Shawn Kehoe				
V	-	Edu - 2022 Board of Investments Offsite - VIRTUAL	09/13/2022 - 09/14/2022	Attended
Joseph Kelly				
A	1	Edu - PPI Executive Seminar and the Asia Pacific Roundtable - Singapore	10/16/2022 - 10/21/2022	Attended
	2	Edu - CII-NYU Corporate Governance Bootcamp - New York NY	11/16/2022 - 11/18/2022	Attended
B	-	Edu - 2022 Pension Bridge Alternatives - Los Angeles CA	11/30/2022 - 12/01/2022	Attended
V	-	Edu - NACD Conflict, Climate, Cyber: What's Next? - VIRTUAL	08/23/2022 - 08/23/2022	Attended
	-	Edu - 2022 Board of Investments Offsite - VIRTUAL	09/13/2022 - 09/14/2022	Attended
	-	Edu - NACD Risk Mitigation Through Board Quality and Compliance Committees: Lessons from Theranos - VIRTUAL	09/28/2022 - 09/28/2022	Attended
	-	Edu - Institute of Internal Auditors 2022 Cybersecurity Virtual Conference - VIRTUAL	10/27/2022 - 10/27/2022	Attended
	-	Edu - NACD Wake Up! Are You Prepared for Post-Pandemic Industry Disruption? - VIRTUAL	01/25/2023 - 01/25/2023	Attended
Keith Knox				
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
V	-	Edu - What Makes an Effective Trustee - VIRTUAL	01/30/2023 - 01/30/2023	Host Canceled
William Pryor				
A	1	Edu - NCPERS 2022 Public Safety Conference - Nashville TN	10/23/2022 - 10/26/2022	Attended
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA	08/21/2022 - 08/23/2022	Attended
Les Robbins				
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended

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TRUSTEE TRAVEL AND EDUCATION REPORT

FOR FISCAL YEAR 2022 - 2023

JANUARY 2023

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Gina Sanchez				
A	1	Edu - PPI Executive Seminar and the Asia Pacific Roundtable - Singapore	10/16/2022 - 10/21/2022	Attended
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA	08/21/2022 - 08/23/2022	Attended
	-	Edu - 2022 Fall Editorial Advisory Board Meeting – Institutional Real Estate Americas - Pasadena CA	09/06/2022 - 09/08/2022	Attended
	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
	-	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
V	-	Edu - NACD Summit 2022 - VIRTUAL	10/08/2022 - 10/11/2022	Attended
Herman Santos				
A	1	Edu - PPI 2022 Summer Roundtable - Canada, Vancouver	07/13/2022 - 07/15/2022	Attended
	2	Edu - CII Fall 2022 Conference - Boston MA	09/21/2022 - 09/23/2022	Attended
	3	Edu - 2022 AAAIM Elevate National Conference - New York NY	09/28/2022 - 09/30/2022	Attended
B	-	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	-	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
C	-	Edu - NCPERS 2023 Legislative Conference - Washington, DC MD	01/22/2023 - 01/24/2023	Attended
	-	Admin - Federal Engagement Visit with Congress - Washington, DC MD	01/24/2023 - 01/25/2023	Attended
X	-	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Canceled

Category Legend:
A - Pre-Approved/Board Approved
B - Educational Conferences and Administrative Meetings in CA where total cost is no more than $3,000 per Trustee Travel Policy; Section III.A
C - Second of two conferences and/or meetings counted as one conference per Trustee Education Policy Section IV.C.2 and Trustee Travel Policy Section IV.
V – Virtual Event
X - Canceled events for which expenses have been incurred.
Z - Trip was Canceled - Balance of $0.00

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Documents not attached are exempt from disclosure under the California Public Records Act and other legal authority.

For further information, contact:
LACERA
Attention: Public Records Act Requests
300 N. Lake Ave., Suite 620
Pasadena, CA 91101

FOR INFORMATION ONLY

February 21, 2023

TO: Trustees
Board of Retirement
Board of Investments

FROM: Ted Granger TG
Interim Chief Financial Officer

FOR: March 1, 2023 Board of Retirement Meeting
March 8, 2023 Board of Investments Meeting

SUBJECT: **2ND QUARTER STAFF TRAVEL REPORT**

Attached for your information, is the Staff Travel Report for trips between July 1, 2022 to December 31, 2022.

REVIEWED AND APPROVED:

Santos H. Kreimann
Chief Executive Officer

TG/EW/SC/se

Attachments

c: L. Lugo
J. Popowich
L. Guglielmo
J. Grabel
S. Rice
R. Van Nortrick

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STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Administrative Services				
Debra Gonzalez	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Martin Sandoval	1	Edu - CALAPRS 2022 Management/Leadership Academy Session #3 - Pasadena CA	07/25/2022 - 07/27/2022	Attended
Elizabeth Smith	1	Edu - CALAPRS 2022 Management/Leadership Academy Session #3 - Pasadena CA	07/25/2022 - 07/27/2022	Attended
Benefits				
Sylvia Botros	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Angel Calvo	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Alisa Gavaller	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Louis Gittens	1	Edu - Los Angeles Digital Government Summit 2022 - Los Angeles CA	10/24/2022 - 10/24/2022	Attended
	2	Admin - CEM 2022 Conference - Phoenix AZ	11/07/2022 - 11/10/2022	Attended
Dmitriy Khaytovich	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Alejandro Ochoa	1	Edu - 2022 CALAPRS Intermediate Course in Retirement Plan Administration - Oakland CA	11/02/2022 - 11/04/2022	Attended
	2	Edu - 2022 CALAPRS Advanced Course in Retirement Plan Administration - Oakland CA	12/07/2022 - 12/09/2022	Attended
Latonya Robinson	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Disability Retirement Services				
Tamara Caldwell	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Ruby Minjares	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Sarah Robles	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Ricardo Salinas	1	Edu - CALAPRS 2022 Management/Leadership Academy Session #3 - Pasadena CA	07/25/2022 - 07/27/2022	Attended
Melena Sarkisian	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Maria Silva	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended

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STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Executive Offices				
Linda Ghazarian	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Santos Kreimann	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
	2	Edu - CALAPRS Administrators' Institute 2022 - Long Beach CA	09/28/2022 - 09/30/2022	Attended
	3	Admin - CVS Due Diligence Site Visit - Chicago IL	09/28/2022 - 09/30/2022	Attended
	4	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
Luis Lugo	1	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
John Popowich	1	Edu - Los Angeles Digital Government Summit 2022 - Los Angeles CA	10/24/2022 - 10/24/2022	Attended
	2	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Financial & Accounting Services				
Ana Chang	1	Edu - 2022 P2F2 Conference - Philadelphia PA	10/23/2022 - 10/26/2022	Attended
Margaret Chwa	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
	2	Edu - 2022 P2F2 Conference - Philadelphia PA	10/23/2022 - 10/26/2022	Attended
Weiyi Guan	1	Edu - 2022 P2F2 Conference - Philadelphia PA	10/23/2022 - 10/26/2022	Canceled
Giselle Jaimes	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Ervin Wu	1	Edu - 2022 P2F2 Conference - Philadelphia PA	10/23/2022 - 10/26/2022	Attended
Human Resources				
Michael Cordial	1	Edu - CALPELRA's 47th Annual Training Conference - Monterey CA	11/15/2022 - 11/18/2022	Attended
Julia Ray	1	Edu - Disability Management Compliance Framework Certification Training at LA County Pubic Works - Alhambra CA	08/09/2022 - 08/10/2022	Canceled
	2	Edu - Disability Management Compliance Framework Certification Training at LA County Pubic Works - Alhambra CA	10/11/2022 - 10/12/2022	Attended
Melissa Slaton	1	Edu - Disability Management Compliance Framework Certification Training at LA County Pubic Works - Alhambra CA	08/09/2022 - 08/10/2022	Canceled
	2	Edu - Disability Management Compliance Framework Certification Training at LA County Pubic Works - Alhambra CA	10/11/2022 - 10/12/2022	Attended
Internal Audit				
Leisha Collins	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
	2	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Perla Gonzalez	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Christina Logan	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended

STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Investments				
Didier Acevedo	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Innovation Endeavors Portfolio Company Visit (Machina Labs) - Chatsworth CA	09/21/2022 - 09/21/2022	Attended
	3	Admin - Great Hill Partners AGM and LPAC + Summit Partners and OpenView visits - Boston MA	09/28/2022 - 09/29/2022	Attended
	4	Admin - Center bridge LPAC meeting; meeting with Long Ridge Capital - New York City NY	11/02/2022 - 11/03/2022	Attended
	5	Admin - Primary Ventures LPAC and AGM and BDCM LPAC and AGM - New York City NY	11/09/2022 - 11/10/2022	Attended
	6	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
Amit Aggarwal	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Meet with Blackstone and Brookfield real estate team, conduct site inspections of Milford Hotel and Knickerboker Retail in New York. Attend Pension Real Estate Association (PREA) investor conference in Washington, DC - New York and Washington, DC NY	10/17/2022 - 10/21/2022	Attended
	3	Admin - Attend Aermont Capital Real Estate Fund IV, LPAC and meet with Blackstone Real Estate Partners X, Brookfield Strategic Real Estate Partners IV, CapMan Nordic Fund II, CapMan Nordic Fund III, Angelo Gordon Europe Fund II, Prologis European Logistics Fund, NREP (potential manager) and Harrison Street (potential manager) - London, UK	11/12/2022 - 11/18/2022	Attended
	4	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
	5	Admin - Due diligence meetings with CBRE US Core Partners - New York NY	12/15/2022 - 12/16/2022	Attended
Magdalia Armstrong	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - BlackRock's Women's Investment Series Luncheon - Santa Monica CA	10/24/2022 - 10/24/2022	Attended
Calvin Chang	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Veritas Annual General Meeting and LPAC - New York City NY	10/18/2022 - 10/20/2022	Attended
Noah Damsky	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Attend Real Assets ILPA training, meet with GPs (DigitalBridge, Macquarie, GIP, Ridgewood) - New York City NY	10/02/2022 - 10/05/2022	Attended
Esmeralda Del Bosque	1	Admin - First Energy deposition preparation sessions with Robbins Geller Rudman & Dowd LLP - Pasadena CA	07/14/2022 - 07/15/2022	Attended
	2	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Terra Elijah	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - 17th annual MSCI Institutional Investor Conference - Sacramento CA	10/17/2022 - 10/19/2022	Attended
Jon Grabel	1	Admin - Guest Speaker-The Investment Diversity Exchange (TIDE) Spark 2022 - Dana Point CA	07/06/2022 - 07/07/2022	Attended

STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Investments				
Jon Grabel	2	Edu - Miami RFK Compass Conference - Miami FL	10/02/2022 - 10/04/2022	Host Canceled
	3	Admin - Nossaman's 2022 Fiduciary Forum - Los Angeles CA	10/17/2022 - 10/18/2022	Attended
	4	Edu - Reuters ESG Conference - Guest Speaker - New York City NY	10/31/2022 - 11/04/2022	Attended
	5	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
	6	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
	7	Edu - KKR's 2022 Chief Investment Officers' Symposium - Washington, DC MD	12/05/2022 - 12/06/2022	Attended
Eduardo Ibanez	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Pushpam Jain	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Current and potential manager meetings - Chicago IL	10/05/2022 - 10/06/2022	Attended
	3	Admin - Board meeting for TIAA CREF Farmland I and TIAA CREF Farmland II, Site Visits to farms + meeting with potential JV partner APG + meeting with other LPs (AP2, CDPQ, TIAA, others) - Santiago, Chile	10/22/2022 - 10/28/2022	Attended
Dale Johnson	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Edu - CII Fall 2022 Conference - Boston MA	09/21/2022 - 09/23/2022	Attended
Daniel Joye	1	Admin - Southern California Institutional Forum-Markets Group - Marina Del Rey CA	07/21/2022 - 07/21/2022	Attended
	2	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	3	Admin - Institutional Investing in Infrastructure Advisory Board Mtg - Newport Beach CA	11/03/2022 - 11/03/2022	Attended
	4	Admin - Infrastructure Guest Speaker-Pension Bridge Alts - Beverly Hills CA	11/30/2022 - 11/30/2022	Attended
	5	Admin - Antin MidCap Fund LPAC and meet with current managers: DIF, Antin, Partners Groups, and prospective managers: Asterion, Meridiam, InfraRed, Ardian, Cube, Ancala, InfraVia, Macquarie - London (UK), Paris (France), & Zug (Switzerland)	12/03/2022 - 12/11/2022	Attended
John Kim	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Derek Kong	1	Admin - CVC Annual General Meeting, LPAC and Fund IX Onsite and meet with prospective managers (Bregal and IK Partners) and secondary placement agents (Lazard, Rede, Evercore) - London, UK	09/06/2022 - 09/09/2022	Attended
	2	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	3	Admin - Attend Montefiore Investment V LPAC and Fund VI Onsite, attend Blackfin Financial Services IV Onsite - Paris, France	11/06/2022 - 11/11/2022	Attended
	4	Admin - STG Onsite - Menlo Park CA	12/01/2022 - 12/01/2022	Attended
Cheryl Lu	1	Admin - Attend GGV 2022 Annual Meeting and LPAC Roundtable - San Francisco CA	09/12/2022 - 09/13/2022	Attended

STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
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Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Investments				
Cheryl Lu	2	Admin - Attend BRV Aster 2022 Annual General Meeting and Limited Partner Advisory Committee, meet with existing (GGV) and potential (Jungle Ventures, LYFE Capita) managers, and attend SuperReturn Asia - Singapore	09/20/2022 - 09/27/2022	Attended
	3	Admin - Attend Revelstoke Capital Partners 2022 Annual General Meeting and Limited Partner Advisory Committee meeting - Boulder CO	10/12/2022 - 10/13/2022	Attended
	4	Admin - MBK Capital Partners 2022 Annual General Meeting and Investor Advisory Committee meetings - Seoul Korea	11/14/2022 - 11/16/2022	Attended
	5	Admin - LPAC lunch and annual general meeting for Lilly Asia Ventures - Menlo Park CA	11/29/2022 - 11/30/2022	Attended
Vache Mahseredjian	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Quoc Nguyen	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Jude Perez	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Krista Powell	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Jim Rice	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Cindy Rivera	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Brookfield 2022 Private Fund Investor Conference - Beverly Hills CA	11/15/2022 - 11/15/2022	Attended
	3	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
Michael Romero	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Edu - 2022 Toigo Foundation Gala - Los Angeles CA	11/17/2022 - 11/17/2022	Attended
Ron Senkandwa	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
David Simpson	1	Admin - One Rock Annual General Meeting (AGM) and Limited Partner Advisory Committee (LPAC) meeting, Siris AGM and LPAC, Riverside AGM, WM Partners AGM - New York, NY and Fort Lauderdale, FL	11/14/2022 - 11/18/2022	Attended
Shelly Tilaye	1	Admin - Vista Partners LPAC meeting and Hellman & Friedman Due Diligence meetings - New York City NY	11/07/2022 - 11/14/2022	Attended
Chad Timko	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Mel Tsao	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	2	Admin - Due diligence meetings with CBRE US Core Partners - New York NY	12/15/2022 - 12/16/2022	Attended
Christopher Wagner	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
Scott Zdrazil	1	Admin - Guest Speaker-The Investment Diversity Exchange (TIDE) Spark 2022 - Dana Point CA	07/06/2022 - 07/07/2022	Attended
	2	Admin - Council of Institutional Investors Board Meeting - Washington, DC MD	08/01/2022 - 08/03/2022	Attended
	3	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended
	4	Edu - CII Fall 2022 Conference - Boston MA	09/21/2022 - 09/23/2022	Attended
	5	Admin - Stanford Institutional Investor Forum - Stanford CA	12/01/2022 - 12/02/2022	Attended

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STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Legal Services				
Jasmine Bath	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
	2	Admin - Nossaman's 2022 Fiduciary Forum - Los Angeles CA	10/17/2022 - 10/18/2022	Attended
Michael Herrera	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Steven Rice	1	Admin - Nossaman's 2022 Fiduciary Forum - Los Angeles CA	10/17/2022 - 10/18/2022	Attended
Jessica Rivas	1	Edu - SACRS 2022 Fall Conference - Long Beach CA	11/08/2022 - 11/11/2022	Attended
Christine Roseland	1	Edu - 2022 Association of Corporate Counsel (ACC) Annual Meeting - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
Elizabeth Tirado	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Member Services				
Stephanie Kawai	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Laura Magallanes	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Alejandro Ochoa	1	Edu - CALAPRS 2022 Management/Leadership Academy Session #3 - Pasadena CA	07/25/2022 - 07/27/2022	Attended
Aurelia Okafor-Smith	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Maritza Perez	1	Admin - CEM 2022 Conference - Phoenix AZ	11/07/2022 - 11/10/2022	Attended
Victor Tafolla	1	Admin - CEM 2022 Conference - Phoenix AZ	11/07/2022 - 11/10/2022	Attended
QA & Metrics				
Bernardo Buenaflor	1	Admin - CEM 2022 Conference - Phoenix AZ	11/07/2022 - 11/10/2022	Attended

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STAFF TRAVEL REPORT
FOR FISCAL YEAR 2022 - 2023
DECEMBER 2022

Attendee		Purpose of Travel - Location	Event Dates	Travel Status
Retiree Healthcare				
Tionna Fredericks	1	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
Nicole Howard	1	Edu - 2022 Los Angeles County Women's Leadership Conference - Los Angeles CA	09/01/2022 - 09/01/2022	Attended
Leilani Ignacio	1	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
Kathy Migita	1	Admin - Anthem Blue Cross Due Diligence Site Visit - Rancho Cordova CA	09/14/2022 - 09/14/2022	Attended
	2	Admin - CVS Due Diligence Site Visit - Chicago IL	09/28/2022 - 09/30/2022	Attended
	3	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
	4	Admin - Kaiser Permanente - Diligence Meeting - Washington DC	10/27/2022 - 10/30/2022	Attended
	5	Admin - CIGNA - Due Diligence - Bloomfield CT	11/02/2022 - 11/03/2022	Attended
Cassandra Smith	1	Admin - Anthem Blue Cross Due Diligence Site Visit - Rancho Cordova CA	09/14/2022 - 09/14/2022	Attended
	2	Admin - CVS Due Diligence Site Visit - Chicago IL	09/28/2022 - 09/30/2022	Attended
	3	Edu - IFEBP 68th Annual Employee Benefits Conference - Las Vegas NV	10/23/2022 - 10/26/2022	Attended
	4	Admin - Kaiser Permanente - Diligence Meeting - Washington DC	10/27/2022 - 10/30/2022	Attended
	5	Admin - CIGNA - Due Diligence - Bloomfield CT	11/02/2022 - 11/03/2022	Attended
Systems				
Joe Aguilar	1	Edu - Allegion - Sielox Product Certification Training - Pleasanton CA	09/12/2022 - 09/16/2022	Attended
Celso Templo	1	Admin - CEM 2022 Conference - Phoenix AZ	11/07/2022 - 11/10/2022	Attended
Alex Yin	1	Edu - 2022 Board of Investments Offsite - Long Beach CA	09/13/2022 - 09/14/2022	Attended

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FOR INFORMATION ONLY

February 21, 2023

TO: Trustees
Board of Retirement
Board of Investments

FROM: Ted Granger TG
Interim Chief Financial Officer

FOR: March 1, 2023 Board of Retirement Meeting
March 8, 2023 Board of Investments Meeting

SUBJECT: **2ND QUARTER TRUSTEE TRAVEL & EDUCATION EXPENDITURE REPORTS**

Attached for your review, is the Trustee Travel & Education Expenditure Report which includes expenses paid and submitted for reimbursement of events between July 1, 2022 to December 31, 2022. The Trustee Cancellation & Credit Expenditures Report which includes credits and expenses associated with trip cancellations, for Fiscal Years 2020-2021, 2021-2022, and 2022-2023 are also attached for your reference.

REVIEWED AND APPROVED:

Santos H. Kreimann
Chief Executive Officer

TG/EW/SC/se

Attachments

c: L. Lugo
J. Popowich
L. Guglielmo
J. Grabel
S. Rice
R. Van Nortrick

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat		Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Alan Bernstein														
A	1	Edu - CII Fall 2022 Conference - Boston MA - 09/21/2022 - 09/23/2022	Attended	$4,221.72	$0.00	$0.00	$3,846.59	$169.13	$0.00	$0.00	$0.00	$0.00	$128.00	$78.00
	2	Edu - NCPERS 2022 Public Safety Conference - Nashville TN - 10/23/2022 - 10/26/2022	Attended	$4,890.71	$750.00	$1,312.34	$1,515.20	$833.49	$0.00	$0.00	$180.68	$0.00	$236.00	$63.00
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Attended	$1,385.41	$120.00	$979.04	$0.00	$0.00	$65.63	$0.00	$62.74	$0.00	$138.00	$20.00
V	-	Edu - NACD: The Theranos Implosion - VIRTUAL - 09/28/2022 - 09/28/2022	Attended	$30.00	$30.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Alan Bernstein:		$10,527.84	$900.00	$2,291.38	$5,361.79	$1,002.62	$65.63	$0.00	$243.42	$0.00	$502.00	$161.00

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat		Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Vivian Gray														
A	1	Edu - CII Fall 2022 Conference - Boston MA - 09/21/2022 - 09/23/2022	Attended	$2,986.23	$0.00	$1,149.36	$1,597.20	$239.67	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA - 08/21/2022 - 08/23/2022	Attended	$820.00	$820.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Admin - SACRS Board of Directors Meeting - Los Angeles CA - 08/22/2022 - 08/22/2022	Attended	$656.08	$0.00	$656.08	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Admin - SACRS Program Committee & Board of Directors Meeting - Santa Barbara CA - 09/26/2022 - 09/27/2022	Attended	$1,410.17	$179.00	$1,057.17	$0.00	$0.00	$0.00	$0.00	$108.00	$0.00	$51.00	$15.00
	-	Admin - SACRS Board of Directors Meeting - San Diego CA - 12/01/2022 - 12/01/2022	Attended	$931.44	$0.00	$629.44	$0.00	$0.00	$154.00	$0.00	$0.00	$0.00	$138.00	$10.00
V	-	Edu - 50/50 Women on Boards - VIRTUAL - 11/02/2022 - 11/02/2022	Attended	$51.80	$51.80	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
X	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Canceled	$135.00	$135.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Vivian Gray:		$6,990.72	$1,185.80	$3,492.05	$1,597.20	$239.67	$154.00	$0.00	$108.00	$0.00	$189.00	$25.00
David Green														
A	1	Edu - PPI 2022 Summer Roundtable - Canada, Vancouver - 07/13/2022 - 07/15/2022	Attended	$3,548.56	$950.00	$1,094.09	$727.21	$354.26	$0.00	$0.00	$0.00	$0.00	$291.00	$132.00
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Attended	$1,218.02	$120.00	$979.02	$0.00	$0.00	$57.00	$0.00	$0.00	$0.00	$52.00	$10.00
		Totals for David Green:		$4,766.58	$1,070.00	$2,073.11	$727.21	$354.26	$57.00	$0.00	$0.00	$0.00	$343.00	$142.00

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat		Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Onyx Jones														
A	1	Edu - SACRS Public Pension Investment Management Program - San Francisco CA - 07/17/2022 - 07/20/2022	Attended	$4,556.29	$2,500.00	$1,536.96	$392.96	$40.37	$0.00	$0.00	$0.00	$0.00	$86.00	$0.00
	2	Edu - 2022 CALAPRS Principles of Pension Governance for Trustees - Tiburon CA - 08/29/2022 - 09/01/2022	Attended	$746.36	$0.00	$0.00	$392.96	$353.40	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	3	Edu - 2022 SuperReturn Summit Africa - Cape Town, South Africa - 12/05/2022 - 12/07/2022	Attended	$13,996.79	$131.63	$13,675.12	$0.00	$70.04	$0.00	$0.00	$0.00	$0.00	$120.00	$0.00
B	-	Edu - Women in Institutional Investments Network - Los Angeles CA - 10/12/2022 - 10/12/2022	Attended	$85.00	$85.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Onyx Jones:		$19,384.44	$2,716.63	$15,212.08	$785.92	$463.81	$0.00	$0.00	$0.00	$0.00	$206.00	$0.00
Patrick Jones														
A	1	Edu - Leading in Artificial Intelligence: Exploring Technology and Policy - Harvard Kennedy School - Cambridge MA - 07/17/2022 - 07/22/2022	Attended	$10,997.68	$9,400.00	$398.42	$765.35	$147.91	$0.00	$0.00	$0.00	$0.00	$256.00	$30.00
	2	Edu - 2022 Infrastructure Investor America Forum - New York NY - 12/06/2022 - 12/07/2022	Attended	$4,183.20	$0.00	$1,026.00	$3,007.20	$0.00	$0.00	$0.00	$0.00	$150.00	$0.00	$0.00
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Attended	$988.01	$120.00	$868.01	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Patrick Jones:		$16,168.89	$9,520.00	$2,292.43	$3,772.55	$147.91	$0.00	$0.00	$0.00	$150.00	$256.00	$30.00
Joseph Kelly														
A	1	Edu - PPI Executive Seminar and the Asia Pacific Roundtable - Singapore - 10/16/2022 - 10/21/2022	Attended	$6,574.63	$950.00	$1,921.73	$3,529.48	$18.42	$0.00	$0.00	$0.00	$0.00	$155.00	$0.00

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat		Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Joseph Kelly														
A	2	Edu - CII-NYU Corporate Governance Bootcamp - New York NY - 11/16/2022 - 11/18/2022	Attended	$7,483.52	$5,035.00	$1,443.24	$565.20	$204.08	$0.00	$0.00	$0.00	$0.00	$236.00	$0.00
V	-	Edu - NACD Conflict, Climate, Cyber: What's Next? - VIRTUAL - 08/23/2022 - 08/23/2022	Attended	$140.00	$140.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Edu - NACD Risk Mitigation Through Board Quality and Compliance Committees: Lessons from Theranos - VIRTUAL - 09/28/2022 - 09/28/2022	Attended	$30.00	$30.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Edu - Institute of Internal Auditors 2022 Cybersecurity Virtual Conference - VIRTUAL - 10/27/2022 - 10/27/2022	Attended	$539.00	$539.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Joseph Kelly:		$14,767.15	$6,694.00	$3,364.97	$4,094.68	$222.50	$0.00	$0.00	$0.00	$0.00	$391.00	$0.00
William Pryor														
A	1	Edu - NCPERS 2022 Public Safety Conference - Nashville TN - 10/23/2022 - 10/26/2022	Attended	$1,189.96	$0.00	$0.00	$1,189.96	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA - 08/21/2022 - 08/23/2022	Attended	$288.84	$0.00	$288.84	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for William Pryor:		$1,478.80	$0.00	$288.84	$1,189.96	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Les Robbins														
B	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Attended	$120.00	$120.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Les Robbins:		$120.00	$120.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat		Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Gina Sanchez														
A	1	Edu - PPI Executive Seminar and the Asia Pacific Roundtable - Singapore - 10/16/2022 - 10/21/2022	Attended	$18,075.99	$950.00	$1,641.82	$15,232.17	$0.00	$0.00	$0.00	$0.00	$0.00	$174.00	$78.00
B	-	Edu - NCPERS 2022 Public Pension Funding Forum - Los Angeles CA - 08/21/2022 - 08/23/2022	Attended	$820.00	$820.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Edu - 2022 Fall Editorial Advisory Board Meeting – Institutional Real Estate Americas - Pasadena CA - 09/06/2022 - 09/08/2022	Attended	$350.00	$350.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Attended	$165.38	$120.00	$0.00	$0.00	$0.00	$45.38	$0.00	$0.00	$0.00	$0.00	$0.00
	-	Edu - 2022 Toigo Foundation Gala - Los Angeles CA - 11/17/2022 - 11/17/2022	Attended	$150.00	$150.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
V	-	Edu - NACD Summit 2022 - VIRTUAL - 10/08/2022 - 10/11/2022	Attended	$2,555.00	$2,555.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
		Totals for Gina Sanchez:		$22,116.37	$4,945.00	$1,641.82	$15,232.17	$0.00	$45.38	$0.00	$0.00	$0.00	$174.00	$78.00
Herman Santos														
A	1	Edu - PPI 2022 Summer Roundtable - Canada, Vancouver - 07/13/2022 - 07/15/2022	Attended	$3,333.80	$950.00	$1,053.99	$393.35	$92.40	$120.88	$0.00	$107.93	$0.00	$440.00	$175.25
	2	Edu - CII Fall 2022 Conference - Boston MA - 09/21/2022 - 09/23/2022	Attended	$4,199.76	$0.00	$1,614.03	$2,026.80	$60.55	$121.13	$0.00	$114.25	$0.00	$238.00	$25.00
	3	Edu - 2022 AAAIM Elevate National Conference - New York NY - 09/28/2022 - 09/30/2022	Attended	$3,429.25	$500.00	$2,278.62	$0.00	$161.38	$0.00	$0.00	$114.25	$0.00	$350.00	$25.00

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2ND QUARTER TRUSTEE
TRAVEL AND EDUCATION EXPENDITURE REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Cat	Purpose of Travel - Location - Travel Dates	Travel Status	Total Expense	Registration	Lodging	Airfare	Ground Transp.	Mileage	Porterage	Parking	Meals	Per Diem	Misc.
Herman Santos													
B -	Edu - 2022 Toigo Foundation Gala - Los Angeles CA - 11/17/2022 - 11/17/2022	Attended	$150.00	$150.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
X -	Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022	Canceled	$120.00	$120.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
	Totals for Herman Santos:		$11,232.81	$1,720.00	$4,946.64	$2,420.15	$314.33	$242.01	$0.00	$336.43	$0.00	$1,028.00	$225.25
Cnt: 16	**Grand Totals:**		$107,553.60	$28,871.43	$35,603.32	$35,181.63	$2,745.10	$564.02	$0.00	$687.85	$150.00	$3,089.00	$661.25

Category Legend:

A - Pre-Approved/Board Approved
B - Educational Conferences and Administrative Meetings in CA where total cost is no more than $3,000 per Trustee Travel Policy; Section III.A
C - Second of two conferences and/or meetings counted as one conference per Trustee Education Policy Section IV.C.2 and Trustee Travel Policy Section IV.
V – Virtual Event
X - Canceled events for which expenses have been incurred.
Z - Trip was Canceled - Balance of $0.00

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TRUSTEE CANCELLATION AND CREDIT EXPENDITURES
REPORT FOR FISCAL YEAR 2021
FOR TRAVEL DURING JULY 2020 - JUNE 2021

Purpose of Travel - Location - Date - Travel Status	Category	Total Expense	Registration (Reg.)	Lodging	Airfare	Other Misc. Travel Exp.	Chair Pardon	Reg. Credit	Reg. Credit Expiration Date	Airfare Credit	Airfare Credit Expiration Date	Refund Pending
Alan Bernstein												
Edu - IFEBP 66th Annual Employee Benefits Conference - Honolulu HI - 11/15/2020 - 11/18/2020 - Host Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Vivian Gray												
Edu - CII & NYU Corporate Governance Bootcamp - VIRTUAL -9/23/2020 - 9/25/2020 - Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Shawn Kehoe												
Edu - IFEBP 66th Annual Employee Benefits Conference - Honolulu HI - 11/15/2020 - 11/18/2020 - Host Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Les Robbins												
Edu - IFEBP 66th Annual Employee Benefits Conference - Honolulu HI - 11/15/2020 - 11/18/2020 - Host Canceled	X	$0.00	$0.00	$0.00	$0.00	$0.00		$2,125.00	**12/31/2023**	$0.00		$0.00
Edu- 2020 SACRS Fall Virtual Conference -VIRTUAL - 11/10/2020 - 11/13/2020 - Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$2,125.00		$0.00		$0.00
Grand Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$2,125.00		$0.00		$0.00

Category Legend:

X - Canceled events for which expenses have been incurred.
Z - Trip was Canceled - Balance of $0.00

LACERA

TRUSTEE CANCELLATION AND CREDIT EXPENDITURES REPORT

FOR FISCAL YEAR 2022

FOR EVENTS DURING JULY 2021 - JUNE 2022

Purpose of Travel - Location - Date - Travel Status	Category	Total Expense	Registration (Reg.)	Lodging	Airfare	Other Misc. Travel Exp.	Chair Pardon	Reg. Credit	Reg. Credit Expiration Date	Airfare Credit	Airfare Credit Expiration Date	Refund Pending
Alan Bernstein												
Edu - SuperReturn International Berlin - Berlin, Germany - 11/09/2021 - 11/12/2021 - Canceled	X	$375.02	$375.02	$0.00	$0.00	$0.00	**Yes**	$0.00		$0.00		$0.00
Attendee Totals:		$375.02	$375.02	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
David Green												
Edu - 2021 CII Fall Conference - Chicago IL - 09/22/2021 - 09/24/2021 - Host Canceled	X	$387.13	$0.00	$0.00	$387.13	$0.00	**Yes**	$0.00		$0.00		$0.00
Attendee Totals:		$387.13	$0.00	$0.00	$387.13	$0.00		$0.00		$0.00		$0.00
Patrick Jones												
Edu - Duke University Executive Education Program - Corporate Social Responsibility - Durham NC - 09/23/2021 - 09/25/2021 - Host Canceled	X	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$616.80	**12/31/2023**	$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$616.80		$0.00
Shawn Kehoe												
Edu - 2021 Milken Institute Global Conference - Los Angeles CA - 10/17/2021 - 10/20/2021 - Canceled	X	$23.96	$0.00	$23.96	$0.00	$0.00	**Yes**	$0.00		$0.00		$0.00
Edu - SACRS Fall Conference - Los Angeles CA - 11/09/2021 - 11/12/2021 - Canceled	X	$120.00	$120.00	$0.00	$0.00	$0.00	**Yes**	$0.00		$0.00		$0.00
Attendee Totals:		$143.96	$120.00	$23.96	$0.00	$0.00		$0.00		$0.00		$0.00
Joseph Kelly												
Edu - Global Investors Annual Meeting - New York NY - 12/13/2021 - 12/14/2021 - Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Keith Knox												
Edu - 2022 Milken Institute Global Conference - Los Angeles CA - 05/01/2022 - 05/04/2022 - Canceled	X	$1,646.94	$0.00	$1,646.94	$0.00	$0.00	**Yes**	$0.00		$0.00		$0.00
Attendee Totals:		$1,646.94	$0.00	$1,646.94	$0.00	$0.00		$0.00		$0.00		$0.00
Les Robbins												
Edu - AHIP Health Conference - Las Vegas NV - 06/21/2022 - 06/23/2022 - Canceled	X	$519.28	$0.00	$519.28	$0.00	$0.00		$400.00	**6/30/2023**	$97.96	**12/31/2040**	$0.00
Attendee Totals:		$519.28	$0.00	$519.28	$0.00	$0.00		$400.00		$97.96		$0.00

Purpose of Travel - Location - Date - Travel Status	Category	Total Expense	Registration (Reg.)	Lodging	Airfare	Other Misc. Travel Exp.	Chair Pardon	Reg. Credit	Reg. Credit Expiration Date	Airfare Credit	Airfare Credit Expiration Date	Refund Pending
Gina Sanchez												
Edu - 2021 CII Fall Conference - Chicago IL - 09/22/2021 - 09/24/2021 - Host Canceled	X	$282.80	$0.00	$0.00	$282.80	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$282.80	$0.00	$0.00	$282.80	$0.00		$0.00		$0.00		$0.00
Herman Santos												
Edu - Global Investors Annual Meeting - New York NY - 12/13/2021 - 12/14/2021 - Canceled	X	$4.99	$4.99	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Edu - NASP Southern California "Day of Education in Private Equity Conference" - Los Angeles CA - 03/23/2022 - 03/24/2022 - Cancelled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Attendee Totals:		$4.99	$4.99	$0.00	$0.00	$0.00		$0.00		$0.00		$0.00
Grand Totals:		$3,360.12	$500.01	$2,190.18	$669.93	$0.00		$400.00		$714.76		$0.00

Category Legend:

X - Canceled events for which expenses have been incurred.
Z - Trip was Canceled - Balance of $0.00

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TRUSTEE CANCELLATION AND CREDIT EXPENDITURES REPORT
FOR FISCAL YEAR 2023
FOR EVENTS DURING JULY 2022 - DECEMBER 2022

Purpose of Travel - Location - Date - Travel Status	Category	Total Expense	Registration (Reg.)	Lodging	Airfare	Other Misc. Travel Exp.	Chair Pardon	Reg. Credit	Reg. Credit Expiration Date	Airfare Credit	Airfare Credit Expiration Date	Refund Pending
Vivian Gray												
Edu - TLF Annual Convening 2022 - Cambridge MA - 07/18/2022 - 07/20/2022 - Canceled	Z	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00		$0.00		
Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022 - Canceled	X	$135.00	$135.00	$0.00	$0.00	$0.00	Yes	$0.00		$0.00		
Attendee Totals:		$135.00	$135.00	$0.00	$0.00	$0.00		$0.00		$0.00		
Herman Santos												
Edu - SACRS 2022 Fall Conference - Long Beach CA - 11/08/2022 - 11/11/2022 - Canceled	X	$120.00	$120.00	$0.00	$0.00	$0.00	Yes	$0.00		$0.00		
Attendee Totals:		$120.00	$120.00	$0.00	$0.00	$0.00		$0.00		$0.00		
Grand Totals:		$255.00	$255.00	$0.00	$0.00	$0.00		$0.00		$0.00		

Category Legend:

X - Canceled events for which expenses have been incurred.
Z - Trip was Canceled - Balance of $0.00

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Attention: Public Records Act Requests
300 N. Lake Ave., Suite 620
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