ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Where Are They Now?

Annual Comprehensive Financial Report

For the Fiscal Year Ended December 31, 2022

A Pension and Other Postemployment Benefit Trust Funds, and Custodial Fund of the County of Orange

ORANGE COUNTY, CALIFORNIA

Orange County Employees Retirement System

ANNUAL COMPREHENSIVE FINANCIAL REPORT

For the Year Ended December 31, 2022

Prepared by: The Finance Department of the
Orange County Employees Retirement System

Issued by: Steve Delaney, Chief Executive Officer
Brenda Shott, Assistant CEO of Finance and Internal Operations

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A Pension and Other Postemployment Benefit Trust Funds, and Custodial Fund of the County of Orange

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Mission

We provide secure retirement and disability benefits with the highest standards of excellence.

Vision

To be a trusted partner providing premier pension administration, distinguished by consistent, quality member experiences and prudent financial stewardship.

Values

__O__pen and Transparent

__C__ommitment to Superior Service

__E__ngaged and Dedicated Workforce

__R__eliable and Accurate

__S__ecure and Sustainable

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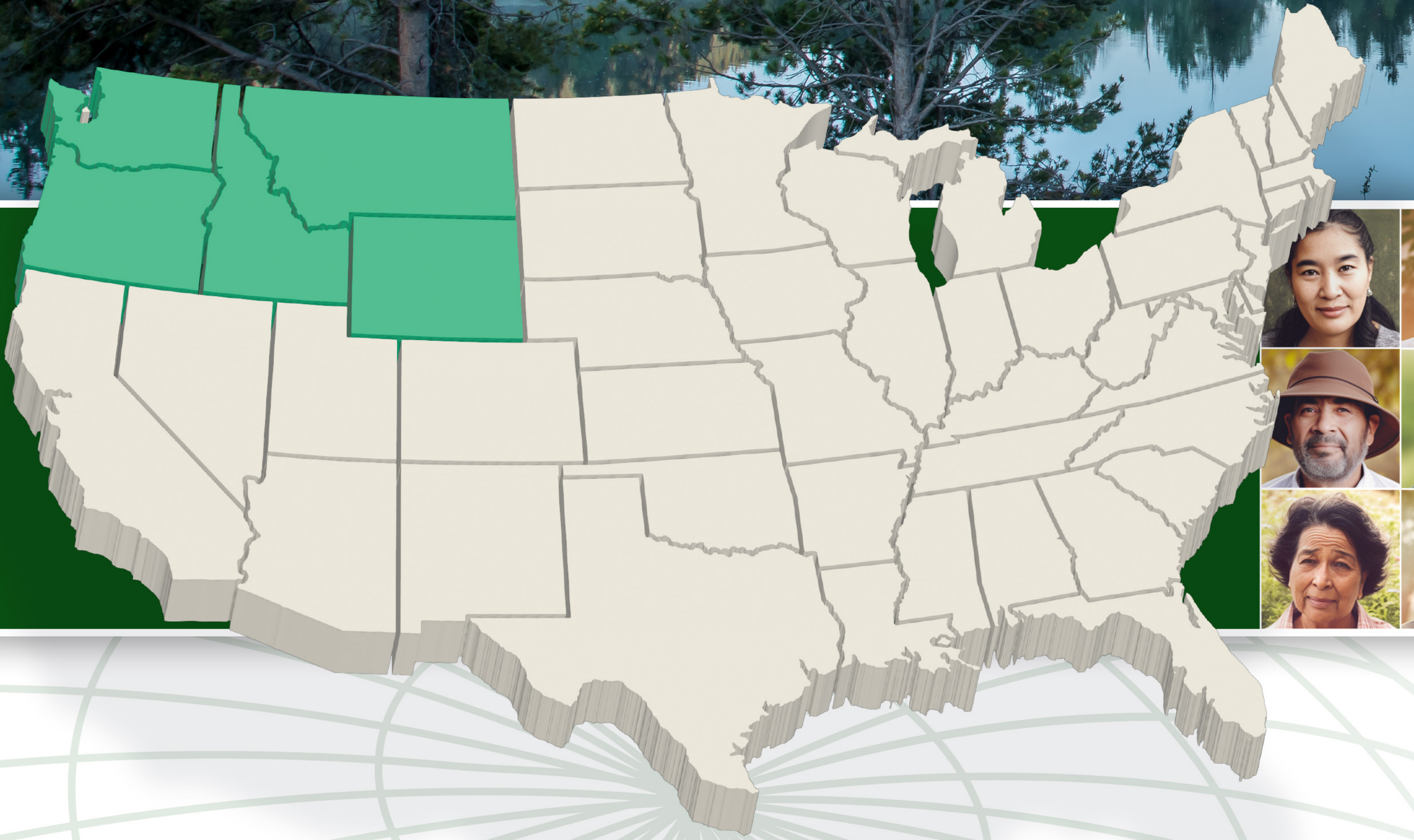
Section 1 - Introductory



Northwest

Photo Caption: Reflecting on the beauty of Grand Teton National Park at Oxbow Bend - where the mountains meet the still waters, and nature paints a perfect picture.

Retirement Benefits: The Northwestern region of the United States, with its natural beauty, mild climate, and retirement communities, retirees can enjoy a range of outdoor activities, urban culture, and access to quality healthcare.

Idaho	284
Montana	59
Oregon	289
Washington	297
Wyoming	23

Total Payees

952

Letter of Transmittal

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Active Participating Employers:

City of San Juan Capistrano

County of Orange

Orange County Cemetery District

Orange County Children & Families Commission

Orange County Employees Retirement System

Orange County Fire Authority

Orange County In-Home Supportive Services Public Authority

Orange County Local Agency Formation Commission

Orange County Public Law Library

Orange County Sanitation District

Orange County Transportation Authority

Superior Court of California, County of Orange

Transportation Corridor Agencies

June 1, 2023

Members of the OCERS Board of Retirement:

We are pleased to present the Annual Comprehensive Financial Report (Annual Report) of the Orange County Employees Retirement System (OCERS or System) as of and for the year ended December 31, 2022. The information contained in this report is intended to provide a detailed overview of the System's financial and investment results for the year ended December 31, 2022. It also includes information from the current actuarial valuation as of December 31, 2021.

OCERS HISTORY, PARTICIPANTS, AND SERVICES

Established in 1945, OCERS is a public retirement system that has provided service retirement, disability, death and survivor benefits to its members for 77 years, administered in accordance with the County Employees Retirement Law of 1937 (CERL) and the California Public Employees' Pension Reform Act of 2013 (PEPRA).

Pursuant to certain provisions of CERL, OCERS is an independent governmental unit within the County of Orange, with a separate operating budget and professional staff. The California Constitution gives the Board of Retirement full authority over the administration of the System, which includes administering plan benefits for over 50,000 members, managing $20.2 billion in net assets, and serving 13 active agencies. A complete listing of both active and inactive agencies as of December 31, 2022, can be found on page 30, Section 2 of the Annual Report, under Note 1: Plan Descriptions.

During 2022, OCERS continued to process a record-breaking number of retirement applications. Although most of our members continue to live in beautiful, sunny California upon retiring, there are many who choose to spend their golden years outside of California. The theme for this year's Annual Report "Where Are They Now?" highlights the vast geographical location of our retirees; there is at least one retiree living in each of the 50 states, the United States territories of the District of Columbia, American Samoa, and Puerto Rico and 21 foreign countries!

MAJOR INITIATIVES AND SIGNIFICANT EVENTS

Coronavirus COVID-19 Update

After two years operating with a mostly remote workforce due to the Coronavirus COVID-19 global pandemic and subsequent Stay-at-Home Order issued by California Governor Gavin Newsom in March 2020, OCERS staff officially returned to the office on March 11, 2022. OCERS made a business decision to allow hybrid work schedules on a case-by-case basis. Hybrid work schedules consists of both in office and remote work. The decision to allow hybrid schedules was influenced by a desire to maintain work-from-home skills in preparation for any future events that may impact business continuity and disaster recovery.

Following staff members return to the office, the OCERS headquarters building was re-opened to the public. We once again are offering in-person retirement seminars and continue to offer virtual seminars and 1-on-1 retirement planning meetings over the phone. Virtual meetings continued to be used to facilitate meetings with investment managers, consultants, and OCERS' stakeholders, as well as internal meetings, but OCERS has gradually resumed attending in-person meetings and conferences. OCERS also resumed in-person Board and Committee meetings.

Vision 2030

During 2022, OCERS continued to make progress with the Vision 2030 initiative, the long-term strategic goal of achieving 100% benefit accuracy by leveraging technology and using some form of Robotic Process Automation (RPA), Machine Learning (ML) and/or Artificial Intelligence (AI). After a competitive search for an RPA consultant, Roboyo USA, Inc. was selected to partner with OCERS to deploy automation solutions over the next three years. In addition to the RPA consultant, OCERS also procured a contractor, Contiem, to provide business procedure documentation services to assist OCERS with developing a comprehensive standardized library of business processes and procedure manuals across the organization. This will ensure consistent application of rules and procedures by OCERS staff, as well as lay a foundation for programming a new pension administration system that will support Vision 2030.

Staffing

At the October 17, 2022 Board meeting, the Board of Retirement approved 14 new positions as part of the 2023 Staffing Plan. The new positions were spread across multiple departments throughout the System. These new positions will assist us in facing the challenges of the future, including assisting a growing number of retirees, navigating the growing complexity of our investment portfolio and providing an ever-growing level of service to all our stakeholders.

Alameda Decision

In late July 2020, the California Supreme Court issued an opinion in what is known as the "Alameda" case (Alameda County Deputy Sheriffs Association et al v. Alameda County Employees Retirement Association and Board of Retirement of ACERA (S247095)). This decision impacted how OCERS and other public pension systems in California pay benefits to members who receive certain pay items. OCERS has no authority or discretion to calculate pension benefits in a manner inconsistent with the Supreme Court decision. Although the decision impacts only a small number of OCERS' retirees, staff continues to complete several crucial tasks including recalculating the retirement allowances of impacted retirees, and credit/refund overpaid employee contributions that are remaining after being offset against overpayments.

Enterprise Resource Planning (ERP) System

OCERS new ERP system went live on January 1, 2022, followed by the integration of an expense management software package that automatically captures receipts and processes expense reports, replacing manual, paper-based expense reports. Significant progress was also made with developing and testing the ability to process vendor payments using ACH electronic payment instead of issuing checks, as well as outsourcing check printing for vendors who are unable to accept ACH as a payment option. The utilization of ACH electronic payments and outsourcing of checks was successfully implemented in January 2023.

Board Member Updates

Long-time board member Frank Eley, who had most recently been serving as the Retiree Board Member, decided to step down when his term ended on December 31, 2022. Mr. Eley served more than two decades as a member of the Board of Retirement. Former Safety Board Member Roger Hilton was elected to take Mr. Eley's place as the Retiree Board Member. Mr. Hilton began serving his three-year term on January 1, 2023.

Incumbent General Board Member Ms. Adele Tagaloa completed her first three-year term on December 31, 2022 and was re-elected for another three-year term beginning on January 1, 2023. In addition, Mr. Shawn Dewane, Mr. Arthur Hidalgo and Mr. Charles Packard were reconfirmed by the Orange County Board of Supervisors for another three-year term beginning January 1, 2023.

During 2022, Ms. Shari Freidenrich was re-elected as the Orange County Treasurer-Tax Collector and continues to serve as an Ex-Officio Member of the Board, a position she has held since 2011.

FINANCIAL INFORMATION

OCERS' management is responsible for the complete and fair presentation of the financial information in accordance with accounting principles generally accepted in the United States of America. To the best of our knowledge, the enclosed data is accurate in all material respects and is reported in a manner designed to fairly present the financial position and operating results of OCERS. Moss Adams LLP audited the accompanying basic financial statements and related disclosures and has issued an unmodified opinion in the independent auditor's report found on page 14, Section 2 of the Annual Report. The financial audit provides reasonable assurance that OCERS' financial statements are presented in conformity with GAAP and are free from material misstatement.

The Annual Report was prepared in accordance with GAAP and reporting guidelines set forth by the Governmental Accounting Standards Board (GASB) and CERL. GAAP requires that management provide a narrative introduction, overview, and analysis to accompany the basic financial statements in the form of management's discussion and analysis (MD&A). This letter of transmittal is designed to complement the MD&A and should be read in conjunction with it. OCERS' MD&A can be found immediately following the independent auditor's report.

OCERS' management is responsible for establishing a system of internal controls to safeguard assets, maintain accurate and reliable accounting records, protect member privacy, detect and prevent fraud, and provide a reasonable basis for asserting that financial statements are fairly presented. OCERS' internal controls are designed to provide reasonable, but not absolute, assurance these objectives are met. The concept of reasonable assurance recognizes that the cost of a control should not exceed the benefits likely to be derived and that the valuation of costs and benefits requires estimates and judgment by management. In addition, oversight of internal controls and operational efficiency is provided by OCERS' Audit Committee and supported by internal auditing staff.

INVESTMENT ACTIVITIES

The Board of Retirement (with the participation of the Investment Committee, OCERS' Investment Team, and Investment Consultants) has exclusive control of all investments of the System and is responsible for the establishment of investment objectives, strategies, and policies.

OCERS' Investment Policy Statement helps guide decisions that impact OCERS' investment structure with the overall objective to invest the assets of the System solely for the benefit of its members while attempting to minimize employer contributions and investment and administration costs. OCERS' Investment Team conducted 609 total meetings and virtual calls with current and prospective investment managers in 2022.

During 2022, OCERS' Investment Team executed new consultant contracts for: general and risk consultant, private equity consultant, real assets consultant, and real estate consultant. The consultant Request for Proposal (RFP) search concluded with renewing contracts for all incumbent consultants (Meketa, Aksia, and Townsend). The OCERS Investment Team continued to build out the co-investment portfolio within the private equity asset class to participate in potentially profitable investments without paying the usual fee structure associated with private equity funds. OCERS' Investment Team, together with the OCERS Finance Team, issued a custodial bank RFP in October 2022. The custodial bank RFP is expected to conclude in Q2 2023.

For the year ended December 31, 2022, OCERS' investment portfolio had a loss of -7.8%, net of fees. This is much lower than the long-term actuarial assumed rate of return of 7.00%; however, as the average years of service for a new OCERS retiree approximates 22 years for both general and safety members, our net annualized return of 7.3% over the last 20 years exceeds the assumed earnings rate over a similar period.

PENSION ACTUARIAL FUNDING STATUS

OCERS maintains a funding goal to establish contributions that fully fund the System's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. It also ensures that contributions are sufficient for each generation of active members to avoid an intergenerational burden on future active members. Actuarial valuations are performed annually with actuarial experience investigations conducted triennially in accordance with state statute. The use of realistic assumptions is important in maintaining the necessary funding while paying promised benefits. Each year the actual experience of the System is compared to our assumptions and the differences are studied to determine whether changes in the contribution requirements are necessary. In addition, triennially, the actuarial experience investigation is undertaken to review the actuarial assumptions and compare the actual experience during the preceding three-year period with that expected under those assumptions. The latest experience investigation was completed during 2020 for plan years ending in 2017 through 2019. The Board adopted changes in several assumptions that were incorporated into the 2020 actuarial valuation, including lowering the inflation rate from 2.75% to 2.50% and maintaining the retiree cost-of-living assumption at 2.75%.

As of the most current actuarial valuation for the year ended December 31, 2021, OCERS' funding status was 81.2% on a valuation value of assets basis, versus 90.5% on a market value of assets basis, with an Unfunded Actuarial Accrued Liability (UAAL) of $4.5 billion. Average employer and employee contribution rates for the year ended December 31, 2021, were 37.5% and 12.1%, respectively.

BUDGET

The Board of Retirement approves OCERS' annual budget. The 1937 Act limits OCERS' annual administrative expenses, excluding the costs of administration for computer software and hardware and computer technology consulting services, to twenty-one hundredths of one percent (0.21%) of OCERS' actuarial accrued liability. OCERS' 2022 administrative expense of $22.0 million was 0.09% of OCERS' actuarial accrued liability.

AWARDS AND RECOGNITION

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to OCERS for its Annual Comprehensive Financial Report for the year ended December 31, 2021. To be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized annual comprehensive financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current Annual Report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to the GFOA to determine its eligibility for another certificate.

OCERS was also the recipient of the Public Pension Coordinating Council (PPCC) Award in recognition of compliance with professional standards for plan funding and administration for the year ended December 31, 2021. This is awarded to a retirement system that meets the professional standards for plan design and administration as set forth in the Public Pension Standards, including a Comprehensive Benefit Program, Funding Adequacy, Actuarial Valuation, Independent Audit, Investments, and Communications. A Public Pension Standards Award is valid for a period of one year.

ACKNOWLEDGEMENTS

We would like to take this opportunity to thank the members of the System for their continued confidence in OCERS during the past year. Also, we would like to express our thanks to the Board of Retirement for its dedicated efforts in supporting the System throughout this past year. Finally, we would like to thank the staff and consultants for their commitment to OCERS and their diligent work to assure the System's continued success.

Respectfully submitted,

Steve Delaney
Steve Delaney
Chief Executive Officer

Brenda M Shott
Brenda Shott
Assistant Chief Executive Officer, Finance & Internal Operations

Members of the Board of Retirement

As of December 31, 2022

Frank E. Eley
Chair Person
Appointed by
the Board of Supervisors

Shawn Dewane
Vice Chair Person
Elected by
Retired Members

Shari L. Freidenrich
Treasurer-Tax Collector
County of Orange

Arthur Hidalgo
Appointed by
the Board of Supervisors

Wayne Lindholm
Appointed by
the Board of Supervisors

Richard Oates
Elected by
Safety Members

Charles E. Packard
Appointed by
the Board of Supervisors

Chris Prevatt
Elected by
General Members

Adele Tagaloa
Elected by
General Members

Jeremy Vallone
Alternate Elected by
Safety Members

Organization of OCERS

Board of Retirement

The Board of Retirement is responsible for establishing policies governing the administration of the retirement plan, disability determinations, assuring benefit payments, establishing investment policy for the System and monitoring execution of its policies. The Board of Retirement consists of nine members and one alternate. Four members of the Board of Retirement are appointed by the Board of Supervisors of the County; four members are elected by active members of the System, including two by the general members, two by the safety members, of which one is the alternate member; one member is elected by the retirees; and the Treasurer of the County, elected by registered voters in the County, serves as an Ex-Officio member.

Executive Division

This division consists of the Chief Executive Officer (CEO) who implements and executes policies promulgated by the Board of Retirement. Two Assistant CEOs, a Director of Internal Audit, a Chief Investment Officer and a General Counsel assist the CEO in the daily operations of the System.

Investment Division

This division is responsible for the administration and management of the investment program, in accordance with policies, regulations, and guidelines set forth by the Board of Retirement. It is responsible for the interface with investment managers, including hiring and termination of investment managers, monitoring investment performance objectives, adherence to investment guidelines, conducting due diligence visits to investment managers' sites, and interviewing prospective investment managers. This division is also responsible for the interface with outside investment consultants in reviewing and evaluating all investment managers' performance and investment manager fees. Refer to the Investment Section on pages 88 and 89 for the Schedule of Commissions and Schedule of Investment Expenses and Investment Summary.

External Operations Division

This division is comprised of the following departments: Member Services, Disabilities, and Communications.

The Member Services Department is responsible for providing all benefit services to the members of the System. This includes benefit calculations, preparation of data to support applications for retirement, preparation of the retiree payroll, processing contribution transmittals, membership counseling, and retirement seminars.

The Disabilities Department is responsible for reviewing claims and medical records of the members of the System; interviewing applicants and witnesses; preparing written reports of findings and recommendations; and making presentations to the Disability Committee and the Board of Retirement regarding the disposition of cases.

The Communications Department is responsible for developing and coordinating information for members and employers through publications, newsletters, seminars, video content, social media and publishing content to the website.

Internal Operations Division

This division is comprised of the following departments: Finance, Information Technology, Information Security, Human Resources, and Operations Support Services.

The Finance Department is responsible for all of the financial records and reports of OCERS. This includes the preparation of the Annual Comprehensive Financial Report, monthly and quarterly financial statements and the annual operating budget. The Finance Department also maintains OCERS' system of internal controls; processes and accounts for retirement payroll and refunds of contributions and interest to members; collects and accounts for employers' and members' contributions; reconciles investment portfolios; and pays costs incurred for goods received and services rendered.

The Information Technology Department is responsible for managing and supporting OCERS' technology infrastructure and systems and plays a crucial role in maintaining and securing computer networks, servers, and databases. In addition they oversee the development, implementation, and maintenance of software applications, provides technical support to users and is responsible for data management.

The Information Security Department is responsible for overseeing the security of OCERS' data and systems with a focus on protecting members' information and the systems, which are relied on for daily operations.

The Human Resources Department is responsible for providing human resources services including leading recruitment and on-boarding efforts, training and developing staff, supporting a high performing workforce, health and safety, maintaining intraoffice relationships, and other labor relations.

The Operations Support Services Department is responsible for procurement and contract administration, operational risk management, facilities management, building safety and security, and mailroom operations. In addition, this department is responsible for overseeing the business continuity/disaster recovery program.

Legal Division

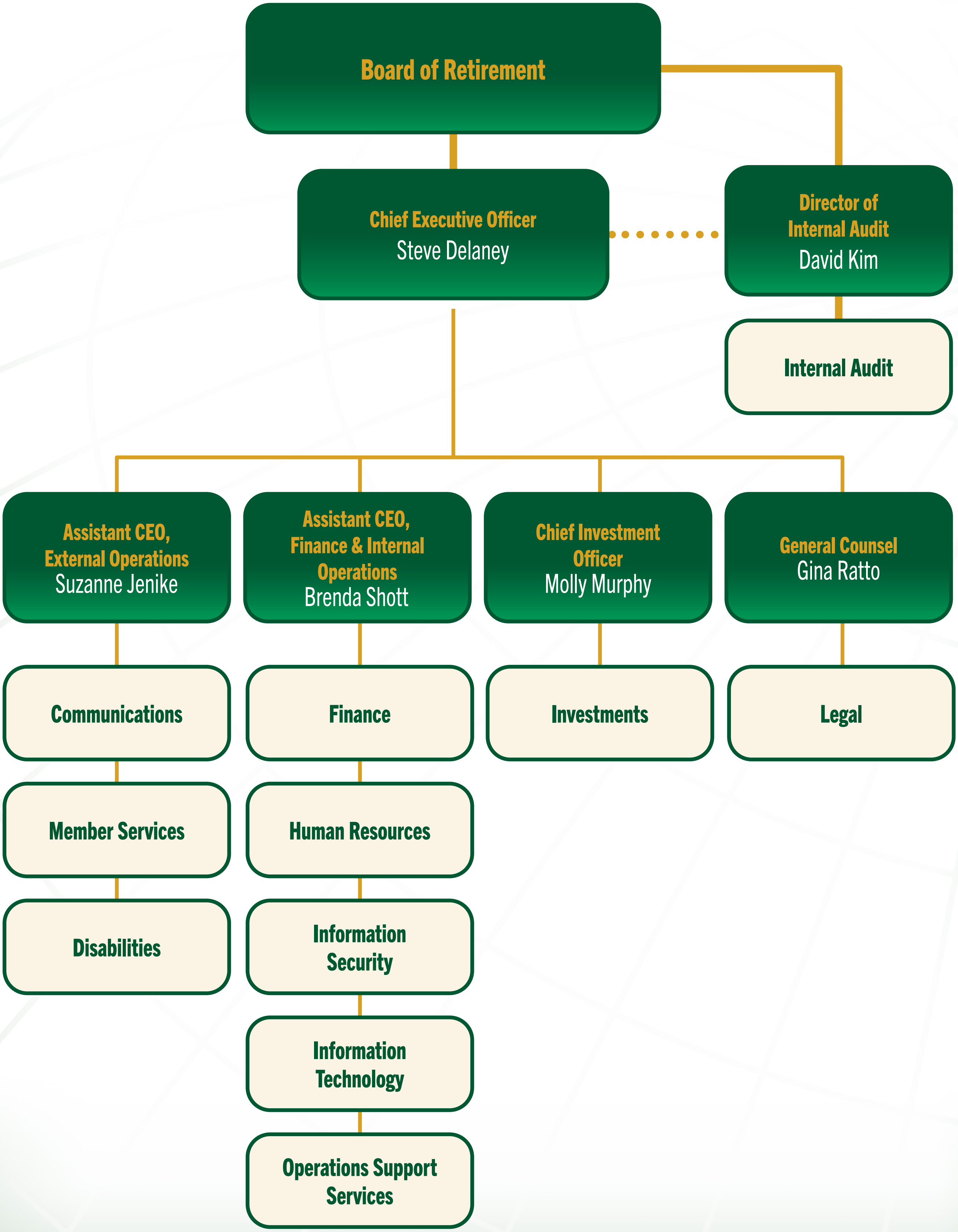
This division provides legal advice and representation to the Board of Retirement and OCERS on a wide variety of issues. Among other things, this includes issues involving pension benefits, disability retirements, investments, legislation and vendor contracts.

Internal Audit Department

This department is responsible for objectively assessing the organization's governance, risk management and internal control processes.

Administrative Organization Chart

As of December 31, 2022



List of Professional Consultants

As of December 31, 2022

Actuary
The Segal Company

Investment Consultant
Meketa Investment Group

Private Equity and Private Real Assets Consultant
Aksia LLC

Real Estate Consultant
The Townsend Group, an Aon Company

Independent Auditor
Moss Adams LLP

Investment Counsel
Foley and Lardner, LLP
Foster Garvey PC
K&L Gates LLP
Morgan, Lewis & Bockius LLP
Nossaman LLP

Fiduciary Counsel
Reed Smith, LLP

Tax Counsel
Reed Smith, LLP

Custodian
State Street Bank and Trust Company

Note: Schedule of Commissions, Schedule of Investment Expenses and Investment Summary and List of Investment Managers, can be found in the Investment Section on pages 88, 89, and 91, respectively.

Certificate of Achievement for Excellence in Financial Reporting

GOVERNMENT FINANCE OFFICERS ASSOCIATION

Certificate of Achievement
for Excellence
in Financial Reporting

Presented to

Orange County
Employees Retirement System
California

Christopher P. Morrill

Executive Director / CEO

2012
2013
2014
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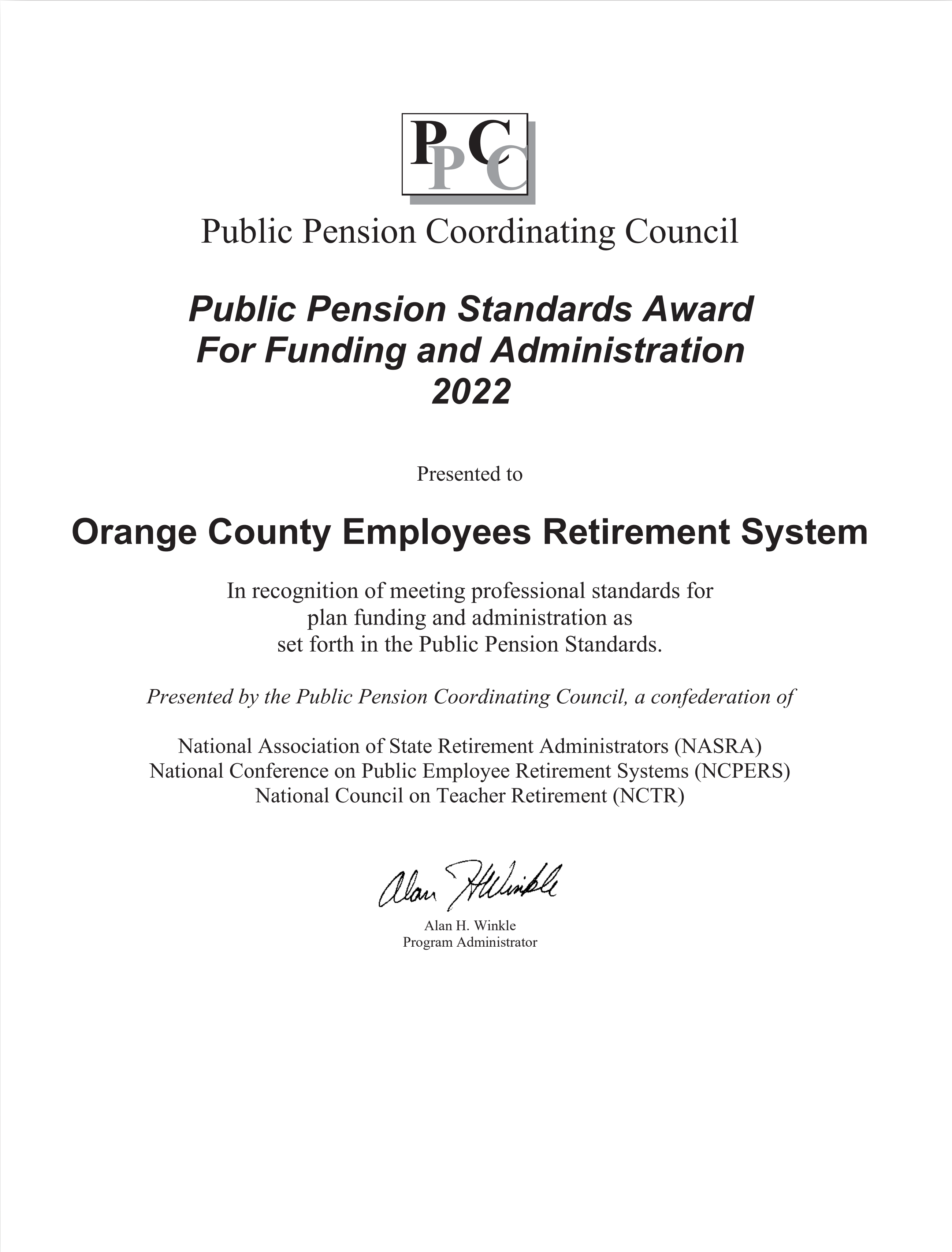
2020
2021

Public Pension Standards Award for Funding and Administration



Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2022

Presented to

Orange County Employees Retirement System

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

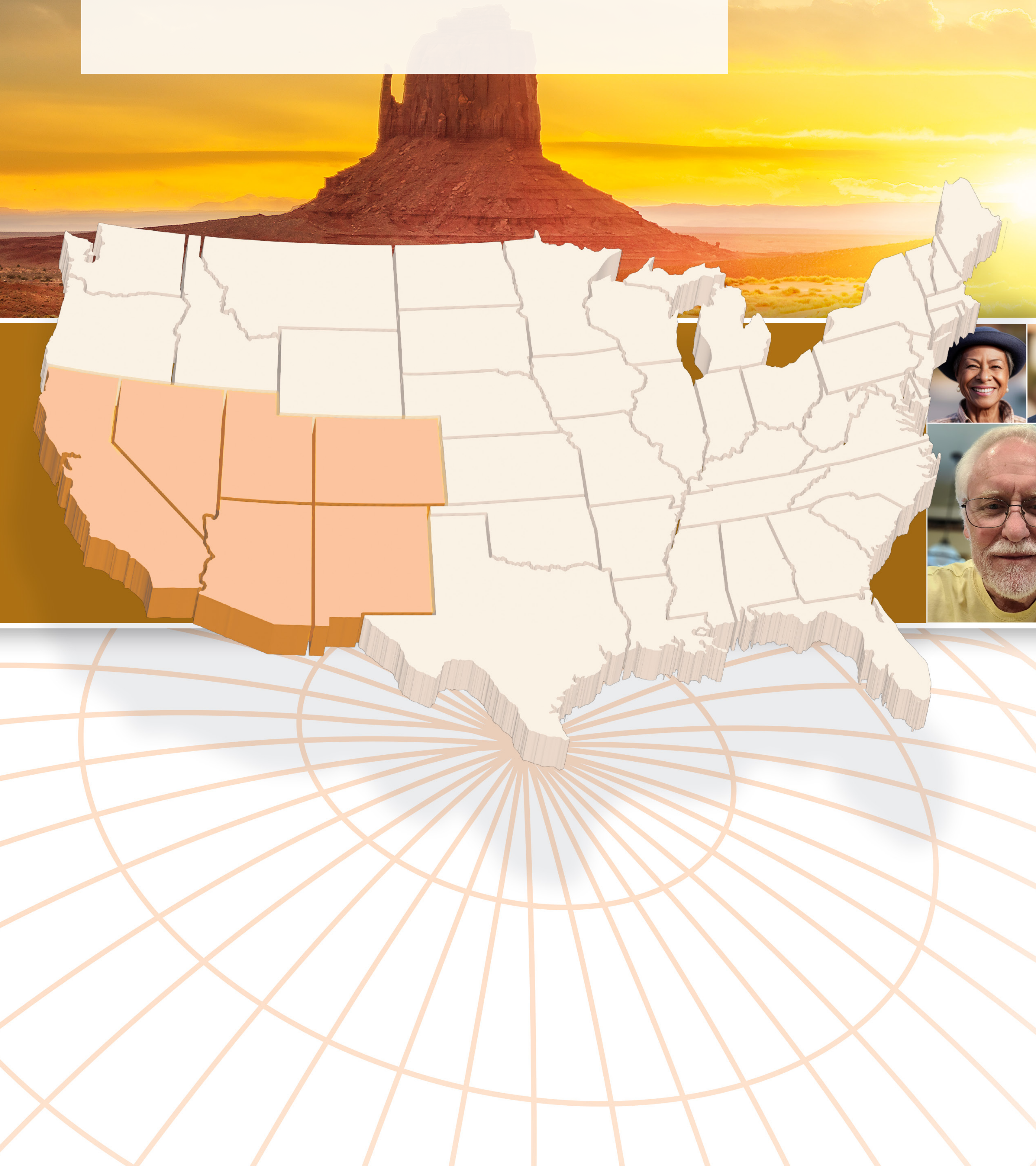
Presented by the Public Pension Coordinating Council, a confederation of

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

Alan H Winkle

Alan H. Winkle
Program Administrator

Section 2 - Financial



Southwest

Photo Caption: Monument Valley at dusk: a stunning display of natural beauty and the perfect end to an unforgettable day of exploration.

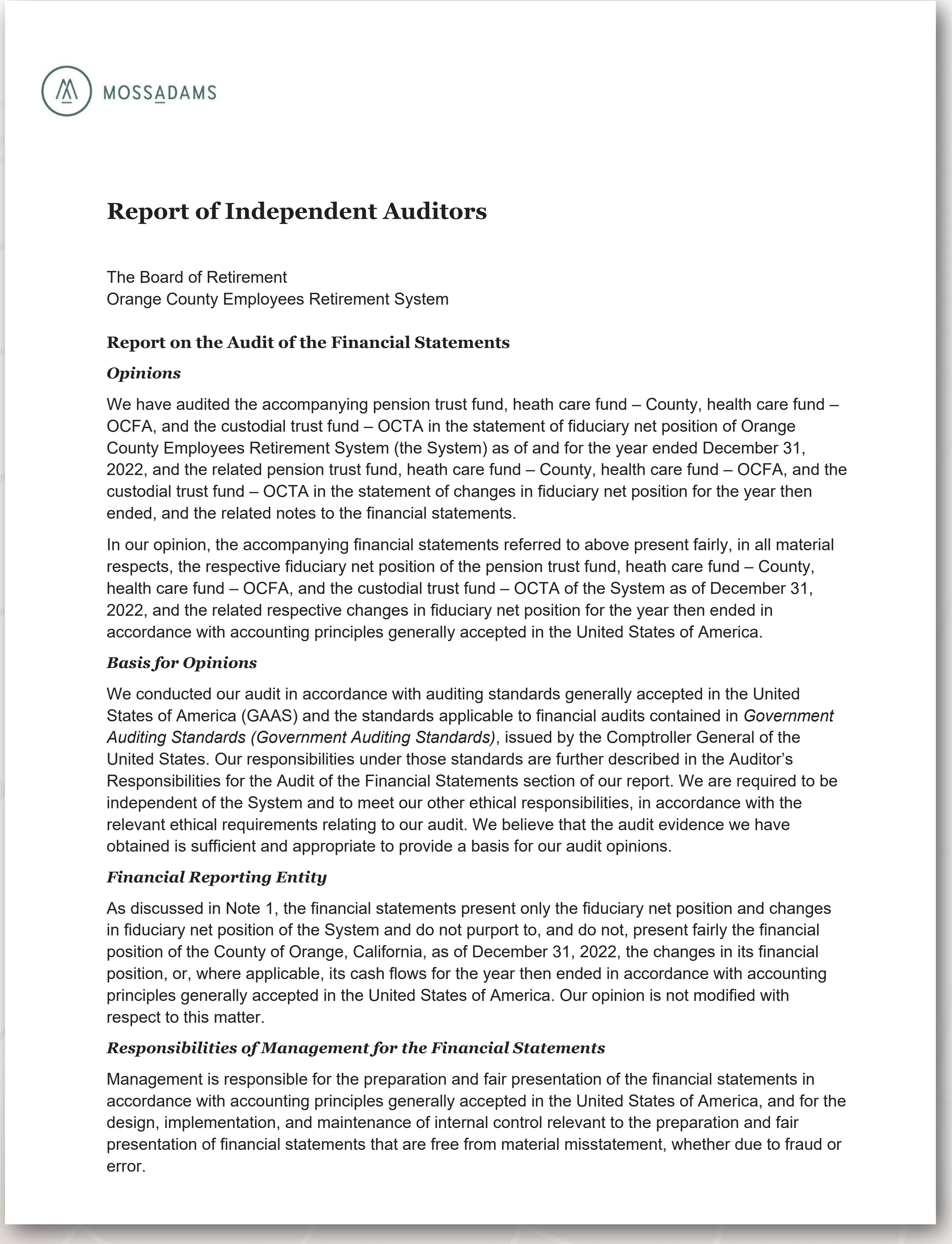
Retirement Benefits: The Southwest is a region with a rich cultural heritage and diversity, including Native American, Mexican, and Spanish influences. This makes it an exciting place to explore and learn about different cultures and traditions, especially for retirees who enjoy history and the arts.

Arizona	777	Nevada	471
California	16,094	New Mexico	69
Colorado	197	Utah	150

Total Payees

17,758

Independent Auditor's Report



MOSSADAMS

Report of Independent Auditors

The Board of Retirement
Orange County Employees Retirement System

Report on the Audit of the Financial Statements

Opinions

We have audited the accompanying pension trust fund, heath care fund – County, health care fund – OCFA, and the custodial trust fund – OCTA in the statement of fiduciary net position of Orange County Employees Retirement System (the System) as of and for the year ended December 31, 2022, and the related pension trust fund, heath care fund – County, health care fund – OCFA, and the custodial trust fund – OCTA in the statement of changes in fiduciary net position for the year then ended, and the related notes to the financial statements.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the respective fiduciary net position of the pension trust fund, heath care fund – County, health care fund – OCFA, and the custodial trust fund – OCTA of the System as of December 31, 2022, and the related respective changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinions

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

Financial Reporting Entity

As discussed in Note 1, the financial statements present only the fiduciary net position and changes in fiduciary net position of the System and do not purport to, and do not, present fairly the financial position of the County of Orange, California, as of December 31, 2022, the changes in its financial position, or, where applicable, its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

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

Auditor's Responsibilities for the Audit of the Financial Statements

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

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

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

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

Prior-Year Comparative Information

We have previously audited the System's 2021 financial statements, and we expressed an unmodified opinion on the total column in our report dated June 2, 2022. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2021, is consistent, in all material respects, with the audited financial statements from which it has been derived.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the schedule of changes in net pension liability of participating employers, schedule of investment returns, schedule of employer contributions, notes to the required supplementary information and significant factors affecting trends in actuarial information – pension plan (collectively, the required supplementary information) be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the System's basic financial statements. The schedule of contributions, schedule of administrative expenses, schedule of investment expenses, and schedule of payments for professional services (collectively, the supplementary information) are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

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

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

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June 1, 2023 on our consideration of the Orange County Employees Retirement System's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the System's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the System's internal control over financial reporting and compliance.

Moss Adams LLP

Irvine, California
June 1, 2023

Management's Discussion and Analysis

The Management's Discussion and Analysis (MD&A) of the Orange County Employees Retirement System (OCERS or System) presents the financial performance and provides a summary of OCERS' financial position and activities as of and for the year ended December 31, 2022. The narrative overview and analysis are presented in conjunction with the Letter of Transmittal, included in Section 1 – Introductory of this Annual Comprehensive Financial Report. The MD&A should be read in conjunction with OCERS' Basic Financial Statements as presented in this report. Amounts in this section have been grouped together to facilitate readability.

OCERS administers the OCERS pension plan—a cost-sharing multiple-employer defined benefit pension plan (the Plan) as well as acts as a trustee and custodian for retirement health benefit plan funds that are sponsored by participating employers. OCERS' financial information is comprised of four fiduciary funds: a defined benefit pension trust fund, two other postemployment benefit (OPEB) trust funds for retiree medical plans and a custodial fund held for the Orange County Transportation Authority (OCTA), a participating employer of OCERS.

Financial Highlights

- The net position restricted for pension, OPEB and employer as of December 31, 2022, totaled $20.2 billion, a decrease of $2.3 billion or -10.1% from the prior year. The decrease is primarily due to lower returns on investments during the year.
- Total additions to fiduciary net position decreased -124.7% from $4.3 billion in 2021 to - $1.1 billion in 2022.
    - Net investment income/(loss) decreased from $3.3 billion in 2021 to approximately -$2.1 billion in 2022. The net year-to-date rate of return/(loss) on investments on a fair value basis was -7.8% loss in 2022 versus 16.6% return in 2021.
    - Contributions received from employers and employees totaled $1.0 billion in 2022, which is a slight increase of 0.6% compared to 2021.
- Total deductions from fiduciary net position increased 8.7% from $1.1 billion in 2021 to $1.2 billion in 2022.
    - Member pension benefit payments increased 8.3% from $1.0 billion in 2021 to $1.1 billion in 2022.
    - The number of retired members and beneficiaries receiving a benefit payment increased 4.3% from 19,826 payees at the end of 2021 to 20,678 payees as of December 31, 2022.
    - The average annual benefit paid to retired members and beneficiaries during 2022 was $53,966, an increase of 3.9% over the average annual benefit payment of $51,964 in 2021.
- The annual actuarial funding valuation as of December 31, 2022 is not yet available at this time. Based upon the most recent actuarial funding valuation dated as of December 31, 2021, the funding status for the pension plan, as measured by the ratio of the actuarial value of assets (which smooths market gains and losses over five years) to the actuarial value of accrued liabilities was 81.2% versus 90.5% if market gains and losses were recognized immediately.
- The net pension liability of participating employers as calculated in the December 31, 2022, Governmental Accounting Standards Board (GASB) Statement No. 67 Actuarial Valuation used for financial reporting purposes is $5.4 billion, which as a percentage of covered payroll is 279.0%. The plan fiduciary net position of the pension trust fund of $19.7 billion as a percentage of the total pension liability of $25.1 billion is 78.5%.

Overview of the Financial Statements

The following discussion and analysis serve as an introduction and overview of the OCERS' Basic Financial Statements. The Basic Financial Statements and required disclosures are prepared in accordance with accounting principles and reporting guidelines as set forth by the GASB. These pronouncements require OCERS to make certain disclosures and to report using the full accrual method of accounting.

OCERS' Basic Financial Statements are comprised of the following:

Statement of Fiduciary Net Position

The Statement of Fiduciary Net Position presents the major categories of assets and liabilities and their related value as of year-end. The difference between assets and liabilities is reported as "Net Position Restricted for Pension, Other Postemployment Benefits and Employer," representing funds available to pay future benefits to plan participants. The Statement of Fiduciary Net Position includes prior year-end total balances for comparative purposes. Increases and decreases in Net Position Restricted for Pension, Other Postemployment Benefits and Employer, when analyzed over time, may serve as an indicator of whether OCERS' financial position is improving or deteriorating. Other factors, such as market conditions, should also be considered when measuring the overall financial health of the System.

The County of Orange (the County) and Orange County Fire Authority (OCFA) participate in irrevocable postemployment health care plan trusts (retiree medical plans) that are reported as other postemployment benefit trust funds in the Statement of Fiduciary Net Position as separate health care funds. OCERS serves as trustee for these trusts. Assets are commingled with pension trust assets for investment purposes and are used exclusively to pay health allowances. The County and OCFA have financial reporting responsibility of the retiree medical plans, including financial statement disclosures and required supplementary information regarding the retiree medical plans funded status and contributions, in accordance with GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other than Pension Plans*.

The OCTA has revocable trust assets held by OCERS in an investment capacity that are reported as a separate custodial fund. The purpose of the employer's trust is to provide certain OPEB benefits to eligible retired OCTA members. Assets are not commingled with those of the pension plan and health care plan trusts.

Statement of Changes in Fiduciary Net Position

The Statement of Changes in Fiduciary Net Position provides information about the financial activities during the reporting period that increased and decreased Net Position Restricted for Pension, Other Postemployment Benefits and Employer. The trend of additions versus deductions to the Plan indicates the strength of OCERS' financial position over time. For comparative purposes, prior year-end total balances are also provided.

To distinguish the activities of the health care plan trusts and the employer trust from the pension plan, the health care plan trusts and employer trust are reported separately in the Statement of Changes in Fiduciary Net Position as health care funds and a custodial fund, respectively.

Notes to the Basic Financial Statements

The Notes to the Basic Financial Statements are an integral part of the basic financial statements and provide additional information that is essential to acquire a full understanding of the information provided in the two statements discussed above. The notes include further discussion and details regarding OCERS' key policies, programs, investments and activities that occurred during the year.

Required Supplementary Information

The Required Supplementary Information (RSI) presents historical trend information related to the pension plan reported in the Basic Financial Statements. The pension plan includes a schedule of changes in net pension liability, a schedule of investment returns, a schedule of employer contributions and other required supplementary information as required by GASB Statement No. 67, *Financial Reporting for Pension Plans – an Amendment of GASB Statement No. 25* (GASB 67). The information contained in the schedules is based on the actuarial valuation prepared for the pension plan and includes additional actuarial information that contributes to the understanding of the changes in the net pension liability of participating employers in the pension plan. The actuarial information is based upon assumptions made regarding future events at the time the valuation was performed. Therefore, the amounts presented in the schedules are management's estimates. A summary of factors that affected the trends of the actuarial information is included in this section as well.

Management's Discussion and Analysis

(continued)

Other Supplementary Information

The Other Supplementary Information includes schedules pertaining to contributions by employers and members, OCERS' administrative expenses, investment expenses, and professional services.

Financial Analysis

Tables 1 and 2 compare and summarize OCERS' financial activity for the current and prior years.

Table 1 : Fiduciary Net Position

As of December 31, 2022 and 2021
(Dollars in Thousands)

	12/31/2022	12/31/2021	Increase / (Decrease)	Percentage Change
Assets				
Cash and Cash Equivalents	$ 412,122	$ 369,867	$ 42,255	11.4%
Securities Lending Collateral	202,096	195,239	6,857	3.5%
Receivables	180,114	113,005	67,109	59.4%
Investments at Fair Value	20,258,889	22,538,086	(2,279,197)	-10.1%
Capital Assets, Net	9,088	11,067	(1,979)	-17.9%
Total Assets	**21,062,309**	**23,227,264**	**(2,164,955)**	**-9.3%**
Liabilities				
Obligations Under Securities Lending Program	202,096	195,239	6,857	3.5%
Securities Purchased	204,403	123,165	81,238	66.0%
Other	444,843	419,433	25,410	6.1%
Total Liabilities	**851,342**	**737,837**	**113,505**	**15.4%**
Net Position Restricted for Pension, Other Postemployment Benefits and Employer	**$ 20,210,967**	**$ 22,489,427**	**$ (2,278,460)**	**-10.1%**

As of December 31, 2022, OCERS has a net position of $20.2 billion restricted for pension, other postemployment benefits and employer. Net position decreased $2.3 billion, a decrease of -10.1% compared to 2021. The decrease in net position includes a decrease in total assets of $2.2 billion and an increase in total liabilities of $113.5 million.

The $2.2 billion decrease in total assets is primarily attributed to a $2.3 billion decrease in total investments at fair value, offset by a $42.3 million increase in cash and cash equivalents, a $6.9 million increase in securities lending collateral, and a $67.1 million increase in receivables. The decrease in investments at fair value can be attributed to decreases in net appreciation/(depreciation) of investments at fair value with the total portfolio reporting a net loss of -7.8% for the one year-year period. The increase in cash and cash equivalents of $42.3 million is due to timing of investing redemptions, distributions, and contributions received near year-end. Securities lending collateral increased $6.9 million due to an increase in lending activity in the securities lending program. Receivables increased by $67.1 million, primarily due to investment related receivables and the timing of investments for unsettled trades.

The liabilities increased $113.5 million primarily due to the timing of securities purchased, which increased $81.2 million, and a $6.9 million increase in the obligations under the securities lending program, which is directly related to the increase in securities lending collateral, as previously discussed. Other liabilities increased $25.4 million, which includes a $15.5 million increase in unearned contributions and $7.4 million increase in retiree payroll payable.

Table 2 : Changes in Fiduciary Net Position

For the Years Ended December 31, 2022 and 2021
(Dollars in Thousands)

	12/31/2022	12/31/2021	Increase / (Decrease)	Percentage Change
Additions				
Employer Pension Contributions	$ 719,691	$ 698,791	$ 20,900	3.0%
Employer Health Care Contributions	44,821	57,822	(13,001)	-22.5%
Employee Pension Contributions	269,999	271,334	(1,335)	-0.5%
Employer OPEB Contributions	655	605	50	-8.3%
Net Investment Income/(Loss)	(2,105,160)	3,298,237	(5,403,397)	-163.8%
Total Additions	**(1,069,994)**	**4,326,789**	**(5,396,783)**	**-124.7%**
Deductions				
Participant Benefits - Pension	1,115,918	1,030,234	85,684	8.3%
Participant Benefits - Health Care	43,671	43,261	410	0.9%
Death Benefits	1,558	1,055	503	47.7%
Member Withdrawals and Refunds	22,239	14,449	7,790	53.9%
Employer OPEB Payments	1,466	1,419	47	3.3%
Administrative Expenses - Pension	23,546	21,473	2,073	9.7%
Administrative Expenses - Health Care and Employer	68	70	(2)	-2.9%
Total Deductions	**1,208,466**	**1,111,961**	**96,505**	**8.7%**
Increase/(Decrease) in Net Position Restricted for Pension, Other Postemployment Benefits and Employer	(2,278,460)	3,214,828	(5,493,288)	-170.9%
Net Position Restricted for Pension, Other Postemployment Benefits and Employer				
Beginning of the Year	22,489,427	19,274,599		
End of the Year	**$ 20,210,967**	**$ 22,489,427**		

Additions to Fiduciary Net Position

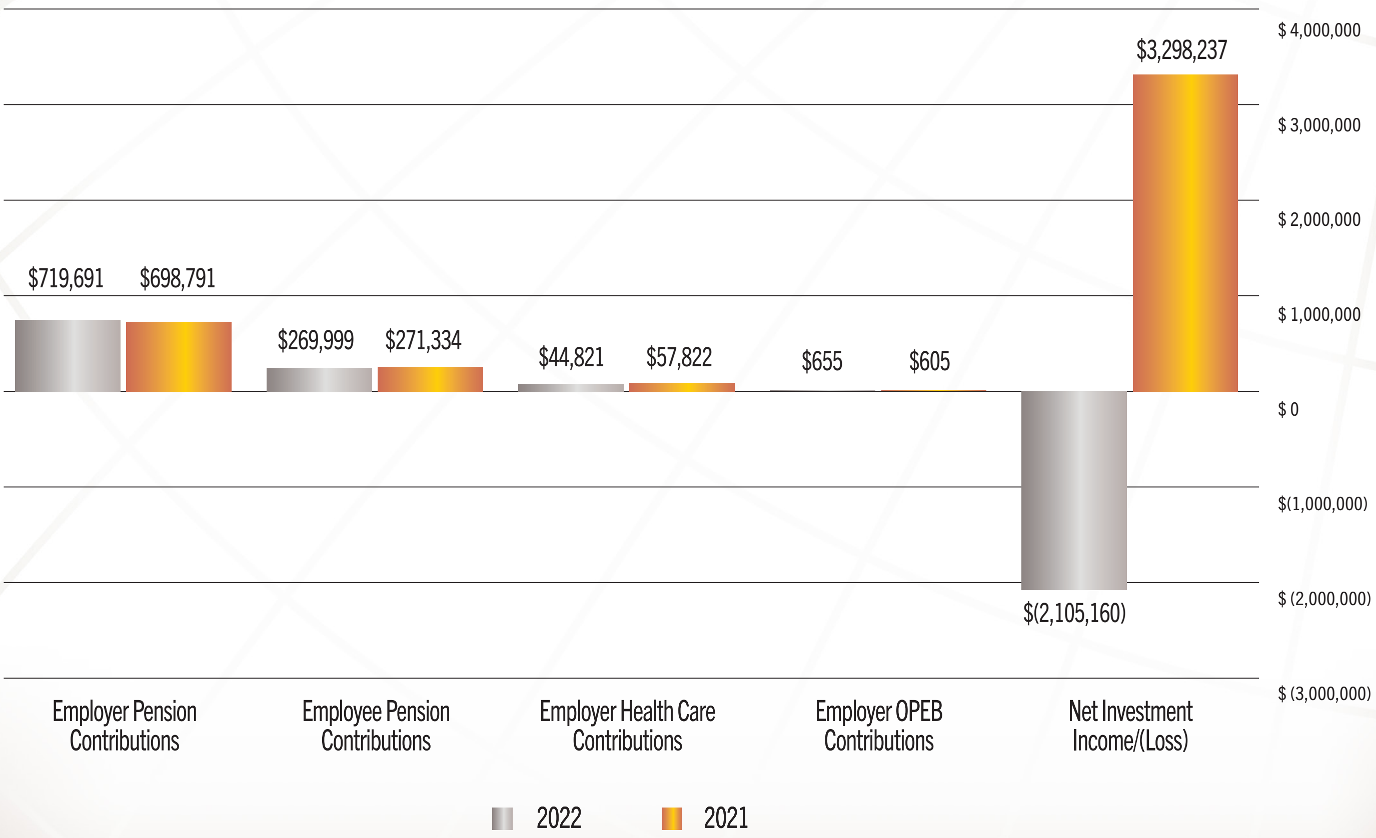
The primary funding sources of pension benefits are the collection of participating employer and member contributions and earnings on investments, net of investment expenses. Total additions for the year ended December 31, 2022 were -$1.1 billion compared to $4.3 billion for the year ended December 31, 2021; the total decrease of 124.7%, or $5.4 billion, is comprised of a decrease in net investment income of $5.4 billion offset by a net increase in total contributions of $6.6 million.

Overall net investment losses for the year ended December 31, 2022 were -7.8% compared to a return of 16.6% in 2021. The majority of the asset classes reported low to negative returns in 2022 compared to significantly higher returns in 2021. Public market portfolios posted negative returns while the private portfolios held up better, with global public equities reporting a year-to-date loss of -18.5% and private equities reporting a year-to-date return of 0.6%. Significant distributions from the private equity class helped enhance performance. Core fixed income reported a year-to-date loss of -10.5% due to high inflation and aggressive interest rate hikes, which hit longer duration bonds harder. Credit reported a year-to-date loss of -5.6%.

Total contributions increased $6.6 million over the prior year mainly due to total employer contributions, which increased $7.9 million over the prior year. This increase was offset by decreases of $1.3 million in employee contributions to the pension plan. The decrease in employee contributions can be attributed to the reduction and/or gradual phase-out of employee reverse pick-up rates for various OCEA (Orange County Employees Association) represented employees, which were offset by an increase in employer contributions of $20.9 million. Increases to employer contributions can also be attributed to an increase in employer contribution rates. Employer health care contributions decreased $13.0 million due to less employer contributions received in the County and OCFA health care funds.

Additions to Fiduciary Net Position

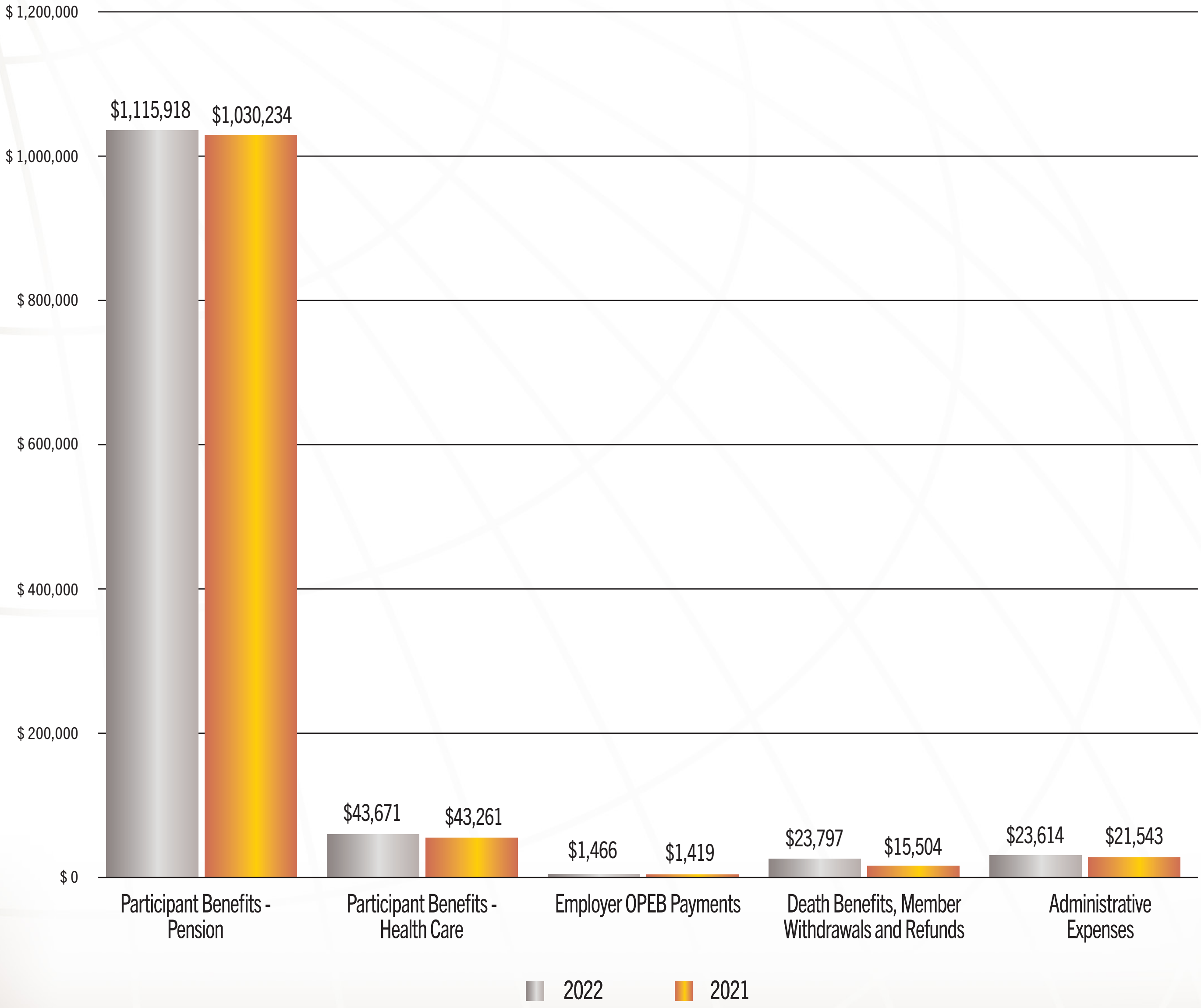
(Dollars in Thousands)



Deductions from Fiduciary Net Position

Expenses incurred by OCERS include payments of benefits to members and their beneficiaries, refunds of contributions to terminated members and the costs of administering the plan. Deductions from fiduciary net position increased $96.5 million or 8.7% compared to the prior year, primarily due to the continued and anticipated growth in member pension benefit payments, both in the total number of OCERS' retired members receiving a pension benefit, cost-of-living adjustments and the average benefit received. Participant benefit payments for pension and health care have increased by $85.7 million and $0.4 million, respectively. Total benefit recipients increased by 852, from 19,826 to 20,678. The average annual pension benefit increased from $51,964 to $53,966.

Deductions from Fiduciary Net Position
(Dollars in Thousands)



OCERS Membership

The table below provides comparative OCERS' membership data for the last two years.

Table 3 : Membership Data

As of December 31, 2022 and 2021

	12/31/2022	12/31/2021	Increase/ (Decrease)	Percentage Change
Active Members	22,061	22,011	50	0.2%
Retired Members	20,678	19,826	852	4.3%
Deferred Members	7,894	7,238	656	9.1%
Total Membership	**50,633**	**49,075**	**1,558**	3.2%

Total OCERS' membership increased during 2022 by 1,558 members. The number of active members increased by 50 or 0.2% and the number of retirees increased by 852 or 4.3%, suggesting that during 2022 the number of employees hired exceeded the replacement of the members who left their employment for retirement or other opportunities.

Actuarial Valuations

To determine whether Net Position Restricted for Pension Benefits will be sufficient to meet future obligations, a calculation of the actuarial funding requirement is performed. An actuarial valuation includes an appraisal of both the assets available to pay future benefits and the liabilities of the System, which represent the actuarial present value of all future benefits expected to be paid for each member. The purpose of the valuation is to determine the amount of future contributions by the employees and employers, which will be required to pay all expected future benefits. OCERS utilizes an independent actuarial firm, The Segal Company (Segal), to prepare an annual valuation. The most recent Annual Actuarial Valuation as of December 31, 2021 is included in the Actuarial Section of this report and contains a detailed discussion of the funding requirements. This valuation is used for funding purposes and establishing employer and employee contribution rates. Segal also prepared a GASB Statement No.67 Actuarial Valuation as of December 31, 2022, used for financial reporting purposes.

To prepare the valuations, the actuary must use several assumptions with regards to OCERS' members such as their life expectancy, projected salary increases over time, and the age at which members will retire. The actuary must also utilize assumptions with regards to how the assets will perform over time. All assumptions used by the actuary are reviewed and adjusted, as required, on a triennial basis and adopted by the Board of Retirement. The most recent triennial study was adopted by the Board on August 17, 2020, for the three-year experience period ended December 31, 2019. As a result, the following assumptions were changed as of the December 31, 2020 valuation: inflation lowered from 2.75% to 2.50 (retiree cost-of-living assumption maintained at 2.75%); active member payroll increases lowered from 3.25% to 3.00%; and projected salary increases for general members lowered from a range of 4.25% to 12.25% to a range of 4.00% to 11.00% and for safety members, the range was changed from 4.75% to 17.25% to 4.60% to 15.00%. In addition, mortality rates apply Pub-2010 Benefit-Weighted mortality tables as a starting point ("base table"), projected generationally using the two-dimensional Scale MP-2019, with adjustments to reflect mortality trends specific to OCERS.

The GASB 67 valuation provides the calculation of the employers' pension liability. To accommodate the annual reporting requirements of our employers in a timely manner, the valuation was prepared using the December 31, 2021 valuation as the basis for calculating the total pension liability (TPL) and rolled forward to December 31, 2022. Based on this actuarial valuation, the TPL was $25.1 billion compared to a fiduciary net position of $19.7 billion, resulting in the employers' net pension liability (NPL) of $5.4 billion and a fiduciary net position as a percentage of the TPL of 78.5%. The NPL as a percentage of covered payroll was 279.0%.

In the actuarial funding valuation for the pension plan as of December 31, 2021, the funding ratio of the valuation value of assets to actuarial accrued liabilities was 81.2%. The calculation of funding status takes into account OCERS' policy to smooth the impact of market volatility by spreading each year's gains or losses over five years. Using the market value of assets as of the valuation date, the funded status of OCERS' pension plan was 90.5% in 2021.

Investment Summary

The OCERS portfolio declined -7.8%, net of fees, for calendar year 2022, driven largely by a difficult year for public market asset classes. However, OCERS' 2022 calendar year return still ranked in the top 15th percentile versus peers (peer rankings are based on defined benefit public funds with over $1 billion in assets), and the one-year portfolio return significantly outperformed the total plan benchmark of -9.0%. Over the trailing three-, five-, and ten-year periods, OCERS had respective returns of 6.2%, 6.1%, and 6.9% annualized, net of fees. The OCERS portfolio ended 2022 with a market value of $20.2 billion, down from $22.5 billion at the end of 2021.

Persistently high inflation and the Russian invasion of Ukraine put pressure on public markets in 2022. As inflation remained well above expectations throughout 2022, the Federal Reserve and other central banks raised interest rates at an accelerated pace. 2022 brought an end to more than a decade of easy money Federal Reserve policy.

Global public equities struggled during the year. OCERS' global public equity portfolio declined 18.5% in 2022. U.S. equities declined 19.1% during 2022, while non-U.S. equities dropped 14.7% for the year. Emerging market equity struggled most as OCERS' emerging market equity portfolio declined 25.1%.

Fixed income markets did not provide any protection from falling equities in the higher interest rate environment. OCERS' fixed income portfolio declined 10.5% during the year. Investment grade bonds were challenged during the year as the U.S. 10-year Treasury yield rose from 1.51% to 3.88%. TIPS performed better than investment grade bonds due to the higher inflationary environment.

It is customary to report private market performance on a quarterly lag. Therefore, OCERS' year-end performance will reflect returns as of the end of the third quarter for many private equity, private credit, and private real assets managers. OCERS' private real assets portfolio returned an impressive 24.5% during the year as energy and infrastructure assets benefitted from the high inflationary environment. OCERS' real estate portfolio gained 14.2% in 2022 with the industrial and multifamily sectors leading the way. OCERS' private equity portfolio returned 0.6% for the year as the stress in the technology sector led to subdued returns.

Request for Financial Information

This Annual Comprehensive Financial Report is designed to provide the Board of Retirement, plan members, participating employers, taxpayers, investment managers and other interested parties with a general overview of OCERS' financial condition and to demonstrate OCERS' accountability for the funds under its stewardship.

Please address any questions about this report or requests for additional information to:

Orange County Employees Retirement System
P.O. Box 1229
Santa Ana, CA 92702

Section 2 - Financial

Basic Financial Statements

Northern CA

Photo Caption: Nature's perfect harmony: stunning Lake Shasta in the foreground, majestic Mount Shasta in the background.

Retirement Benefits: Northern California offers ample opportunities for outdoor recreation, including hiking, cycling, fishing, and golfing. Many retirees enjoy staying active and taking advantage of the region's natural beauty.

Statement of Fiduciary Net Position

As of December 31, 2022
(with summarized comparative amounts as of December 31, 2021)
(Dollars in Thousands)

	Pension Trust Fund	Health Care Fund-County	Health Care Fund-OCFA	Custodial Fund - OCTA	Total Funds	Comparative Totals 2021
Assets						
Cash and Short-Term Investments						
Cash and Cash Equivalents	$ 401,414	$ 9,152	$ 1,039	$ 517	$ 412,122	$ 369,867
Securities Lending Collateral	197,092	4,494	510	-	202,096	195,239
Total Cash and Short-Term Investments	598,506	13,646	1,549	517	614,218	565,106
Receivables						
Investment Income	14,940	341	39	-	15,320	14,932
Securities Sales	137,974	3,146	357	-	141,477	65,186
Contributions	15,437	-	-	-	15,437	25,981
Other Receivables	7,685	175	20	-	7,880	6,906
Total Receivables	176,036	3,662	416	-	180,114	113,005
Investments at Fair Value						
Global Public Equity	8,598,842	196,058	22,254	11,459	8,828,613	10,708,968
Private Equity	3,220,117	73,420	8,334	-	3,301,871	3,369,659
Core Fixed Income	1,594,045	36,345	4,126	5,245	1,639,761	2,424,314
Credit	1,706,716	38,914	4,417	-	1,750,047	1,659,609
Real Assets	2,835,098	64,642	7,337	-	2,907,077	2,316,246
Risk Mitigation	1,713,648	39,072	4,435	-	1,757,155	1,982,386
Unique Strategies	72,523	1,654	188	-	74,365	76,904
Total Investments at Fair Value	19,740,989	450,105	51,091	16,704	20,258,889	22,538,086
Capital Assets, Net	9,088	-	-	-	9,088	11,067
Total Assets	**20,524,619**	**467,413**	**53,056**	**17,221**	**21,062,309**	**23,227,264**
Liabilities						
Obligations Under Securities Lending Program	197,092	4,494	510	-	202,096	195,239
Securities Purchased	199,342	4,545	516	-	204,403	123,165
Unearned Contributions	320,009	-	-	-	320,009	304,504
Foreign Currency Forward Contracts	2,308	53	6	-	2,367	942
Retiree Payroll Payable	92,303	5,064	958	-	98,325	90,948
Other	23,544	537	61	-	24,142	23,039
Total Liabilities	**834,598**	**14,693**	**2,051**	**-**	**851,342**	**737,837**
Net Position Restricted for Pension, Other Postemployment Benefits and Employer	**$19,690,021**	**$ 452,720**	**$ 51,005**	**$ 17,221**	**$20,210,967**	**$22,489,427**

The accompanying notes are an integral part of these financial statements.

Statement of Changes in Fiduciary Net Position

For the Year Ended December 31, 2022
(with summarized comparative amounts for the Year Ended December 31, 2021)
(Dollars in Thousands)

	Pension Trust Fund	Health Care Fund-County	Health Care Fund-OCFA	Custodial Fund - OCTA	Total Funds	Comparative Totals 2021
Additions						
Contributions						
Employer	$ 719,691	$ 41,889	$ 2,932	$ -	$ 764,512	$ 756,613
Employee	269,999	-	-	-	269,999	271,334
Employer OPEB Contributions	-	-	-	655	655	605
Total Contributions	989,690	41,889	2,932	655	1,035,166	1,028,552
Investment Income						
Net Appreciation/(Depreciation) in Fair Value of Investments	(2,408,298)	(46,439)	(5,609)	(3,399)	(2,463,745)	3,063,469
Dividends, Interest, & Other Investment Income	495,116	11,289	1,282	-	507,687	365,536
Securities Lending Income						
Gross Earnings	4,297	98	11	-	4,406	1,189
Less: Borrower Rebates and Bank Charges	(3,523)	(80)	(9)	-	(3,612)	(233)
Net Securities Lending Income	774	18	2	-	794	956
Total Investment Income/(Loss)	(1,912,408)	(35,132)	(4,325)	(3,399)	(1,955,264)	3,429,961
Investment Fees and Expenses	(146,182)	(3,333)	(378)	(3)	(149,896)	(131,724)
Net Investment Income/(Loss)	(2,058,590)	(38,465)	(4,703)	(3,402)	(2,105,160)	3,298,237
Total Additions	**(1,068,900)**	**3,424**	**(1,771)**	**(2,747)**	**(1,069,994)**	**4,326,789**
Deductions						
Participant Benefits	1,115,918	37,013	6,658	-	1,159,589	1,073,495
Death Benefits	1,558	-	-	-	1,558	1,055
Member Withdrawals and Refunds	22,239	-	-	-	22,239	14,449
Employer OPEB Payments	-	-	-	1,466	1,466	1,419
Administrative Expenses	23,546	23	22	23	23,614	21,543
Total Deductions	**1,163,261**	**37,036**	**6,680**	**1,489**	**1,208,466**	**1,111,961**
Net Increase /(Decrease)	(2,232,161)	(33,612)	(8,451)	(4,236)	(2,278,460)	3,214,828
Net Position Restricted For Pension, Other Postemployment Benefits and Employer, Beginning of Year	21,922,182	486,332	59,456	21,457	22,489,427	19,274,599
Ending Net Position Restricted For Pension, Other Postemployment Benefits and Employer	**$ 19,690,021**	**$ 452,720**	**$ 51,005**	**$ 17,221**	**$ 20,210,967**	**$ 22,489,427**

The accompanying notes are an integral part of these financial statements.

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions

The Orange County Employees Retirement System (OCERS or System) was established in 1945 under the provisions of the County Employees Retirement Law of 1937 (CERL). OCERS is governed by a ten-member Board of Retirement, nine voting members and one alternate member. Board membership consists of four members appointed by the County of Orange Board of Supervisors, five members elected by the members of the System, including an alternate, two by the general members, one by the safety members, and one by the retired members. Safety members elect the alternate member. The County of Orange Treasurer Tax-Collector, elected by the voters registered in the County, serves as an Ex-Officio member.

OCERS operates as a cost-sharing multiple-employer defined benefit pension plan for the County of Orange, Orange County Superior Court of California, City of San Juan Capistrano, and ten special districts: Orange County Cemetery District, Children and Families Commission of Orange County, Orange County Employees Retirement System, Orange County Fire Authority, Orange County In-Home Supportive Services Public Authority, Orange County Local Agency Formation Commission (LAFCO), Orange County Public Law Library, Orange County Sanitation District, Orange County Transportation Authority and Transportation Corridor Agencies. Capistrano Beach Sanitary District, Cypress Recreation & Parks District, Orange County Mosquito and Vector Control District, City of Rancho Santa Margarita, the Orange County Department of Education and the University of California, Irvine Medical Center and Campus are no longer active employers, but retired members and their beneficiaries, as well as deferred members, remain in the System. OCERS is legally and fiscally independent of the County of Orange.

Pension Plan Membership

OCERS provides retirement, disability and death benefits to general and safety members. Safety membership includes those members serving in active law enforcement, fire suppression and as probation officers. General membership applies to all other occupations. Plan retirement benefits are tiered based upon date of OCERS membership. Tier I members were hired prior to September 21, 1979 and use their highest one-year average salary to determine their retirement allowance while Tier II members were hired on or after September 21, 1979 and use their highest three-year average salary to determine their retirement allowance. All Public Employees' Pension Reform Act (PEPRA) members hired on or after January 1, 2013 are Tier II and use their highest three-year average salary to determine their retirement allowance. Member rate groups are determined by employer, bargaining unit, and benefit plan (a description of the benefit plans can be found under Member Retirement Benefits). The benefit plan represents the benefit formula and tier that will be used in calculating a retirement benefit. All regular employees scheduled to work 20 hours or more per week become members of the plan upon commencing employment with one of OCERS' employers, with the exception of a provision adopted in 2014 that allows new members over the age of 60 to opt out of the plan if their employer has implemented the provision. Active members are categorized as vested in the following table upon accumulating five years of accredited service or attaining the age of 70. Additional information regarding the pension plan's benefit structure is included in the Summary Plan Description that is available on the web at **https://www.ocers.org/summary-plan-description.**

The following table is a summary of OCERS' general and safety membership as of December 31, 2022, consisting of active members, retired members or their beneficiaries, and deferred members who have terminated, but are not yet receiving benefits (further information regarding benefit eligibility for deferred members is described under the Deferred Members Benefits section):

OCERS Membership - General Members

As of December 31, 2022

Rate Group	Benefit Plan	Tier	Active Vested	Active Non-Vested	Retired Members & Beneficiaries	Deferred Members	Total
1	A	I	-	-	294	1	295
1	B	II	495	2	541	271	1,309
1	U	II-PEPRA	317	805	11	489	1,622
Rate Group 1 Total			**812**	**807**	**846**	**761**	**3,226**
2	A	I	-	-	2,481	8	2,489
2	B	II	-	-	1,858	554	2,412
2	I	I	11	-	1,122	-	1,133
2	J	II	6,966	80	7,683	2,325	17,054
2	P	II	152	8	16	100	276
2	S	II	10	2	4	8	24
2	T	II-PEPRA Compliant	2,500	4,160	28	2,253	8,941
2	U	II-PEPRA	133	247	6	93	479
2	W	II-PEPRA Alternative	1	1	-	-	2
Rate Group 2 Total			**9,773**	**4,498**	**13,198**	**5,341**	**32,810**
3	A	I	-	-	71	1	72
3	B	II	41	11	73	37	162
3	G	I	-	-	30	-	30
3	H	II	229	-	424	50	703
3	U	II-PEPRA	130	194	5	57	386
Rate Group 3 Total			**400**	**205**	**603**	**145**	**1,353**
4	H	II	-	-	1	-	1
Rate Group 4 Total			**-**	**-**	**1**	**-**	**1**
5	A	I	1	-	351	2	354
5	B	II	741	13	1,211	514	2,479
5	U	II-PEPRA	98	426	6	224	754
Rate Group 5 Total			**840**	**439**	**1,568**	**740**	**3,587**
9	A	I	-	-	4	-	4
9	B	II	-	-	10	12	22
9	N	II	18	1	53	39	111
9	U	II-PEPRA	14	22	3	24	63
Rate Group 9 Total			**32**	**23**	**70**	**75**	**200**
10	A	I	-	-	6	-	6
10	B	II	-	-	37	7	44
10	I	I	-	-	16	-	16
10	J	II	80	-	171	86	337
10	N	II	28	15	3	22	68
10	U	II-PEPRA	67	126	2	139	334
Rate Group 10 Total			**175**	**141**	**235**	**254**	**805**
11	A	I	-	-	3	-	3
11	B	II	-	-	3	-	3
11	N	II	13	-	7	2	22
11	U	II-PEPRA	7	5	-	2	14
Rate Group 11 Total			**20**	**5**	**13**	**4**	**42**
12	A	I	-	-	2	-	2
12	B	II	-	-	3	1	4
12	H	II	11	-	8	2	21
12	U	II-PEPRA	1	2	-	-	3
Rate Group 12 Total			**12**	**2**	**13**	**3**	**30**
Total General Members			**12,064**	**6,120**	**16,547**	**7,323**	**42,054**

NOTE 1 : Plan Descriptions (continued)

OCERS Membership - Safety Members

As of December 31, 2022

Rate Group	Benefit Plan	Tier	Active Vested	Active Non-Vested	Retired Members & Beneficiaries	Deferred Members	Total
6	C	I	-	-	87	-	87
6	D	II	-	-	45	34	79
6	E	I	-	-	45	-	45
6	F	II	510	1	411	169	1,091
6	V	II-PEPRA	17	88	-	24	129
Rate Group 6 Total			**527**	**89**	**588**	**227**	**1,431**
7	C	I	-	-	424	-	424
7	D	II	-	-	285	22	307
7	E	I	-	-	277	-	277
7	F	II	705	-	1,576	91	2,372
7	R	II	359	31	21	36	447
7	V	II-PEPRA	455	499	21	66	1,041
Rate Group 7 Total			**1,519**	**530**	**2,604**	**215**	**4,868**
8	C	I	-	-	27	-	27
8	D	II	-	-	69	3	72
8	E	I	-	-	16	-	16
8	F	II	528	1	815	37	1,381
8	R	II	86	74	8	13	181
8	V	II-PEPRA	144	379	4	76	603
Rate Group 8 Total			**758**	**454**	**939**	**129**	**2,280**
Total Safety Members			2,804	1,073	4,131	571	8,579
Grand Total			14,868	7,193	20,678	7,894	50,633

Member Retirement Benefits

Members are entitled to receive a retirement allowance with ten or more years of service credit beginning at age 50 (5 years of service and age 52 for General PEPRA plans and 5 years of service and age 50 for Safety PEPRA, for all plans except those identified as PEPRA compliant and PEPRA alternative), at any age with thirty years of service credit (twenty years of service credit for safety members), or if a part-time employee at age 55 or older with five or more years of service credit and at least ten years of active employment with a sponsoring agency covered by OCERS. Members attaining age 70 are eligible to retire regardless of credited service. Benefits received are determined by plan formula, age, years of service and final average salary. Member rate groups and benefit plans as of December 31, 2022, are as follows:

NOTE 1 : Plan Descriptions (continued)

Rate Groups and Benefit Plans

As of December 31, 2022

Rate Group	Plan Type	Benefit Plan	Benefit Formula per Year of Service	Sponsoring Agencies
#1	General	A	2.0% @ 57	County of Orange and OC In-Home Supportive Services Public Authority (OC Department of Education, UCI Medical Center and Campus, Capistrano Beach Sanitary District, Cypress Recreation & Parks District, and OC Mosquito and Vector Control District are no longer active employers)
		B	1.67% @ 57.5	
		J	2.7% @ 55	
		T	1.62% @ 65 PEPRA Compliant	
		U	2.5% @ 67 PEPRA	
#2	General	A	2.0% @ 57	County of Orange; City of San Juan Capistrano; Orange County LAFCO; OCERS; Orange County Superior Court of California; and Children and Families Commission of Orange County
		B	1.67% @ 57.5	
		I	2.7% @ 55	
		J	2.7% @ 55	
		P	1.62% @ 65	
		S	2.0% @ 57	
		T	1.62% @ 65 PEPRA Compliant	
		U	2.5% @ 67 PEPRA	
		W	1.62% @ 65 PEPRA Alternative	
#3	General	A	2.0% @ 57	OC Sanitation District
		B	1.67% @ 57.5	
		G	2.5% @ 55	
		H	2.5% @ 55	
		U	2.5% @ 67 PEPRA	
#4	General	H	2.5% @ 55	City of Rancho Santa Margarita (no longer an active employer)
#5	General	A	2.0% @ 57	OC Transportation Authority
		B	1.67% @ 57.5	
		U	2.5% @ 67 PEPRA	
#6	Safety	C	2.0% @ 50	County of Orange (Probation)
		D	2.0% @ 50	
		E	3.0% @ 50	
		F	3.0% @ 50	
		V	2.7% @ 57 PEPRA	
#7	Safety	C	2.0% @ 50	County of Orange (Law Enforcement)
		D	2.0% @ 50	
		E	3.0% @ 50	
		F	3.0% @ 50	
		R	3.0% @ 55	
		V	2.7% @ 57 PEPRA	
#8	Safety	C	2.0% @ 50	OC Fire Authority
		D	2.0% @ 50	
		E	3.0% @ 50	
		F	3.0% @ 50	
		R	3.0% @ 55	
		V	2.7% @ 57 PEPRA	

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

Rate Groups and Benefit Plans (continued)

As of December 31, 2022

Rate Group	Plan Type	Benefit Plan	Benefit Formula per Year of Service	Sponsoring Agencies
#9	General	A	2.0% @ 57	Transportation Corridor Agencies
		B	1.67% @ 57.5	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
#10	General	A	2.0% @ 57	OC Fire Authority
		B	1.67% @ 57.5	
		I	2.7% @ 55	
		J	2.7% @ 55	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
#11	General	A	2.0% @ 57	OC Cemetery District
		B	1.67% @ 57.5	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
#12	General	A	2.0% @ 57	OC Law Library
		B	1.67% @ 57.5	
		H	2.5% @ 55	
		U	2.5% @ 67 PEPRA	

Public Employees' Pension Reform Act (PEPRA)

During 2012, the Public Employees Pension Reform Act (PEPRA) was signed into law, resulting in the creation of three new benefit formulas for employees entering OCERS on or after January 1, 2013: 1.62% @ 65 PEPRA - General; 2.5% @ 67 PEPRA - General; and 2.7% @ 57 PEPRA – Safety. New plan provisions include a cap on pensionable compensation at 120% of the social security taxable wage base limit, three year final average salary, and new cost-sharing requirements by members to pay at least 50% of the total normal cost of the plan.

Deferred Member Benefits

If a member terminates employment with a participating employer, the member is entitled to withdraw the employee contributions made, together with accumulated interest, unless the member enters a reciprocal retirement system within 180 days and leaves their accumulated contributions on deposit with OCERS and receives a deferred retirement allowance when eligible. There are different deferred retirement eligibility requirements for members with less than five years of service when terminating and leaving funds on deposit. It is possible for these members to earn a deferred retirement allowance upon attaining the age of 70, or upon accumulating reciprocal service. Members who terminate employment with a participating employer, and defer with five or more years of service may become eligible for a service retirement allowance when they would have accrued ten years of service and attain the age of 50 or greater (5 years of service and age 52 for PEPRA).

Disability Benefits

Members found by the Board of Retirement to be permanently incapacitated from the performance of their job are eligible for disability retirement benefits. A disability retirement benefit may either be service-connected or non-service-connected. Members applying for non-service-connected disability must have five or more years of eligible service credit. There are no service credit requirements for members applying for service-connected disability benefits, but the disabling condition must be a result of injury or disease arising out of or in the course of the member's employment.

Death Benefits

Death benefits are payable to eligible beneficiaries of OCERS members. Eligible beneficiaries of retired members may receive a percentage of a deceased member's retirement allowance based upon the retirement option selected by the member at the time of retirement. The beneficiary of a retired member will also receive a $1,000 burial benefit.

Survivor benefits for members who die prior to retirement are dependent upon a number of factors including whether or not the member was eligible for a service retirement or disability retirement at the time of death, and whether the death was job related. The eligible beneficiary of a member who is not eligible for service retirement or disability retirement is eligible to receive the member's accumulated contributions plus one month's salary for each year of creditable service, subject to a maximum of six month's salary. The eligible beneficiary of a member who is entitled to receive a service retirement or disability retirement, in lieu of the benefit described above, may elect to receive a monthly retirement allowance equal to 60% of the monthly allowance the member would have received for a non-service connected disability as of the day after the date of death, or a monthly allowance equal to the higher of 50% of the member's monthly compensation and service retirement allowance if the death was found to be service-connected.

Survivor benefits for deferred members (with no reciprocity) consist of a refund to eligible beneficiaries of all contributions and interest accumulated by the member as of the date of death.

Cost-of-Living Adjustments

Retired member monthly allowances will be adjusted annually in accordance with changes in the cost-of-living, as determined by the average annual change in the Consumer Price Index (CPI) for the Los Angeles-Long Beach-Anaheim area for the prior calendar year. The cost-of-living adjustment (COLA) is limited to a maximum increase or decrease of three percent per year as established by the Board of Retirement. The 2022 cost-of-living adjustment was 4.0% ; this adjustment will increase benefit recipients allowances by 3% with the remaining 1% added to the recipients COLA bank. The COLA bank can be used in subsequent years when the change in CPI falls below 3%.

STAR COLA

Retired members and eligible beneficiaries who have lost more than 20% of their original retirement benefit's purchasing power due to inflation are eligible to receive the STAR COLA (Supplemental Targeted Adjustment for Retirees Cost-of-Living Adjustment). STAR COLA benefits are reviewed annually by the Board of Retirement and as of December 31, 2022, the Board has determined that presently only those members that retired on or before April 1, 1980 are eligible to receive the STAR COLA benefit.

Postemployment Health Care Plans

OCERS serves as trustee for the County of Orange (County) and Orange County Fire Authority (OCFA) single-employer postemployment health care plan trusts established under Internal Revenue Code section 401(h), which are reported as other postemployment benefit trust funds in OCERS basic financial statements. Health care assets for the 401(h) trusts are commingled with pension trust assets for investment purposes and are used exclusively to pay health allowances to eligible retired members of the County of Orange and participating special districts including OCERS and the OCFA.

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

In July 2007, the County of Orange established under Internal Revenue Code both a 115 trust and a 401(h) trust as funding sources of retiree health care benefits, including grants, for the County of Orange Retiree Medical Plan (the "Plan"). The County maintains control and custody of all the 115 trust assets, which acts as a conduit for collecting contributions and passing them through to the 401(h) trust at their discretion, as well as distributing lump sum health care grant payments as part of a termination program that is being phased-out. OCERS maintains custody of the assets in the 401(h) trust and pays all primary benefits of the Plan as directed by the County. The County has evaluated the structure of its plan and related roles and responsibilities and has determined that the County is the plan administrator. Therefore, the County has taken financial reporting responsibility of the plan including financial statement disclosures and required supplementary information regarding the plan's funded status and contributions, in accordance with Governmental Accounting Standards Board (GASB) Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other than Pension Plans* (GASB 74). A publicly available financial report can be obtained from the County of Orange at 12 Civic Center Plaza, Santa Ana, California 92702 or their website at **http://ac.ocgov.com**.

As trustee of OCFA's 401(h) Other Postemployment Benefit (OPEB) trust fund, the sole source of funding for OCFA's postemployment health care plan, OCFA has evaluated the structure of its plan and related roles and responsibilities and has determined that OCFA is the plan administrator. Therefore, OCFA has taken financial reporting responsibility of the Plan including financial statement disclosures and required supplementary information regarding the plan's funded status and contributions, in accordance with GASB 74. A publicly available financial report can be obtained from the Orange County Fire Authority at 1 Fire Authority, Irvine, California 92602 or their website at **http://ocfa.org**.

Assets are allocated on the Statement of Fiduciary Net Position between the pension plan and the two 401(h) health care trusts based upon pro-rata shares of the net position after balances and transactions specific to the respective trusts are assigned. Contributions and benefit payment information for the pension plan and individual health care trusts are readily identified; however, investment income must be allocated and is based upon the individual health care trusts' pro-rata share of total fund assets.

Custodial Fund

In addition to serving as Trustee for the two 401(h) health care trusts, OCERS also provides investment advisory services to the Orange County Transportation Authority (OCTA) health care plan established in accordance with Internal Revenue Code section 115 (115 Plan). Investments in the 115 Plan are not commingled with those of the pension plan and 401(h) plan trusts, but rather are invested in separately managed index funds. OCTA's 115 Plan assets held by OCERS in an investment capacity are reported as a Custodial Fund. Additional information regarding the OCTA 115 Plan is available by contacting OCTA at 550 S. Main Street, Orange, California 92868 or their website at **http://www.octa.net.**

NOTE 2 : Summary of Significant Accounting Policies

Basis of Accounting

The accompanying financial statements have been prepared on the accrual basis of accounting and in accordance with accounting principles generally accepted in the United States of America (GAAP). Employee and employer contributions are recognized in the period in which contributions are due pursuant to legal requirements, and benefits and refunds are recognized when currently due and payable in accordance with plan terms. Unearned contributions represent prepaid employer contributions that will be recognized as an addition to plan net position in future periods. Investment income is recognized as revenue when earned. The net appreciation/(depreciation) in the fair value of investments is recorded as an increase/(decrease) to investment income based upon investment valuations, which includes both realized and unrealized gains and losses on investments.

Investment Policy and Valuation

State Street Bank and Trust (State Street) maintains custody of the majority of OCERS' investments held as of December 31, 2022. The acquisition of investments is authorized by state statute and OCERS' Investment Policy Statement (refer to Note 3: Investments for further information). Investments are reported at fair value on a trade-date basis. The allocation of investment assets is approved by OCERS' Board of Retirement, as outlined in the Investment Policy Statement, and System assets are invested solely for the benefit of plan participants and beneficiaries while attempting to minimize employer contributions and investment and administration costs. The Investment Policy Statement calls for an asset allocation plan that seeks to optimize long-term returns for the level of risk that the Board of Retirement considers appropriate. The current asset allocation adopted by the Board of Retirement as of December 31, 2022, is detailed in Section 3 - Investments. The Board of Retirement conducts a periodic review of the asset allocation plan to maintain an optimal allocation, and may also revise the asset allocation in response to significantly changing market conditions that may affect valuations and forward-looking expected returns of asset classes.

Plan investments consist of global public equity securities, core fixed income, real assets, credit, risk mitigation, absolute return and unique strategies, and private equity. Investments are reported at fair value and the overall valuation process and information sources by major asset classification are as follows:

Cash and Short-Term Investments

Cash and short-term investments represent funds held in operating accounts with State Street, Wells Fargo Bank and deposits held in a pooled account with the County of Orange Treasurer. Short-term investments are expected to be utilized within 30-90 days and are reported at fair value. OCERS is a participant in the County Treasurer's Orange County Investment Pool (OCIP). The OCIP is an external investment pool, is not rated, and is not registered with the Securities and Exchange Commission. The County Treasury Oversight Committee conducts OCIP oversight. Cash on deposit in the OCIP is stated at fair value. The OCIP values participant shares on an amortized cost basis during the year and adjusts to fair value at year-end. Deposits held in the OCIP are invested in the Orange County Money Market Fund and the Extended Fund. At December 31, 2022, the OCIP had a weighted average maturity of 199 days. The Orange County Money Market Fund is rated AAAm by Standard & Poor's. The Extended Fund is not rated. For further information regarding the OCIP, refer to the County of Orange's most recently available Annual Comprehensive Financial Report.

Global Public Equity

The majority of OCERS' domestic, international and global securities, including those traded in emerging markets, consist of institutional funds that are valued based on the fair value of underlying investments using pricing models or other valuation methodologies that use pricing inputs that are either directly or indirectly observable on the valuation date for the securities or assets held in the fund. Other domestic, international and global securities are actively traded on major security exchanges, or over-the-counter. Fair value for exchange traded securities is determined as of the close of the trading date in the primary market or agreed upon exchange. The last known price is used for listed securities that did not trade on a particular date. Fair value is obtained from third-party pricing sources for securities traded over-the-counter.

Core Fixed Income

Actively traded debt instruments such as those securities issued by the U.S. Treasury, Federal Agencies and corporate issuers are reported at fair value as of the close of the trading date. Fair values of irregularly traded debt securities are obtained from pricing vendors who employ modeling techniques in determining security values. Inputs typically employed by pricing vendors include cash flows, maturity and credit rating.

Real Assets

OCERS invests in real assets, which include agriculture, energy, infrastructure, real estate and timber holdings. The fair value for real estate, timber, energy, infrastructure and agriculture are determined based on independent appraisals and/or estimates made in good faith by the general partner or management.

NOTE 2 : Summary of Significant Accounting Policies (continued)

Real estate assets are in commingled real estate funds structured as either limited partnerships or trust funds. Properties held in commingled funds are based on the investment's net asset value (NAV) per share provided by the investment management firms/general partners, who perform regular internal appraisals and obtained at regular intervals independent third-party appraisals and are further supported by annual financial statements, which are audited by an independent third-party accountant. Primary determinants of fair value include market and property type specific information, which typically involve a degree of expert judgment.

Other real asset funds, agriculture, energy, and infrastructure, are held in limited partnerships. The investment's NAV per share are provided by the investment management firms/general partners, and are further supported by annual financial statements, which are audited by an independent third-party accountant. Primary determinants of fair value include market specific information, which involves a degree of expert judgment.

Other Investments

OCERS invests in a variety of different credit strategies, alternative strategies which include private equity, absolute return and unique strategies, and risk mitigation investments.

Credit is a global allocation that includes a number of diverse fixed-income related strategies. It represents an allocation that is diversified by region, by credit quality, and by sources of risk. The general shared characteristics of these strategies are a degree of illiquidity, and a focus on current yield as a principal source of expected return. Hedging of market and individual security risks and diversified risk-controlled tactical trading may be permitted.

Credit is a combination of liquid and illiquid credit strategies and the fair value depends on the nature of the investment. For credit funds structured as partnerships, the fair values are based on NAV. Credit included in Level 2 of the fair value hierarchy may be estimated by the underlying managers in the absence of observable market data or the general partner may estimate the fair value in good faith using the best information available, which may incorporate the general partner's own assumptions. The liquid strategies comprised of multi-strategies are actively traded and are generally reported at fair value as of the close of the trading date. The illiquid strategies comprised of mortgages, direct lending and energy-based credit funds are valued initially at cost as an approximation of fair value with subsequent adjustments to fair value as determined by the general partner. The factors considered include readily available market quotes, earnings-multiple analysis using comparable companies or discounted cash flow analysis.

Private equity, absolute return and unique strategies are alternative strategies. The fair value of these alternative investments depends upon the nature of the investment and the underlying business. Typically, alternative investments are less liquid and subject to redemption restrictions. Fair value is determined either quarterly or semi-annually with valuations conducted by general partners, management and valuation specialists. Valuation techniques vary by investment type and involve expert judgment or estimates made in good faith using the best information available, including the general partner's or management's own assumptions. Investments reported at NAV are based on audited financial statements.

Risk mitigation investments include generally liquid investments with shorter redemption periods. Risk mitigation funds included in Level 2 are short-term investment funds and NAV is determined daily; for risk mitigation funds structured as partnerships, the fair values are based on NAV. Risk mitigation investments are uncorrelated or negatively correlated to economic growth assets.

NOTE 2 : Summary of Significant Accounting Policies (continued)

Capital Assets

Capital assets consist of furniture, equipment, intangible assets, including computer software, and building and improvements for the portion of the OCERS' headquarters building used for plan administration. Capital assets are defined by OCERS as assets with an initial, individual cost of more than $25,000 and an estimated useful life in excess of one year. Such assets are recorded at cost. Capital assets are depreciated using the straight-line depreciation method over their estimated useful lives, ranging from five to fifteen years for furniture, equipment and building improvements; three years for purchased computer software; sixty years for buildings; and five years for the data center. Intangible assets, including the Pension Administration System, are amortized over an estimated useful life of ten years.

Capital Assets
As of December 31, 2022
(Dollars in Thousands)

Building and Improvements	$ 5,309
Computer Software - Pension Administration System	21,854
Construction-In-Progress	247
Data Center	1,234
Furniture and Equipment	503
Total Capital Assets (at cost)	29,147
Less: Accumulated Depreciation and Amortization	(20,059)
Total Capital Assets (Net of Depreciation and Amortization)	**$ 9,088**

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect reported amounts of net position. Actual results could differ from those estimates.

Comparative Totals

The basic financial statements include certain prior-year summarized comparative information in total but not at the level of detail required for a presentation in conformity with GAAP. Accordingly, such information should be read in conjunction with OCERS' financial statements for the year ended December 31, 2021, from which the summarized information was derived.

Effect of New GASB Pronouncement

In June 2017, the GASB issued Statement No. 87, *Leases* (GASB 87), which improves accounting and financial reporting for leases by governments. This statement requires recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as inflows of resources or outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources.

These requirements, which were postponed by GASB for one year due to the COVID-19 pandemic, are effective for the fiscal year ended December 31, 2022. OCERS completed a thorough evaluation of GASB 87 and determined that the recognition and measurement criteria applied to OCERS' current lease population would have an insignificant impact. Therefore, there are no new lease disclosures included in OCERS' December 31, 2022 financial statements.

NOTE 3 : Investments

OCERS may invest, in accordance with state statutes, in any form or type of investment deemed prudent by the Board of Retirement. Pension and 401(h) Health Care plan assets are restricted for the exclusive purposes of providing benefits to plan participants and defraying reasonable expenses of administering the plans. The Board of Retirement may invest, or delegate the authority to invest, the assets of the funds through the purchase, holding, or sale of any form or type of investment, financial instrument, or financial transaction. Custodial fund assets, restricted pursuant to section 115 of the Internal Revenue Code, are separately invested in domestic equity, international equity and domestic bond index funds in accordance with the respective OCTA Third-Party Administrative and Investment Management Agreement.

The following table shows the Investment Allocation as of December 31, 2022:

Investment Allocation

As of December 31, 2022

Investment Category	Policy	Target Ranges	Actual
Global Public Equity	47%	40% - 54%	44%
Core Fixed Income	11%	6% - 16%	8%
Credit	7%	4% - 10%	7%
Real Assets	12%	8% - 16%	14%
Private Equity	13%	9% - 17%	16%
Risk Mitigation	10%	6% - 14%	9%
Unique Strategies	0%	0% - 5%	0%
Cash	0%	0% - 5%	2%
Total	**100 %**		**100 %**

During 2022, no changes were made to the investment allocation.

Custodial Credit Risk

Custodial credit risk for deposits is the risk that in the event of a financial institution's failure, OCERS would not be able to recover its deposits. Deposits are exposed to custodial risk if they are not insured or not collateralized. As of December 31, 2022, OCERS' deposits with a financial institution are fully insured by Federal Deposit Insurance Corporation (FDIC) insurance up to $250,000 with the remaining balance exposed to custodial credit risk as it is not insured; however, the financial institution does collateralize the deposit of monies in excess of the FDIC insurance amount with eligible securities held by the pledging financial institution, but not in OCERS' name, which approximates $102.7 million. Deposits held by OCERS' custodial bank are not exposed to custodial credit risk as they are held in a qualified pool trust, separate from the custodial bank assets.

For an investment, custodial credit risk is the risk that, in the event of a counterparty failure, OCERS will not be able to recover the value of its investments or collateral securities that are in the possession of counterparties. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in OCERS' name or by other qualified third-party administrator trust accounts.

OCERS' investments and collateral received through securities lending are not exposed to custodial credit risk because all securities are held by OCERS' custodial bank in OCERS' name or by other qualified third-party administrator trust accounts. The risk is managed by the custodian bank by diversifying the number of counterparties, with periodic review of the credit quality of counterparties and by regularly posting/receiving margins. OCERS does not maintain any general policies regarding custodial credit risk.

Credit Risk

By definition, credit risk measures the risk that an issuer or counterparty will not fulfill its obligations. S&P Global defines investment grade as those fixed income securities with ratings between AAA and BBB. OCERS' investment policy permits, on an opportunistic basis, the investment in fixed income securities rated below investment grade. A rating of NR represents pooled funds and other securities that have not been rated by S&P Global and NA represents securities explicitly guaranteed by the U.S. Government that are not subject to the GASB Statement No. 40 disclosure requirements. The credit ratings for individual OCERS' fixed income portfolios are monitored regularly.

As of December 31, 2022, the S&P Global credit ratings of the OCERS' fixed income portfolio were as follows:

Credit Ratings

As of December 31, 2022
(Dollars in Thousands)

Rating	Pooled	U.S. Treasuries	Corporates	Mortgages	Asset-Backed	Municipals	Agencies	International	Swaps	Total
AAA	$ -	$ -	$ 528	$ 6,300	$ 12,666	$ 3,838	$ -	$ -	$ -	$ 23,332
AA	-	-	7,499	302,575	9,419	11,062	-	1,861	-	332,416
A	-	-	37,811	892	2,086	8,432	-	21,691	-	70,912
BBB	-	-	178,108	469	3,448	1,845	-	95,713	-	279,583
BB	-	-	76,168	589	2,122	818	-	34,466	-	114,163
B	-	-	40,563	228	1,410	1,031	-	19,449	-	62,681
CCC	-	-	10,994	138	1,787	-	-	696	-	13,615
CC	-	-	70	-	-	-	-	-	-	70
D	-	-	-	-	982	-	-	-	-	982
NR	448,419	-	17,234	28,926	27,984	3,539	1,625	30,915	(1,187)	557,455
NA	-	285,069	-	5,275	-	-	-	-	-	290,344
Total	$448,419	$ 285,069	$ 368,975	$ 345,392	$ 61,904	$ 30,565	$ 1,625	$ 204,791	$(1,187)	$1,745,553

This schedule reflects credit ratings for OCERS' fixed income portfolio, which includes $224.9 million of fixed income securities which are included in the Credit investment category and excludes $121.4 million of non-fixed income securities that are included in the Core Fixed Income investment category on the Statement of Fiduciary Net Position.

Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Duration is a measure of the price sensitivity of a fixed-income portfolio to changes in interest rates. It is calculated as the weighted average time to receive a bond's coupon and principal payments. The longer the duration of a portfolio, the greater its price sensitivity to changes in interest rates.

Interest rate risk is managed through OCERS' investment policies requiring that investment managers investing on behalf of OCERS have applicable investment guidelines and that the effective durations of fixed income portfolios remain within a defined range of the benchmark's effective duration. The primary benchmark for domestic fixed income is a blend of two indices, the Bloomberg US Universal (82%) and the Bloomberg US Treasury TIPS (18%). As of December 31, 2022, the durations of these indices are 6.32 years and 2.35 years, respectively for a blended duration of 5.61 years. All investment managers were in compliance within their defined range.

OCERS invests in a variety of fixed income instruments including asset-backed securities, corporate obligations and commercial mortgage-backed securities. The value, liquidity and income of these securities are sensitive to changes in overall economic conditions and the fair value of these securities may be affected by changes in interest rates, default rates and the value of the underlying securities.

The interest rate risk schedule presents the duration of fixed income securities by investment category as of December 31, 2022:

Interest Rate Risk Schedule

As of December 31, 2022
(Dollars in Thousands)

Category	Amount	Duration (in Years)	Percent
Pooled	$ 448,419	3.40	26%
U.S. Treasuries	285,069	8.51	16%
Corporates	354,131	5.35	20%
Mortgages	337,196	4.82	19%
Asset-Backed	52,678	2.76	3%
Municipals	30,565	8.96	2%
Agencies	1,625	3.04	0%
International	203,988	4.00	12%
No Effective Duration:			
Corporates	14,844	N/A	1%
Mortgages	8,196	N/A	0%
Asset-Backed	9,226	N/A	1%
International	803	N/A	0%
Swaps	(1,187)	N/A	0%
Total	**$ 1,745,553**	**4.99**	**100%**

This schedule reflects interest rate risk for OCERS' fixed income portfolio, which includes $224.9 million of fixed income securities which are included in the Credit investment category and excludes $121.4 million of non-fixed income securities that are included in the Core Fixed Income investment category on the Statement of Fiduciary Net Position.

Foreign Currency Risk

The value of deposits or investments denominated in foreign currency may be adversely affected by changes in currency exchange rates. OCERS' investment policy permits investment in international securities that includes investments in international equity securities, global equity securities, emerging markets equity securities and debt, public real estate securities, and real return. Investment managers monitor currency exposures daily.

The following schedule represents OCERS' net exposure to foreign currency risk in U.S. dollars as of December 31, 2022:

Foreign Currency Risk Schedule

As of December 31, 2022
(Dollars in Thousands)

Currency in U.S. Dollar	Cash	Equity	Fixed Income	Options	Forward Contracts	Swaps	Total
Australian Dollar	$ 24	$ 31,705	$ -	$ -	$ 181	$ -	$ 31,910
Brazilian Real	-	6,432	-	-	(9)	(446)	5,977
Canadian Dollar	1,479	25,514	130	-	(6)	-	27,117
Colombian Peso	-	-	-	-	(6)	-	(6)
Danish Krone	51	32,104	-	-	(8)	-	32,147
Euro Currency	4,045	346,708	2,024	(1,623)	631	(752)	351,033
Hong Kong Dollar	(74)	25,273	-	-	(3)	-	25,196
Indonesian Rupiah	-	886	-	-	-	-	886
Japanese Yen	812	144,768	25,394	-	(2,738)	(173)	168,063
Mexican Peso	11	-	191	-	(7)	-	195
New Israeli Shekel	-	-	-	-	(61)	-	(61)
New Zealand Dollar	-	1,275	-	-	3	-	1,278
Norwegian Krone	-	4,063	-	-	10	-	4,073
Polish Zloty	-	-	-	-	(144)	-	(144)
Pound Sterling	(718)	88,555	3,405	-	130	1,055	92,427
Russian Ruble	-	1,514	-	-	-	-	1,514
Singapore Dollar	127	9,453	-	-	51	-	9,631
South African Rand	-	-	-	-	64	-	64
South Korean Won	-	6,330	-	-	-	-	6,330
Swedish Krona	(80)	26,058	-	-	(127)	25	25,876
Swiss Franc	80	44,183	-	-	(327)	197	44,133
Amount Exposed to Foreign Currency Risk	$ 5,757	$ 794,821	$ 31,144	$ (1,623)	$ (2,366)	$ (94)	$ 827,639

The foreign currency amounts above are included within the cash and cash equivalents, global public equity, credit and core fixed income categories on the Statement of Fiduciary Net Position as of December 31, 2022.

Concentration of Credit Risk

Concentration of credit risk is the risk of loss attributed to the magnitude of OCERS' investment in a single issuer. By policy, OCERS did not hold investments in any one issuer that represented five percent (5%) or more of plan net position and net investments. Investments issued or explicitly guaranteed by the U.S. Government and pooled investments are excluded from this policy requirement.

Concentration of Investments

As of December 31, 2022, OCERS did not hold investments in any one organization that represented five percent (5%) or more of the plan's fiduciary net position. Investments issued or explicitly guaranteed by the U.S. Government and pooled investments are excluded from this requirement.

Derivative Instruments

As of December 31, 2022, all derivative instruments held by OCERS are considered investments and not hedges for accounting purposes. Any reference to the term hedging in these financial statements references an economic activity and not an accounting method. All gains and losses associated with these activities are recognized as incurred in the Statement of Changes in Fiduciary Net Position.

The table that follows presents the related net appreciation/(depreciation) in fair value, the fair value amounts and the notional amounts of derivative instruments outstanding at December 31, 2022.

Derivative Instruments

As of December 31, 2022
(Amounts in Thousands)

	Changes in Fair Value Net Appreciation/ (Depreciation) [4]	Fair Value at December 31, 2022		
Derivative Instruments	**Amount [1]**	**Classification**	**Amount [2]**	**Notional [3]**
Commodity Futures Long	$ 2,794	Cash	$ -	$ 1,133
Commodity Futures Short	(318)	Cash	-	-
Credit Default Swaps Bought	2	Cash	-	-
Credit Default Swaps Written	(1,081)	Core Fixed Income	344	35,794
Fixed Income Futures Long	(35,933)	Cash / Core Fixed Income	-	97,307
Fixed Income Futures Short	3,491	Core Fixed Income	-	(38,208)
Fixed Income Options Bought	770	Core Fixed Income	1,043	13,400
Fixed Income Options Written	(2,529)	Core Fixed Income	(3,380)	(135,467)
Foreign Currency Futures Long	(312)	Cash	-	700
FX Forwards	(3,926)	Foreign Currency Forward Contracts Receivables and Payables	(2,366)	275,870
Index Futures Long	(45,171)	Cash/Global Public Equity	-	1,923
Index Futures Short	3,017	Global Public Equity	-	(33)
Pay Fixed Interest Rate Swaps	1,961	Core Fixed Income	1,599	22,632
Receive Fixed Interest Rate Swaps	(3,586)	Core Fixed Income	(3,130)	59,596
Rights	88	Global Public Equity	-	-
Total Return Swaps Bond	(7)	Global Public Equity	232	8,783
Total Return Swaps Equity	(1,076)	Global Public Equity	(232)	(8,362)
Grand Totals	**$ (81,816)**		**$ (5,890)**	

[1] Negative values (in brackets) refer to losses

[2] Negative values refer to liabilities and are reported net of investments

[3] Notional may be a dollar amount or size of underlying for futures and options, negative values refer to short positions

[4] Excludes futures margin payments

NOTE 3 : Investments (continued)

Valuation of Derivative Instruments

Non-exchange traded instruments, such as swaps, are valued using similar methods as those described for debt securities.

Futures contracts are traded on exchanges and typically derive their value from underlying indices and are marked to market daily. All gains and losses associated with changes in the value of futures contracts also settle on a daily basis and result in the contracts themselves having no fair value at the end of any trading day, including December 31, 2022. Future variation margin accounts also settle daily and are recognized in the financial statements under net appreciation/(depreciation) in the fair value of the investments as incurred.

In general, option values are dependent upon a number of different factors, including the current market price of the underlying security, the strike price of the option, costs associated with holding a position in the underlying security including interest and dividends, the length of time until the option expires and an estimate of the future price volatility of the underlying security relative to the time period of the option.

Foreign currency forward contracts are agreements to buy or sell a currency at a specified exchange rate on a specified date. The fair value of a foreign currency forward is determined by the difference between the specified exchange rate and the closing exchange rate at December 31, 2022.

Custodial Credit Risk – Derivative Instruments

As of December 31, 2022, all investments in derivative instruments are held in OCERS' name and are not exposed to custodial credit risk as described in the previous discussion of custodial credit risk.

NOTE 3 : Investments (continued)

Counterparty Credit Risk – Derivative Instruments

A summary of counterparty credit ratings relating to non-exchange traded derivatives in asset positions as of December 31, 2022 is as follows:

Counterparty Credit Risk Schedule for Derivative Instruments

As of December 31, 2022
(Dollars in Thousands)

Counterparty Name	S&P Rating	Foreign Currency Forward Contracts	Swaps	Total Fair Value
Bank of America, N.A.	A+	$ 12	$ -	$ 12
BNP Paribas SA	A+	20	-	20
Citibank N.A.	A+	906	-	906
Credit Event	NR	-	1,977	1,977
Goldman Sachs Bank USA	BBB+	22	-	22
HSBC Bank USA	A-	67	-	67
JPMorgan Chase Bank N.A.	A+	896	-	896
Morgan Stanley and Co. International PLC	A-	52	-	52
Morgan Stanley Co Incorporated	A-	-	231	231
Standard Chartered Bank	A+	2	-	2
UBS AG	A+	24	-	24
Total Non-Exchange Traded Derivatives in Asset Position		**$ 2,001**	**$ 2,208**	**$ 4,209**

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Interest Rate Risk – Derivatives

At December 31, 2022, OCERS is exposed to interest rate risk on its investments in various swap arrangements based on daily interest rates for BRCDI (Brazilian Interbank Deposit Rate), SONIA (Sterling Overnight Index Rate), LIBOR (London Interbank Offered Rate), CETIP (Latin America largest central depository), SOFR (Secured Overnight Financing Rate) and European reference rates. The following table illustrates the maturity periods of these investments:

Interest Rate Risk - Schedules for Derivative Instruments

As of December 31, 2022

(Dollars in Thousands)

		Investment Maturities (in years)			
Investment Type	**Fair Value**	**Less Than 1**	**1-5**	**6-10**	**More than 10**
Credit Default Swaps Written	$ 344	$ -	$ 370	$ (17)	$ (9)
Fixed Income Options Bought	1,043	1,043	-	-	-
Fixed Income Options Written	(3,380)	(3,380)	-	-	-
Pay Fixed Interest Rate Swaps	1,599	37	2	1,097	463
Receive Fixed Interest Rate Swaps	(3,130)	(1,078)	(778)	(805)	(469)
Total Return Swaps Bond	232	232	-	-	-
Total Return Swaps Equity	(232)	(232)	-	-	-
Total	**$ (3,524)**	**$ (3,378)**	**$ (406)**	**$ 275**	**$ (15)**

Derivative Instruments Highly Sensitive to Interest Rate Changes

As of December 31, 2022

(Dollars in Thousands)

Investment Type	Receive Rate	Payable Rate	Fair Value	Notional
Pay Fixed Interest Swaps	Variable 3-month LIBOR	Fixed 0.25%-2.00%	$ 43	$ 3,420
Pay Fixed Interest Swaps	Variable 12-month SOFR	Fixed 1.75%-4.27%	501	6,100
Pay Fixed Interest Swaps	Variable 12-month SONIA	Fixed 0.08%-2.00%	1,055	13,112
Total Pay Fixed Interest Rate Swaps			**$ 1,599**	
Received Fixed Interest Rate Swaps	Fixed 10.12%-11.84%	Variable 0-month BRCDI	(445)	12,349
Received Fixed Interest Rate Swaps	Fixed 10.21%	Variable 0-month CETIP	(1)	19
Received Fixed Interest Rate Swaps	Fixed 0.65%-1.75%	Variable 6-month EURIB	(801)	7,428
Received Fixed Interest Rate Swaps	Fixed 1.27%	Variable 3-month LIBOR	(1,077)	34,100
Received Fixed Interest Rate Swaps	Fixed 1.85%-1.86%	Variable 12-month SOFR	(806)	4,895
Total Receive Fixed Interest Rate Swaps			**$ (3,130)**	
Total Interest Rate Swaps			**$ (1,531)**	

Foreign Currency Risk – Derivatives

At December 31, 2022, OCERS is exposed to foreign currency risk on investments in swaps and forward currency contracts denominated in foreign currencies that may be adversely affected by changes in the currency exchange rates.

Foreign Currency Risk Schedule for Derivative Instruments

As of December 31, 2022
(Dollars in Thousands)

		Currency Forward Contracts			
Currency Name	**Rights**	**Net Receivables**	**Net Payables**	**Swaps**	**Total Exposure**
Australian Dollar	$ -	$ 275	$ (94)	$ -	$ 181
Brazilian Real	-	14	(23)	(446)	(455)
Canadian Dollar	-	2	(8)	-	(6)
Colombian Peso	-	-	(6)	-	(6)
Danish Krone	-	24	(32)	-	(8)
Euro Currency	(1,623)	821	(190)	(752)	(1,744)
Hong Kong Dollar	-	2	(5)	-	(3)
Japanese Yen	-	206	(2,944)	(173)	(2,911)
Mexican Peso	-	-	(7)	-	(7)
New Israeli Shekel	-	60	(121)	-	(61)
New Zealand Dollar	-	5	(2)	-	3
Norwegian Krone	-	222	(212)	-	10
Polish Zloty	-	-	(144)	-	(144)
Pound Sterling	-	207	(77)	1,055	1,185
Singapore Dollar	-	55	(4)	-	51
South African Rand	-	65	(1)	-	64
Swedish Krona	-	8	(135)	25	(102)
Swiss Franc	-	35	(362)	197	(130)
Total Foreign Currency	**$ (1,623)**	**$ 2,001**	**$ (4,367)**	**$ (94)**	**$ (4,083)**
U.S. Dollar	(714)	-	-	(1,093)	(1,807)
Total	**$ (2,337)**	**$ 2,001**	**$ (4,367)**	**$ (1,187)**	**$ (5,890)**

Rate of Return

For the year ended December 31, 2022, the annual money-weighted rate of return on the assets of the plan, net of investment expense, was -7.88%. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the timing of cash flows and the changing amounts actually invested.

NOTE 3 : Investments (continued)

Securities Lending

OCERS is authorized by investment policy and state law to lend its investment securities including global public equities, core fixed income, and credit to broker/dealers in exchange for collateral in the form of either cash or securities. Lent domestic and international securities are collateralized with an initial fair value of not less than 102% or 105% depending on the nature of the loaned securities and the collateral received, of fair value of the loaned securities. The lending agent receives cash and non-cash collateral for the securities on loan. There are no restrictions on the amount of securities that can be lent at one time. State Street Bank serves, in accordance with a Securities Lending Authorization Agreement, as OCERS' agent to loan domestic and international securities. State Street Bank does not have the ability to pledge or sell collateral securities delivered absent a borrower default.

Cash collateral received on loaned securities is invested together with the cash collateral of other qualified tax-exempt investors in a collective investment fund managed by State Street. The collective investment fund is not rated and is comprised of one liquidity investment pool. As of December 31, 2022, the liquidity pool had an average duration of 96 days and a weighted average maturity of 3 days. Because loans are terminable at will, the duration of the loans did not generally match the duration of the investments made with the cash collateral. The Securities Lending Authorization Agreement requires State Street to indemnify OCERS if the broker/dealer fails to return any borrowed securities. During 2022, there were no failures to return loaned securities or to pay distributions by the borrowers. Furthermore, there were no losses due to borrower defaults. The fair value of securities on loan and the total cash and non- cash collateral held as of December 31, 2022 was $196.3 million and $202.1 million, respectively. The following table shows fair values of securities on loan and cash collateral received by asset class:

Securities on Loan and Collateral Received

As of December 31, 2022
(Dollars in Thousands)

Security Lent for Cash Collateral	Fair Value of OCERS' Securities Lent	Cash Collateral Received	Collateral Investment Value
Global Public Equity	$ 89,353	$ 92,649	$ 92,649
Core Fixed Income	75,140	76,936	76,936
Credit	31,768	32,511	32,511
Total	**$ 196,261**	**$ 202,096**	**$ 202,096**

Investments – Fair Value Measurements

OCERS categorizes its fair value measurements of its investments based on the three level fair value hierarchy established by GAAP. The fair value hierarchy is based on the valuation inputs used to measure fair value of the asset or liability and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 inputs) and the lowest priority to unobservable inputs (Level 3 inputs). Unobservable inputs are developed using the best information available about the assumptions that market participants would use when pricing an investment. The three levels of the fair value hierarchy are:

- Level 1 - Unadjusted quoted prices for identical instruments in active markets.
- Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.
- Level 3 - Valuations are derived from valuation techniques in which significant inputs are unobservable. Investments that are measured at fair value using the net asset value per share (or its equivalent) as a practical expedient are not classified in the fair value hierarchy.

NOTE 3 : Investments (continued)

The following table represents the fair value measurements as of December 31, 2022:

Investments and Derivative Instruments Measured at Fair Value

As of December 31, 2022
(Dollars in Thousands)

	12/31/2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments by Fair Value Level				
Fixed Income:				
U.S. Fixed Income:				
Pooled	$ 448,419	$ -	$ 448,419	$ -
U.S. Treasuries	285,069	-	285,069	-
Corporates	368,975	-	368,975	-
Mortgages	345,392	-	345,392	-
Asset-backed	61,904	-	61,904	-
Municipals	30,565	-	30,565	-
Agencies	1,625	-	1,625	-
International	204,791	-	204,791	-
Total Fixed Income	**1,746,740**	**-**	**1,746,740**	**-**
Global Public Equity Investments:				
Domestic Equity	5,449,485	503,460	4,946,025	-
International Equity	2,146,589	695,456	1,451,133	-
Emerging Markets Equity	322,121	-	322,121	-
Total Global Public Equity	**7,918,195**	**1,198,916**	**6,719,279**	**-**
Real Assets:				
Agriculture	46,557	-	-	46,557
Real Estate	11,082	-	-	11,082
Timber	21	-	-	21
Total Real Assets	**57,660**	**-**	**-**	**57,660**
Other Investments:				
Risk Mitigation	467,049	-	467,049	-
Total Other Investments	**467,049**	**-**	**467,049**	**-**
Total Investments by Fair Value Level	**$ 10,189,644**	**$ 1,198,916**	**$ 8,933,068**	**$ 57,660**

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Investments and Derivative Instruments Measured at Fair Value

As of December 31, 2022
(Dollars in Thousands)
(Continued)

	12/31/2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Investments Measured at the Net Asset Value (NAV)				
Global Public Equity Investments:				
International Equity	$ 445,329			
Emerging Markets Equity	589,043			
Total Global Public Equity	**1,034,372**			
Real Assets:				
Energy	694,444			
Infrastructure	577,643			
Real Estate	1,577,330			
Total Real Assets	**2,849,417**			
Other Investments:				
Credit (includes private credit)	1,522,987			
Private Equity	3,301,522			
Risk Mitigation	1,290,106			
Unique Strategies	74,365			
Total Other Investments	**6,188,980**			
Total Investments Measured at the NAV	**$ 10,072,769**			
Investments Derivative Instruments				
Swaps:				
Interest Rate Swaps	$ (1,531)	$ -	$ (1,531)	$ -
Credit Default Swaps	344	-	344	-
Options	(2,337)	-	(2,337)	-
Total Investment Derivative Instruments	**(3,524)**	**$ -**	**$ (3,524)**	**$ -**
Total Investments Measured at Fair Value	**$ 20,258,889**			

Core Fixed Income in the above schedule includes $224.9 million of fixed income securities, which are included in the Credit investment category; and excludes $121.4 million of non-fixed income securities and derivatives that are included in the Core Fixed Income investment category on the Statement of Fiduciary Net Position.

NOTE 3 : Investments (continued)

Core fixed income include actively traded debt instruments such as those securities issued by the United States government, federal agencies, municipal obligations, foreign governments, and both U.S. and foreign corporate issuers. Core fixed income securities are reported at fair value as of the close of the trading date. Fair values for securities not traded on a regular basis are obtained from pricing vendors who employ modeling techniques, such as matrix pricing or discounted cash flow method, in determining security values. These inputs are observable, which supports the Level 2 fair value hierarchy. One fixed income mortgage security is leveled at Level 3 based on the investment manager's pricing policy.

Global public equity include U.S. and international equity securities, and emerging markets equity securities. Global public equity securities classified in Level 1 of the fair value hierarchy are primarily common and preferred stock or real estate investment trusts. Fair value for these exchange traded securities is determined as of the close of the trading date in the primary market or agreed upon exchange. The last known price is used for listed securities that did not trade on a particular date. Fair value is obtained from third-party pricing sources for securities traded over-the-counter. Global public equity securities classified in Level 2 of the fair value hierarchy consist of institutional funds that are valued based on the fair value of underlying investments using pricing models or other valuation methodologies that use pricing inputs that are either directly or indirectly observable on the valuation date for the securities or assets held in the fund.

Real assets investments at fair value include a variety of real return investments in agriculture, real estate and timber resources, which are held directly. Real estate assets held directly are appraised by independent third-party appraisers in accordance with the Uniform Standards of Professional Appraisal Practice. Independent appraisals use professional judgment, which is unobservable input, to determine the fair value of the asset; therefore these real estate investments are classified as Level 3. Agriculture and timber resources included in Level 3 are based on independent appraisals and/or the good faith estimates of management.

Other investments include two risk mitigation funds. These investments are classified in Level 2 of the fair value hierarchy and include primarily institutional mutual funds that are valued based on the fair value of underlying investments using pricing models or other valuation methodologies that use pricing inputs that are either directly or indirectly observable on the valuation date for the securities or assets held in the fund.

Derivative instruments classified as Level 2 are valued using a market approach with observable inputs from major indices as well as benchmark interest rates and foreign exchange rates.

NOTE 3 : Investments (continued)

Investments Measured at NAV, Unfunded Commitments and Redemption Terms

As of December 31, 2022
(Dollars in Thousands)

The System uses the Net Asset Value (NAV) to determine the fair value of the underlying investments, when an investment does not have a readily determinable fair value, provided that the NAV is calculated and used as a practical expedient to estimate fair value in accordance with GAAP requirements.

	Fair Value Measured at NAV	Unfunded Commitments	Redemption Frequency (If Currently Eligible)[1]	Redemption Notice Period
Investments Measured at the Net Asset Value (NAV)				
Global Public Equity:				
International Equity	$ 445,329	$ -	W	7 days
Emerging Markets Equity	589,043	-	M	30 days
Total Equity Investments Measured at the NAV	**1,034,372**	**-**		
Real Assets:				
Agriculture	-	22,451	Q	60 days
Energy	694,444	383,621	N/A	N/A
Infrastructure	577,643	272,190	N/A	N/A
Real Estate	1,577,330	612,515	Q, N/A	7-90 days, N/A
Total Real Assets Measured at the NAV	**2,849,417**	**1,290,777**		
Other Investments:				
Credit (includes private credit)	1,522,987	652,551	M, Q, N/A	5-90 days, N/A
Private Equity	3,301,522	1,588,829	N/A	N/A
Risk Mitigation	1,290,106	-	D, W, M, Q	1-75 days
Unique Strategies	74,365	99,831	Q, N/A	60 days, N/A
Total Other Investments at the NAV	**6,188,980**	**2,341,211**		
Total Investments Measured at the NAV	**$ 10,072,769**	**$ 3,631,988**		

[1] D=Daily, W=Weekly, M=Monthly, Q=Quarterly, N/A = No redemption or frequency period

NOTE 3 : Investments (continued)

The investment types listed in the above table were measured at the Net Asset Value (NAV) as explained below:

Global public equity includes five institutional funds. Two funds focus on international securities and three funds focus on emerging markets equities. The fair value of each fund has been determined using NAV per share or unit of the investments.

Real assets: Agriculture includes one fund that invests in a diversified portfolio of vegetable and permanent crop farmland in select major agricultural states. The fund is an open-end, infinite life, private REIT (real estate investment trust) subject to the redemption terms in the above schedule.

Real assets: Energy consists of nineteen limited partnerships that invest primarily in oil and gas related investments. There are no redemption terms for any of these partnerships. These investments are considered illiquid. During the life of the partnerships, distributions are received as underlying partnership investments are realized. The fair values of this investment type have been determined using estimates provided by the underlying partnerships and are at NAV. One of the partnerships is considered a going concern, and is included at a zero value.

Real assets: Infrastructure consists of ten limited partnerships that invest primarily in energy related renewable infrastructure. There are no redemption terms for any of these partnerships. These investments are considered illiquid. During the life of the partnerships, distributions are received as underlying partnership investments are realized. The fair values of this investment type have been determined using estimates provided by the underlying partnerships and are at NAV.

Real assets: Real estate investments include twenty-one funds consisting of primarily trust funds and limited partnerships. The purpose of these funds is to acquire, own, invest in real estate and real estate related assets with the intention of achieving current income, capital appreciation or both. These investments are valued through independent appraisals and other unobservable methods. The majority of these funds are closed-end funds with structured investment periods, and considered illiquid investments. All other funds have no redemption restrictions other than the restrictions noted above.

Credit includes investments in twenty-four limited partnership funds and one equity fund. Eighteen of these funds are considered private credit investments, which are closed-end funds and are considered illiquid investments. These investments represent approximately 53% of the value. The remaining six funds allow for redemption based on the terms noted above. The fair value of these investments has been determined using NAV per share of the investments.

Private equity includes primarily investments in limited partnership funds, managed by various different investment managers. Generally, the partnership strategies are to maximize the return by participating in private equity and equity-related investments through a diversified portfolio of venture capital, growth equity, buyouts, special situation partnerships and other limited liability vehicles. Investments in these partnerships are typically for 10-12 years and are considered illiquid. Redemptions are restricted over the life of the partnership. During the life of the partnerships, distributions are received as underlying partnership investments are realized. The fair values of this investment type have been determined using NAV per share of the System’s ownership interest in partners’ capital.

Risk mitigation includes eight limited partnership funds, which allow redemption with proper notification. The funds assist in diversifying the portfolio and protecting in an economic downturn of growth assets. The strategies are uncorrelated or negatively correlated to economic growth assets. The fair value of these investments has been determined using NAV per share.

Unique strategies includes three limited partnership funds, one of the funds allows for redemptions and the other funds have no redemption terms and are considered illiquid investments. This asset class provides additional diversification which can be used to help mitigate risk and provide value to the OCERS portfolio. These investments are valued at NAV.

NOTE 4 : Funding Policy - Pension Plan

Employer and employee/member pension plan contribution requirements are determined as a percentage of employer payrolls. In determining contributions, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. The projected total pensionable compensation for all OCERS' employers for the year ended December 31, 2022 was $2 billion. Employer contribution rates are determined using the entry age actuarial cost method based upon a level percentage of payroll. The employer contributions provide for both normal cost and an amount to amortize any unfunded or overfunded actuarial accrued liabilities. By definition, the normal cost is the annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement benefit if all underlying assumptions are met. The actuarial valuation report as of December 31, 2019 established the contribution rates for the first six months of calendar year 2022 (second half of fiscal year 2021-2022), and the actuarial valuation report as of December 31, 2020 established the contribution rates for the last six months of calendar year 2022 (first half of fiscal year 2022-2023). For the year ended December 31, 2022, employer contribution rates ranged from 11.99% of payroll to 63.25% depending upon the benefit plan type. Employer pension contributions were $719.7 million for the year ended December 31, 2022 of which approximately $539.6 million and $87.6 million, net of prepayment discounts, were made by the County of Orange and the Orange County Fire Authority, respectively. Participating employers are required by Government Code sections 31453.5 and 31454 to contribute a percentage of covered salary to the Plan. The contribution requirements of participating active members and employers are established and may be amended by the OCERS' Board of Retirement. Participating employers may pay a portion of the participating active employees' contributions through negotiations and bargaining agreements. Employer contributions paid for by the employee through negotiated reverse pick-up arrangements are treated and reported as employee contributions. Employee contributions elected to be paid for by the employer under Section 31581.1 are treated and reported as employer contributions as these payments do not become part of the accumulated contributions of the employee and are immaterial. Employee contributions elected to be paid for by the employer under Section 31581.2 are treated and reported as employee contributions as these payments are credited to the employee account and become a part of their accumulated contributions.

Employee contributions are established by the OCERS' Board of Retirement and guided by state statute (Government Code sections 31621, 31621.5, 31621.8, 31639.25 and 31639.5) and vary based upon employee age at the time of entering OCERS membership. OCERS received $270 million in employee pension contributions for the year ended December 31, 2022. Average employee contribution rates for the year ended December 31, 2022 ranged between 9.59% and 17.27%.

NOTE 5 : Plan Reserves

The OCERS Board of Retirement adopted the Reserves and Interest-Crediting Policy to identify all the reserves maintained by OCERS and how funds are distributed to and from the relevant reserve. Employer and employee contributions are deposited into various legally-required reserve accounts established on a book value basis. Set forth below are the descriptions of OCERS' various reserve accounts:

Pension Reserve

Pension reserve represents funding set aside for retirement payments derived from employer contributions. Additions include transfers from the employer contribution reserve and interest credited. Deductions include benefit payments made to retired members.

Employee Contribution Reserve

Employee contribution reserve represents the balance of member contributions. Additions include member contributions and interest credited. Deductions include member refunds and transfers to the annuity reserve fund retirement benefits.

Employer Contribution Reserve

Employer contribution reserve represents the balance of employer contributions for active member future retirement benefits. Additions include employer contributions and interest credited. Deductions include transfers to the pension reserves in order to fund retirement benefits, disability benefits and death benefits.

Annuity Reserve

Annuity reserve represents funding set aside for retirement payments derived from contributions made by members. Additions include transfers from the employee contribution reserve and interest credited. Deductions include benefit payments made to retired members.

NOTE 5 : Plan Reserves (continued)

Contra Account

A positive balance in this account represents excess earnings. A credit balance in this account represents the amount of interest credited to the reserve accounts that has not been paid for out of current or excess earnings. Additions include net increases to the fiduciary net position, which are decreased by interest credited to the reserves account.

County Investment Account (POB Proceeds) Reserve

County investment account (POB Proceeds) reserve represents the remaining proceeds from the County of Orange's 1994 Pension Obligation Bond issuance. The remaining proceeds are utilized, in accordance with a long standing agreement between OCERS and the County of Orange, to offset a portion of the annual actuarially-determined contribution rates for the County of Orange. In 2022, $15 million of the remaining proceeds were utilized to offset the actuarially determined contributions for the County of Orange.

OCSD UAAL Deferred Reserve

The Orange County Sanitation District (OCSD) Unfunded Actuarial Accrued Liability (UAAL) Reserve represents the payment made by OCSD for its deferred UAAL. OCERS shall make annual transfers from the OCSD reserve account into the OCERS' employer contribution reserve account in the amount necessary to satisfy the actual UAAL attributed to OCSD. The intent of this transfer is to provide that the OCSD's future annual employer contribution obligation to OCERS shall consist of either the normal cost portion only, or the normal cost and amortizing installments of only such amount of future actual UAAL that exceeds to the amount of funds remaining in the OCSD reserve account.

Actuarial Deferred Return/(Loss)

The actuarial deferred return/(loss) represents the balance of deferred earnings created by a five-year smoothing of actual gains and losses compared to the assumed investment rate of return.

Health Care Plan Reserves

Health care plan reserves represent assets held to pay medical benefits for eligible retirees of the 401(h) health care plans. Additions include employer contributions and investment earnings. Deductions include medical payments and administrative expenses.

Custodial Fund Reserve

Custodial fund reserve represents custodial assets held by OCERS in an investment capacity for the OCTA health care plan. Additions include other postemployment benefit contributions and investment earnings. Deductions include other postemployment benefits and administrative expenses.

Total Plan Reserves

As of December 31, 2022

(Dollars in Thousands)

Valuation Reserves		
Pension Reserve	$	11,947,372
Employee Contribution Reserve		3,794,047
Employer Contribution Reserve		3,443,588
Annuity Reserve		2,625,821
Contra Account		(1,119,169)
Non-Valuation Reserves		
County Investment Reserve		140,991
OCSD UAAL Deferred Reserve		14,399
Total Pension Fund Reserves (smoothed market actuarial value)		**20,847,049**
Actuarial Deferred Return/(Loss)		(1,157,028)
Net Position Restricted for Pension		**19,690,021**
Net Position Restricted for Other Postemployment Benefits		
Health Care Plan Reserves		503,725
Net Position Restricted for Employer		
Custodial Fund Reserve		17,221
Net Position Restricted for Pension, Other Postemployment Benefits and Employer	**$**	**20,210,967**

Notes to the Basic Financial Statements

NOTE 6 : Administrative Expenses - Pension

As permitted by Government Code (Code) Section 31580.2, the Board of Retirement adopts an annual budget, financed from the System's assets, covering the entire expenses for the administration of OCERS. The Code provides that administrative expenses incurred in any year are to be charged against the earnings of the pension trust fund and are not to exceed twenty-one hundredths of one percent (0.21%) of OCERS' actuarial accrued liabilities, excluding investment related costs and expenditures for computer software, hardware and related technology consulting services. Administrative expenses incurred in calendar year 2022 were within the limits established by the Code. The following schedule represents the excess of the maximum allowed over actual administrative expenses for the year ended December 31, 2022.

Administrative Expense Compared to Actuarial Accrued Liability

For the Year Ended December 31, 2022
(Dollars in Thousands)

Actuarial Accrued Liability (AAL) as of December 31, 2022	$	25,091,400
Maximum Allowed for Administrative Expense (AAL * 0.21%)		52,692
Actual Administrative Expense[1]		21,977
Excess of Allowed Over Actual Expense	**$**	**30,715**
Actual Administrative Expense as a Percentage of Actuarial Accrued Liability as of December 31, 2022		0.09%
[1] Administrative Expense Reconciliation		
Administrative Expense per Statement of Changes in Fiduciary Net Position	$	23,546
Less: Administrative Expense Not Considered per CERL Section 31596.1		(1,569)
Administrative Expense Allowable Under CERL Section 31580.2	**$**	**21,977**

NOTE 7: Contingencies

At December 31, 2022, OCERS was involved in various litigation matters. In management's opinion, and after consultation with legal counsel, the outcome of these matters is not expected to have a material adverse effect on OCERS' financial position.

The net pension liability was measured as of December 31, 2022. The plan fiduciary net position was valued as of the measurement date while the total pension liability was determined based upon rolling forward the total pension liability from the actuarial valuation as of December 31, 2021. The components of the net pension liability as of December 31, 2022 are as follows:

Net Pension Liability

For the Year Ended December 31, 2022
(Dollars in Thousands)

Total Pension Liability	$ 25,081,027
Less: Plan Fiduciary Net Position	(19,690,021)
Net Pension Liability	**$ 5,391,006**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability	**78.51%**

Actuarial Assumptions

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Examples include future salary increases and investment earnings, expected retirement age, life expectancy and other relevant factors. Actuarially determined amounts are subject to continual revision as results are compared to past expectations and new estimates are made about the future. OCERS' independent actuary and Board of Retirement review the economic and demographic assumptions every three years and the actuarially determined contributions annually.

In preparing the actuarial valuation, the actuary has complied with the parameters set forth in GASB Statement No. 67, *Financial Reporting for Pension Plans – an Amendment of GASB Statement No. 25* (GASB 67), and employed generally accepted actuarial methods and assumptions to measure the total pension liability of employers. The actuary's calculations are based upon member data and financial information provided by the System. Projection of benefits for financial reporting purposes is based on all benefits estimated to be payable through the System to current active, retired and inactive employees as a result of their past service and their expected future service.

The total pension liability as of December 31, 2022 was determined by rolling forward the liability as determined in the actuarial valuation as of December 31, 2021. The actuarial assumptions used were based on the results of an experience study for the period from January 1, 2017 through December 31, 2019 and they are the same assumptions used in the December 31, 2022 funding valuation for OCERS. In particular, the following actuarial assumptions were applied in the measurement:

Inflation	2.50%
Salary Increases	General: 4.00% to 11.00% and Safety: 4.60% to 15.00%, vary by service, including inflation
Cost of Living Adjustments (COLA)	Retiree COLA increases of 2.75% per year. For members that have COLA banks, it is assumed they receive 3.00% COLA increases until their COLA banks are exhausted and 2.75% thereafter.
Investment Rate of Return	7.00%, net of pension plan investment expense, including inflation
Mortality Rates	Pub-2010 Amount Weighted Above-Median Mortality Table, projected generationally using two-dimensional MP-2019 scale, adjusted separately for healthy and disabled for both general and safety members.
Other Assumptions	Actuarial experience study during the period of January 1, 2017 through December 31, 2019

NOTE 8 : Pension Disclosures (continued)

Long-Term Expected Real Rate of Return

The long-term expected rate of return on pension plan investments[1] was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation but before deducting investment expenses are shown in the following table. This information was used in the derivation of the long-term expected investment rate of return assumption for the December 31, 2022 actuarial valuation. This information will change every three years based on the actuarial experience study.

Long-Term Expected Real Rate of Return

For the Year Ended December 31, 2022

Asset Class	Target Allocation	Long-Term Expected Arithmetic Real Rate of Return
Large Cap Equity	23.10%	5.43%
Small Cap Equity	1.90%	6.21%
International Developed Equity	13.00%	6.67%
Emerging Markets Equity	9.00%	8.58%
Core Bonds	9.00%	1.10%
High Yield Bonds	1.50%	2.91%
TIPS	2.00%	0.65%
Emerging Market Debt	2.00%	3.25%
Corporate Credit	1.00%	0.53%
Long Duration Fixed Income	2.50%	1.44%
Real Estate	3.01%	4.42%
Private Equity	13.00%	9.41%
Value Added Real Estate	3.01%	7.42%
Opportunistic Real Estate	0.98%	10.18%
Energy	2.00%	9.68%
Infrastructure (Core Private)	1.50%	5.08%
Infrastructure (Non-Core Private)	1.50%	8.92%
CTA - Trend Following	2.50%	2.38%
Global Macro	2.50%	2.13%
Private Credit	2.50%	5.47%
Alternative Risk Premia	2.50%	2.50%
Total	**100.00 %**	**5.67%**

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[1] The investment return assumption for funding purposes is developed net of both investment and administrative expenses; however, the same investment return assumption is used for financial reporting purposes, where it is considered gross of administrative expenses.

Discount Rate

The discount rate used to measure the total pension liability was 7.00% for the year ended December 31, 2022. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the plan fiduciary net position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2022.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following table represents the net pension liability as of December 31, 2022, of participating employers calculated using the discount rate of 7.00%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1.00% lower (6.00%) or 1.00% higher (8.00%) than the current rate:

Sensitivity of Net Pension Liability to Changes in the Discount Rate

As of December 31, 2022

(Dollars in Thousands)

1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
$8,873,564	$5,391,006	$2,550,390

Section 2 - Financial

Required Supplementary Information

Central CA

Photo Caption: Standing in awe of nature's giants in Sequoia National Forest.

Retirement Benefits: Central California boasts a warm and sunny climate with mild winters, making it an ideal place for outdoor activities year-round. Retirees can enjoy scenic drives, explore national parks such as Yosemite, or take leisurely strolls on the many beaches along the coast.

Schedule of Changes in Net Pension Liability of Participating Employers

For the Years Ended December 31, 2013 through 2022
(Dollars in Thousands)

	2022	2021	2020	2019	2018
Total Pension Liability					
Service Cost	$ 526,769	$ 510,863	$ 512,255	$ 499,256	$ 491,373
Interest	1,675,053	1,609,891	1,535,954	1,452,644	1,379,917
Differences Between Expected and Actual Experience	46,500	(113,046)	162,336	24,383	(118,124)
Changes of Assumptions	-	-	18,967	-	-
Benefit Payments, Including Refunds of Employee Contributions	(1,139,715)	(1,045,738)	(973,325)	(900,902)	(828,278)
Other	-	-	-	-	-
Net Change in Total Pension Liability	1,108,607	961,970	1,256,187	1,075,381	924,888
Total Pension Liability - Beginning	23,972,420	23,010,450	21,754,263	20,678,882	19,753,994
Total Pension Liability - Ending (a)	**$ 25,081,027**	**$ 23,972,420**	**$ 23,010,450**	**$ 21,754,263**	**$ 20,678,882**
Plan Fiduciary Net Position					
Contributions - Employer[2]	$ 719,691	$ 698,791	$ 659,807	$ 653,793	$ 580,905[4]
Contributions - Employee	269,999	271,334	279,384	279,373	270,070
Net Investment Income/(Loss)	(2,058,590)	3,222,065	2,173,184	2,183,808	(324,628)
Benefit Payments, Including Refunds of Employee Contributions	(1,139,715)	(1,045,738)	(973,325)	(900,902)	(828,278)
Administrative Expense	(23,546)	(21,473)	(20,428)	(19,171)	(18,284)
Net Change in Plan Fiduciary Net Position	(2,232,161)	3,124,979	2,118,622	2,196,901	(320,215)
Plan Fiduciary Net Position - Beginning	21,922,182	18,797,203	16,678,581	14,481,680	14,801,895
Plan Fiduciary Net Position - Ending (b)	19,690,021	21,922,182	18,797,203	16,678,581	14,481,680
Net Pension Liability (a) - (b) = (c)	**$ 5,391,006**	**$ 2,050,238**	**$ 4,213,247**	**$ 5,075,682**	**$ 6,197,202**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (b)/(a)	78.51%	91.45%	81.69 %	76.67%	70.03%
Covered Payroll (d)[5]	$ 1,932,374	$ 1,870,387	$ 1,909,268	$ 1,783,054	$ 1,718,798
Plan Net Pension Liability as a Percentage of Covered Payroll (c)/(d)	278.98%	109.62%	220.67 %	284.66%	360.55%

[1] Orange County Public Law Library was separated out from the Orange County Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the valuation as of December 31, 2015. There was an adjustment to the UAAL for Rate Group #3 that was originally included in the December 31, 2015 valuation. There was a credit of $509 given to the Orange County Public Law Library to reflect that their future service enhancement did not increase the UAAL.

[2] Reduced by discount for prepaid contributions and transfers from County Investment Account.

[3] A $24,042 transfer from the Orange County Sanitation District Deferred UAAL Account which was required to offset a UAAL increase for the assumption changes has been excluded from this amount.

[4] A $14,589 transfer from the Orange County Sanitation District Deferred UAAL Account which was required to offset a UAAL increase for the actuarial losses as of December 31, 2018 has been excluded from this amount.

[5] Covered payroll represents payroll on which contributions to the pension plan are based.

Schedule of Changes in Net Pension Liability of Participating Employers

For the Years Ended December 31, 2013 through 2022
(Dollars in Thousands)

(continued)

	2017	2016	2015	2014	2013
Total Pension Liability					
Service Cost	$ 452,412	$ 427,473	$ 439,454	$ 438,600	$ 444,838
Interest	1,305,268	1,241,080	1,197,308	1,153,352	1,109,002
Differences Between Expected and Actual Experience	(66,964)	(323,566)	(205,463)	(327,402)	(295,483)
Changes of Assumptions	827,197	-	-	(127,729)	-
Benefit Payments, Including Refunds of Employee Contributions	(764,344)	(717,976)	(675,963)	(630,678)	(586,284)
Other	-	(509)[1]	-	-	-
Net Change in Total Pension Liability	1,753,569	626,502	755,336	506,143	672,073
Total Pension Liability - Beginning	18,000,425	17,373,923	16,618,587	16,112,444	15,440,371
Total Pension Liability - Ending (a)	**$ 19,753,994**	**$ 18,000,425**	**$ 17,373,923**	**$ 16,618,587**	**$ 16,112,444**
Plan Fiduciary Net Position					
Contributions - Employer[2]	$ 572,104[3]	$ 567,196	$ 571,298	$ 625,520	$ 427,095
Contributions - Employee	262,294	258,297	249,271	232,656	209,301
Net Investment Income/(Loss)	1,939,635	1,061,243	(10,873)	499,195	1,152,647
Benefit Payments, Including Refunds of Employee Contributions	(764,344)	(717,976)	(675,963)	(630,678)	(586,284)
Administrative Expense	(17,002)	(16,870)	(12,521)	(11,905)	(11,705)
Net Change in Plan Fiduciary Net Position	1,992,687	1,151,890	121,212	714,788	1,191,054
Plan Fiduciary Net Position - Beginning	12,809,208	11,657,318	11,536,106	10,821,318	9,630,264
Plan Fiduciary Net Position - Ending (b)	14,801,895	12,809,208	11,657,318	11,536,106	10,821,318
Net Pension Liability (a) - (b) = (c)	**$ 4,952,099**	**$ 5,191,217**	**$ 5,716,605**	**$ 5,082,481**	**$ 5,291,126**
Plan Fiduciary Net Position as a Percentage of the Total Pension Liability (b)/(a)	74.93%	71.16%	67.10%	69.42%	67.16%
Covered Payroll (d)[5]	$ 1,678,322	$ 1,602,675	$ 1,521,036	$ 1,513,206	$ 1,494,745
Plan Net Pension Liability as a Percentage of Covered Payroll (c)/(d)	295.06%	323.91%	375.84%	335.88%	353.98%

Schedule of Investment Returns

For the Years Ended December 31, 2014 Through 2022[1]

Year Ended December 31	Annual Money Weighted Rate of Return, Net of Investment Expense
2014	4.64%
2015	-0.51%
2016	8.71%
2017	14.74%
2018	-1.31%
2019	14.81%
2020	11.22%
2021	16.67%
2022	-7.88%

[1] Data for years prior to 2014 is not available. Information will be presented over ten years as it becomes available prospectively.

Schedule of Employer Contributions

For the Years Ended December 31, 2013 through 2022
(Dollars in Thousands)

Year Ended December 31	Actuarially Determined Contributions[1,2]	Actual Contributions[1,2]	Contribution Deficiency / (Excess)	Covered Payroll [3]	Contributions as a % of Covered Payroll [1, 2]
2013	$ 426,020	$ 427,095[4]	$ (1,075)	$ 1,494,745	28.57%
2014	476,320	625,520[4]	(149,200)	1,513,206	41.34%
2015	502,886	571,298[4]	(68,412)	1,521,036	37.56%
2016	521,447	567,196[4]	(45,749)	1,602,675	35.40%
2017	536,726[5]	572,104[4, 5]	(35,378)	1,678,322	34.09%
2018	556,728[6]	580,905[4,6]	(24,177)	1,718,798	33.80%
2019	583,057	653,793[4]	(70,736)	1,783,054	36.67%
2020	638,215	659,807[4]	(21,592)	1,909,268	34.56%
2021	684,142	698,791[4]	(14,649)	1,870,387	37.36%
2022	707,318	719,691[4]	(12,373)	1,932,374	37.24%

[1] Excludes employer pickup of member contributions and transfers from County Investment Account (funded by pension obligation proceeds held by OCERS). Those transfers are as follows:

2013	$ 5,000	2018	$ -
2014	5,000	2019	-
2015	-	2020	5,000
2016	-	2021	15,077
2017	-	2022	14,962

[2] Reduced by discount for prepaid contributions

[3] Covered payroll represents payroll on which contributions to the pension plan are based.

[4] Includes additional contributions made by employers towards the reduction of their UAAL.

[5] A $24,042 transfer from the Orange County Sanitation District Deferred UAAL Account, which was required to offset a UAAL increase for the assumption changes has been excluded from both these amounts.

[6] A $14,589 transfer from the Orange County Sanitation District Deferred UAAL Account which was required to offset a UAAL increase for the actuarial losses as of December 31, 2018 has been excluded from both of these amounts.

Actuarial Valuation Methods and Assumptions

The actuarial determined contribution rates in the schedule of employer contributions are calculated as of December 31. Rates are effective eighteen months after the valuation date for the fiscal year that begins July 1. The following actuarial methods and assumptions were used to calculate the actuarially determined contributions for the year ended December 31, 2022:

Valuation Date	Actuarially determined contribution rates for the first six months of calendar year 2022 or the second half of fiscal year 2021-2022 are calculated based on the December 31, 2019 valuation. Actuarially determined contribution rates for the last six months of calendar year 2022 or the first half of fiscal year 2022-2023 are calculated based on the December 31, 2020 valuation.
Actuarial Cost Method	Entry Age Actuarial Cost Method
Amortization Method	Level percent of payroll for total unfunded actuarial accrued liability
Remaining Amortization Period	Effective December 31, 2013, the outstanding balance of the UAAL from the December 31, 2012 valuation was combined and re-amortized over a declining 20-year period. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to 5 years.
Asset Valuation Method	The Actuarial Value of Assets is determined by recognizing any difference between the actual and the expected market return over a five-year period. The Valuation Value of Assets is the Actuarial Value of Assets reduced by the value of the non-valuation reserves.

Actuarial Assumptions:	
December 31, 2019 Valuation	
Investment Rate of Return	7.00% net of pension plan investment expense, including inflation
Inflation Rate	2.75%
Real Across-the-Board Salary Increase	0.50%
Projected Salary Increases	General: 4.25% to 12.25% and Safety: 4.75% to 17.25%, vary by service, including inflation
Cost of Living Adjustments (COLA)	Retiree COLA increases of 2.75% per year. For members that have COLA banks, it is assumed they receive 3.00% COLA increases until their COLA banks are exhausted and 2.75% thereafter.
Other Assumptions	Same as those used in the December 31, 2019 funding actuarial valuation
December 31, 2020 Valuation	
Investment Rate of Return	7.00% net of pension plan investment expense, including inflation
Inflation Rate	2.50%
Real Across-the-Board Salary Increase	0.50%
Projected Salary Increases	General: 4.00% to 11.00% and Safety: 4.60% to 15.00%, vary by service, including inflation
Cost of Living Adjustments (COLA)	Retiree COLA increases of 2.75% per year. For members that have COLA banks, it is assumed they receive 3.00% COLA increases until their COLA banks are exhausted and 2.75% thereafter
Other Assumptions	Same as those used in the December 31, 2020 funding actuarial valuation

Significant Factors Affecting Trends in Actuarial Information – Pension Plan

Changes in Benefit Terms

2021 • Superior Court of California, County of Orange adopted Plan U (2.5% at 67 PEPRA) on a go forward basis for all existing employees in Plan T and any future PEPRA eligible employees with an effective date of July 1, 2023. This enhancement resulted in a slight decrease to the employer and employee normal cost rates for Plan T and a slight increase to the employer and employee normal cost for Plan U as reported for Rate Group #2 in the original 12/31/2021 actuarial valuation.

2016 • New employees hired by the City of San Juan Capistrano on and after July 1, 2016 will be offered a choice in retirement plan formulas; the PEPRA Plan U (2.5% at 67 PEPRA – General) or the alternate plan formula, Plan W (1.62% at 65 PEPRA – General).

• Orange County Public Law Library was moved from Rate Group #3 into its own rate group, Rate Group #12.

2012 • With the exception of OCTA, members with membership date on or after January 1, 2013 will be placed in PEPRA tiers: Plan T (1.62% at 65 PEPRA – General); Plan U (2.5% at 67 PEPRA – General); or Plan V (2.7% at 57 PEPRA – Safety).

Significant Factors Affecting Trends in Actuarial Information – Pension Plan

(continued)

Changes in Assumptions

2020 • The inflation rate was reduced from 2.75% to 2.50% (retiree cost-of-living assumption maintained at 2.75%).

• Projected salary increases for general members of 4.25% to 12.25% changed to 4.00% to 11.00% and safety members changed from 4.75% to 17.25% to 4.60% to 15.00%.

• Mortality rate tables changed to Pub-2010 Amount Weighted Above-Median Mortality Table, projected generationally using two-dimensional MP-2019 scale, adjusted separately for healthy and disabled for both general and safety members.

• The cost impact of assumption changes to employers is $19 million.

2017 • The assumed rate of return was decreased from 7.25% to 7.00%.

• The inflation rate was decreased from 3.00% to 2.75%.

• Projected salary increases for general members of 4.25% to 13.50% changed to 4.25% to 12.25% and safety members changed from 5.00% to 17.50% to 4.75% to 17.25%.

• Mortality rate tables changed to a Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally using two-dimensional MP-2016 scale, adjusted separately for healthy and disabled for both general and safety members.

• Impact due to assumption changes to be phased-in over three years.

2014 • The inflation rate was reduced from 3.25% to 3.00%

• Total wage inflation and payroll growth was reduced from 3.75% to 3.50%.

• Inclusion of additional cash-out assumptions in developing basic member contribution rates in the legacy plans.

• Mortality rates for after service retirement were changed to reflect longer life expectancies for Safety members and shorter life expectancies for General members and longer life expectancies for both General and Safety members for after disability retirement. The cost impact to employer to be phased in over three years.

2013 • The outstanding balance of the December 31, 2012 UAAL was combined and re-amortized over a 20-year period.

2012 • The investment rate of return was decreased from 7.75% to 7.25%.

• The inflation rate was decreased from 3.50% to 3.25%.

• Projected salary increases for general members of 4.50% to 11.50% changed to 4.75% to 13.75% and safety members changed from 4.50% to 13.50% to 4.75% to 17.75%.

Section 2 - Financial

Other Supplementary Information

Southern CA

Photo Caption: Nature's canvas comes to life as the sun sets over the stunning Laguna Beach.

Retirement Benefits: Southern California with its mild and sunny climate, diverse communities, and range of cultural experiences offers excellent healthcare facilities, world-class attractions, and a variety of housing options, making it an attractive choice for retirees.

Schedule of Contributions

For the Year Ended December 31, 2022
(Dollars in Thousands)

	Employee	Employer
Pension Trust Fund Contributions		
County of Orange	$ 202,014	$ 572,012
Orange County Fire Authority	30,119	89,729[1]
Orange County Superior Court of California	14,961	41,375
Orange County Transportation Authority	11,226	33,081
City of San Juan Capistrano	718	2,139
Orange County Sanitation District	8,371	8,686
UCI Medical Center & Campus	-	3,223[2]
Orange County Employees Retirement System	1,141	3,614
Transportation Corridor Agencies	769	895
Cypress Recreation and Parks District	-	596[3]
Orange County Department of Education	-	367[2]
Orange County Cemetery District	191	285
Orange County Children & Families Commission	131	208
Orange County Local Agency Formation Commission	46	195
Orange County In-Home Supportive Services Public Authority	147	197
Orange County Public Law Library	165	128
Contributions Before Prepaid Discount	269,999	756,730
Prepaid Employer Contribution Discount	-	(37,039)
Total Pension Trust Fund Contributions	**269,999**	**719,691**
Health Care Fund - County Contributions	-	**41,889**
Health Care Fund - OCFA Contributions	-	**2,932**
Custodial Fund - OCTA Employer OPEB Contributions	-	**655**
Total Contributions	**$ 269,999**	**$ 765,167**

[1] Unfunded actuarial accrued liability payments were made for $11.8 million by the Orange County Fire Authority.

[2] Unfunded actuarial liability payments have been made in accordance with a separate 20-year level dollar payment schedule to include liabilities for employee benefits related to past service credit.

[3] This balance reflects the unfunded actuarial accrued liability obligation payment made in July 2022 to fund the obligations for the ongoing benefits owed to Cypress Recreation & Parks District's retired and disabled employees and their survivors and beneficiaries.

Schedule of Administrative Expenses

For the Year Ended December 31, 2022
(Dollars in Thousands)

Pension Trust Fund Administrative Expenses	
Expenses Subject to the Statutory Limit	
Personnel Services	
Employee Salaries and Benefits	$ 14,578
Board Members' Allowance	13
Total Personnel Services	14,591
Office Operating Expenses	
Depreciation/Amortization	2,626
Professional Services	2,179
General Office and Administrative Expenses	1,841
Rent/Leased Real Property	740
Total Office Operating Expenses	7,386
Total Expenses Subject to the Statutory Limit	21,977
Expenses Not Subject to the Statutory Limit	
Information Technology Professional Services	558
Information Technology Security Professional Services	123
Finance Professional Services	52
Actuarial Fees	339
Equipment / Software	497
Total Expenses Not Subject to the Statutory Limit	1,569
Total Pension Trust Fund Administrative Expenses	**23,546**
Health Care Fund - County Administrative Expenses	**23**
Health Care Fund - OCFA Administrative Expenses	**22**
Custodial Fund - OCTA Administrative Expenses	**23**
Total Administrative Expenses	**$ 23,614**

Schedule of Investment Expenses

For the Year Ended December 31, 2022
(Dollars in Thousands)

Investment Management Fees*		
Global Public Equity	$	15,287
Core Fixed Income		2,404
Credit		9,786
Real Assets		32,314
Private Equity		31,508
Risk Mitigation		19,186
Unique Strategies		1,049
Short-Term Investments		201
Total Investment Management Fees		**111,735**
Other Fund Expenses[1]		**31,823**
Other Investment Expenses		
Consulting/Research Fees		2,310
Investment Department Expenses		2,865
Legal Services		539
Custodian Services		580
Investment Service Providers		41
Total Other Investment Expenses		**6,335**
Security Lending Activity		
Security Lending Fees		204
Rebate Fees		3,408
Total Security Lending Activity		**3,612**
Custodial Fund - OCTA Investment Fees and Expenses		**3**
Total Investment Expenses	**$**	**153,508**

* Does not include undisclosed fees deducted at source.

[1] These costs include, but are not limited to, foreign income tax and other indirect flow-through investment expenses such as organizational expenses in limited partnership structures.

Schedule of Payments for Professional Services

For the Year Ended December 31, 2022
(Dollars in Thousands)

Type of Services*	
Professional Expenses Subject to the Statutory Limit	
Medical/Disability Services	$ 483
Information Technology Services	251
Legal Counsel	339
Other Consulting/Services	448
Operations Support Services	299
Audit Services	116
Other Legal Services	97
Human Resources Services	77
Finance Services	50
Information Security Services	19
Total Professional Expenses Subject to the Statutory Limit	**2,179**
Professional Expenses Not Subject to the Statutory Limit	
Consulting/Research Fees	2,310
Information Technology Consultants	558
Custodian Services	580
Investment Legal Services	539
Actuarial Services	339
Information Security Consultants	123
Finance Consultants	52
Investment Service Providers	41
Total Professional Expenses Not Subject to the Statutory Limit	**4,542**
Total Payments for Professional Expenses	**$ 6,721**

* Detail for fees paid to investment professionals is presented in the Investment Section.

Section 3 - Investments

North Central

Photo Caption: Crossing over the Mississippi River Backwater on the historic railroad trestle, a glimpse into the past of Wisconsin’s rich railroad history.

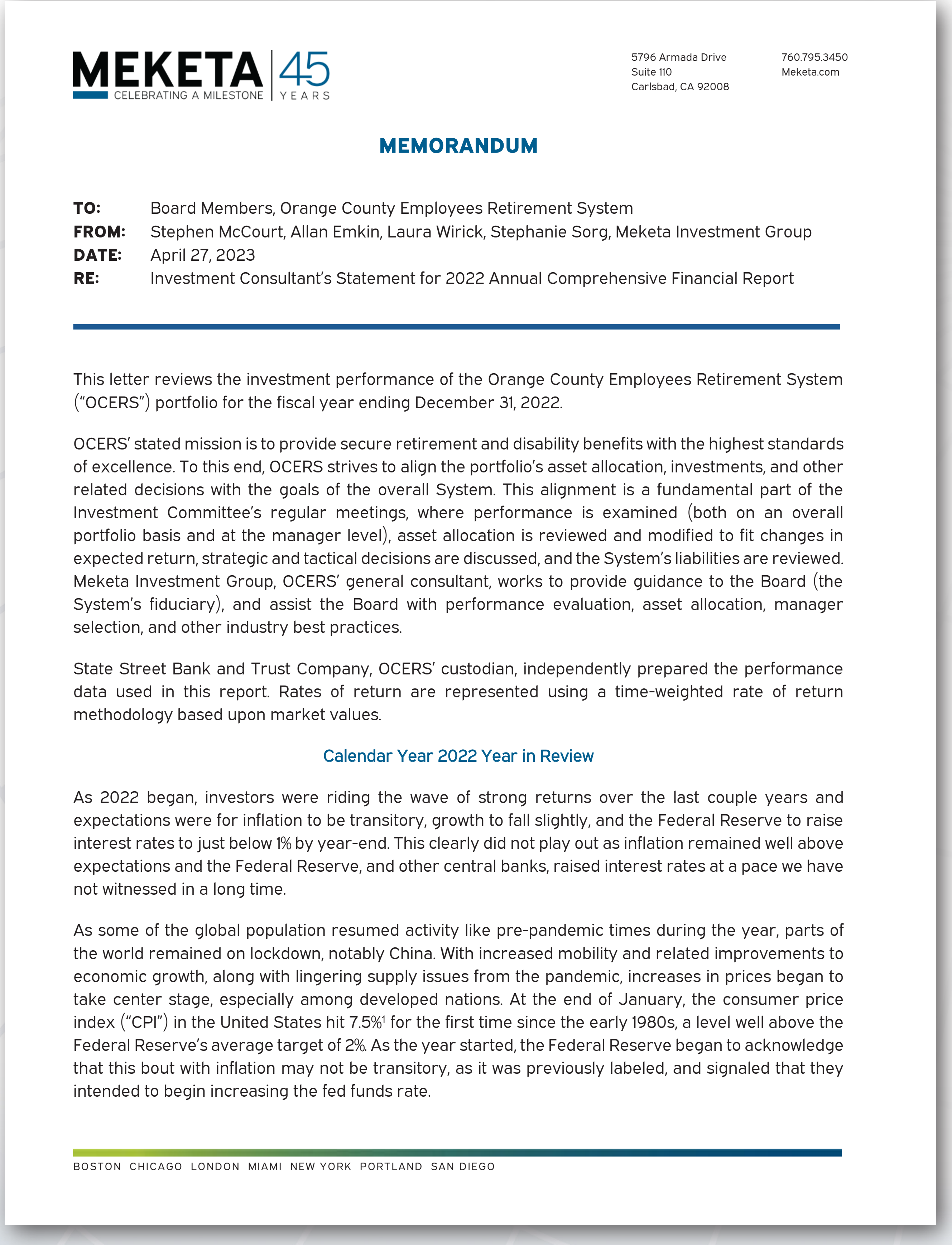
Retirement Benefits: The North Central region, with its lower cost of living than many other parts of the country, offers a unique blend of natural beauty and cultural offerings, making it an excellent choice for retirement.

Illinois	39
Iowa	17
Kansas	26
Michigan	29
Minnesota	19
Missouri	73
Nebraska	11
North Dakota	1
South Dakota	25
Wisconsin	38

Total Payees

278

Investment Consultant's Statement



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CELEBRATING A MILESTONE | YEARS

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MEMORANDUM

TO: Board Members, Orange County Employees Retirement System
FROM: Stephen McCourt, Allan Emkin, Laura Wirick, Stephanie Sorg, Meketa Investment Group
DATE: April 27, 2023
RE: Investment Consultant's Statement for 2022 Annual Comprehensive Financial Report

This letter reviews the investment performance of the Orange County Employees Retirement System ("OCERS") portfolio for the fiscal year ending December 31, 2022.

OCERS' stated mission is to provide secure retirement and disability benefits with the highest standards of excellence. To this end, OCERS strives to align the portfolio's asset allocation, investments, and other related decisions with the goals of the overall System. This alignment is a fundamental part of the Investment Committee's regular meetings, where performance is examined (both on an overall portfolio basis and at the manager level), asset allocation is reviewed and modified to fit changes in expected return, strategic and tactical decisions are discussed, and the System's liabilities are reviewed. Meketa Investment Group, OCERS' general consultant, works to provide guidance to the Board (the System's fiduciary), and assist the Board with performance evaluation, asset allocation, manager selection, and other industry best practices.

State Street Bank and Trust Company, OCERS' custodian, independently prepared the performance data used in this report. Rates of return are represented using a time-weighted rate of return methodology based upon market values.

Calendar Year 2022 Year in Review

As 2022 began, investors were riding the wave of strong returns over the last couple years and expectations were for inflation to be transitory, growth to fall slightly, and the Federal Reserve to raise interest rates to just below 1% by year-end. This clearly did not play out as inflation remained well above expectations and the Federal Reserve, and other central banks, raised interest rates at a pace we have not witnessed in a long time.

As some of the global population resumed activity like pre-pandemic times during the year, parts of the world remained on lockdown, notably China. With increased mobility and related improvements to economic growth, along with lingering supply issues from the pandemic, increases in prices began to take center stage, especially among developed nations. At the end of January, the consumer price index ("CPI") in the United States hit 7.5%[1] for the first time since the early 1980s, a level well above the Federal Reserve's average target of 2%. As the year started, the Federal Reserve began to acknowledge that this bout with inflation may not be transitory, as it was previously labeled, and signaled that they intended to begin increasing the fed funds rate.

The unemployment rate remained elevated at the start of the year too at 6.7% but continued to improve over the first quarter declining to 6.1%[2] despite the Omicron variant. Average hourly earnings continued to rise during the quarter, reaching the 2022 peak of 5.9%[2] by quarter-end, a level still below inflation. The labor force participation rate remained below pre-pandemic levels as many workers stayed on the sidelines. This contributed to there being many more job openings than applicants, a trend that would continue for all of calendar year 2022.

In late February, Russia invaded Ukraine and the west responded with sweeping sanctions that exceeded market expectations. Restricting access to foreign reserves was key, leading Russia's central bank to dramatically increase interest rates (9.5% to 20%[3]) to try to protect the currency. Because of rising rates in the US, as well as safe-haven flows, the US dollar strengthened at the start of the year versus other currencies. This is a trend that would continue throughout the year. Concerns that inflation may remain higher for longer had been compounded by the tragic conflict in Ukraine. The war specifically weighed on energy and food prices.

As the first calendar quarter of the year ended, market volatility increased, driven by unrelenting inflation, expectations for policy to tighten much faster than previously expected, and Russia's invasion of Ukraine as well as its potential financial consequences for the global economy.

As a result, all major public market asset classes declined in the three months ending March, except for commodities. US equities (Russell 3000: -5.3%[3]) had similar declines compared to equities outside the US (MSCI ACWI ex. US: -5.4%[3]). Value stocks significantly outperformed growth stocks, and investors preferred companies presumably better able to weather the tightening financial conditions. An increase in inflation expectations, and the pricing in of higher policy rates, proved to be a challenging headwind for nearly all bond indices in the first calendar quarter of 2022, with only 3-month Treasury Bills providing positive returns. The broad US bond market (Bloomberg Aggregate) fell an impressive 5.9%[3] just in the first quarter.

The Federal Reserve started its rate increases with 50 basis point hikes in March and May. At the June 8, 2022, meeting, Federal Reserve policy makers increased rates by a surprising 75 basis points versus the 50 basis points expected. Shortly following this meeting in June, CPI was released showing that prices had increased to a multi-decade high of 9.1%[4], again above expectations. This surprised markets and put into question the idea that inflation was peaking, as well as accelerated investor expectations for the pace of the Fed tightening policy. High inflation levels and potentially rapidly rising rates also elevated concerns about the US economy, and others, heading into a recession.

The US bond market (Bloomberg Aggregate) had its worst first half of a calendar year on record (-10.3%[3]) while the US equity market (S&P 500) had its 3rd worst first half of a year (-20.0%[3]). For historical perspective, this was the only start to a year where both indices were in top ten lists for negative performance. The decline in the S&P 500 through June 2022 also brought the index into bear market territory.

April 27, 2023

In Europe, the war in Ukraine, high inflation, slow growth, and a reliance on energy imports all weighed on markets. However, the European Central Bank had not yet begun to increase rates. Similarly, Japan seemed committed to their monetary policy of low rates, leading to weakness in the yen not seen since 1998. The MSCI EAFE index declined by 19.6%[3] through the first half of 2022. The strength of the US dollar played a significant role in the decline for US investors, with the index declining only 11.3% in local terms (much less than domestic equities). China had begun to relax COVID-Zero policies around the middle of the year leading to positive results (+3.4%[3]) for the MSCI China index in the second quarter. The gains contributed to the MSCI Emerging Markets index (-17.6%[3]) outpacing developed markets in the first six months of 2022.

The second half of calendar year 2022 started off with strong performance across global markets, especially in the US. Investors' optimism at the time was driven by a decline in inflation measures, as the CPI ticked down from 9.1% to 8.5% and came in below expectations[3]. This led to longer-dated yields falling as investors reconsidered economic growth prospects and the likelihood that yields had reached their peak for this economic cycle. Shorter dated yields rose on near-term monetary policy actions and messaging that policy officials intended to remain aggressive in fighting inflation pressures into early 2023. This messaging effectively started tightening financial conditions that had been loosening since the end of April.

It was also at the start of July when we first saw an inversion in the US yield curve. The yield spread between two-year and ten-year Treasuries, finished July at -0.23%[3]. Inversions in the yield curve have historically signaled building recessionary pressures.

The Federal Reserve raised interest rates by an additional 75 basis points[3] in July and again by the same amount in September. The European Central Bank also notably started increasing rates, moving off 0%. They increased rates by 50 basis points in July followed by a surprise 75 basis point increase in September.

Federal Reserve messaging about policy going forward, combined with outsized interest rate hikes due to the slow rate of decline in inflation and a strong labor market resulted in significant equity market declines in both August and September 2022. The September CPI release showed prices that increased 8.2% over the trailing twelve months, which was lower than the peak of 9.1% but still above the pace of market expectations at the time. The US bond market (Bloomberg Aggregate) continued its decline through the third quarter (-14.6%[3]) as did the US Equity Market (Russell 3000), which returned -24.6% year-to-date through September.

The last calendar quarter of 2022 started very strong for developed market equities, on returned signs that inflation may be peaking, monetary policy tightening may relatedly slow, and hopes for a soft-landing of major economies. However, as the quarter progressed, results were mixed by month and region as the world received mixed signals on inflation. Overall, US equities finished the fourth quarter up (Russell 3000: +7.2%[3]), while equities outside the US (MSCI ACWI ex. US: +14.3%) increased even more versus stocks in the US. The US bond market also finished the calendar quarter in positive territory (Bloomberg Aggregate: +1.9%).

April 27, 2023

Inflation, as measured by CPI, declined to 6.5% by the end of the year. While progress had been made since the 2022 peak of 9.1%, there was still much work to be done to bring the pace of price increases down to the Federal Reserve's preferred range. Except for Japan, inflation impacted the rest of the developed world as well. Inflation in the Eurozone ended the year at 9.2%, down from a peak of 10.6%[3]. Similarly, inflation in the UK ended the year at 9.2%, down from a peak of 9.6%[5].

The US labor market remained extraordinarily strong throughout 2022, with the unemployment rate declining to 3.5% at the end of the year from a starting point of 3.9%[3]. The labor force participation rate remained slightly above 62% for most of 2022. This is an increase from the lows of the pandemic but still below the 63.4%[2] level from before the pandemic. Average hourly earnings declined at the backend of 2022 after peaking at 5.9% in March, finishing the year at 4.8%. The strength of the labor market in the US contributed to the Federal Reserve's continued hawkish stance. In Europe and Japan, increases in unemployment were less during the pandemic compared to the US but also improved.

Economic growth in the US rebounded in the second half of 2022 after declining, respectively, at annualized rates of 1.6% and 0.6% in the first and second quarters. The GDP release for the third calendar quarter of 2022 came in at an annualized rate of 3.2%[6], and the most recent fourth quarter growth rate was 2.7%[6], resulting in full calendar year 2022 GDP growth of 2.1%[6]. Outside the US, the Euro area economy grew 3.5%[7], the UK at 4.1%[5], and Japan at 1.7%[8] over calendar year 2022. Looking forward, growth is expected to slow in 2023 with many forecasts being downgraded given inflation dynamics and expectations for policy. This upcoming year we will likely see how successful central banks are in reducing inflation while trying to not tip their respective economy into recession. Beyond 2023, growth is expected to return to pre-pandemic levels.

Over the full year, US stocks outperformed emerging markets but underperformed developed markets outside the US. The Russell 3000 returned -19.2%[3] for the year, compared to the MSCI EAFE at -14.5%[3], and a decline of -20.1%[3] for the MSCI Emerging Markets index. Though the MSCI China index had strong performance in the fourth quarter (+13.5%[3]) on reopening optimism, the full year return was -21.9%[3]. Within fixed income, the inflation adjustment helped TIPS' full year relative results as the Bloomberg TIPS index decreased 11.8%[3] over the full year, while the Bloomberg Aggregate index declined by -13.0%[3]. Riskier bonds declined overall too in 2022, but less than high quality bonds. The Bloomberg High Yield index fell 11.2% in 2022.

2023 Outlook

Looking ahead, markets could remain volatile in 2023 due to persistent concerns over inflation, uncertainty related to the path of monetary policy, the potential for a recession, and geopolitical issues. Recent issues in the banking sector have created further complications. Beyond these issues, more attractive equity valuations, coupled with higher fixed income yields, should increase expected returns over the long-term. That said, there are several uncertainties that could guide markets, both positively and negatively, in 2023. These include:

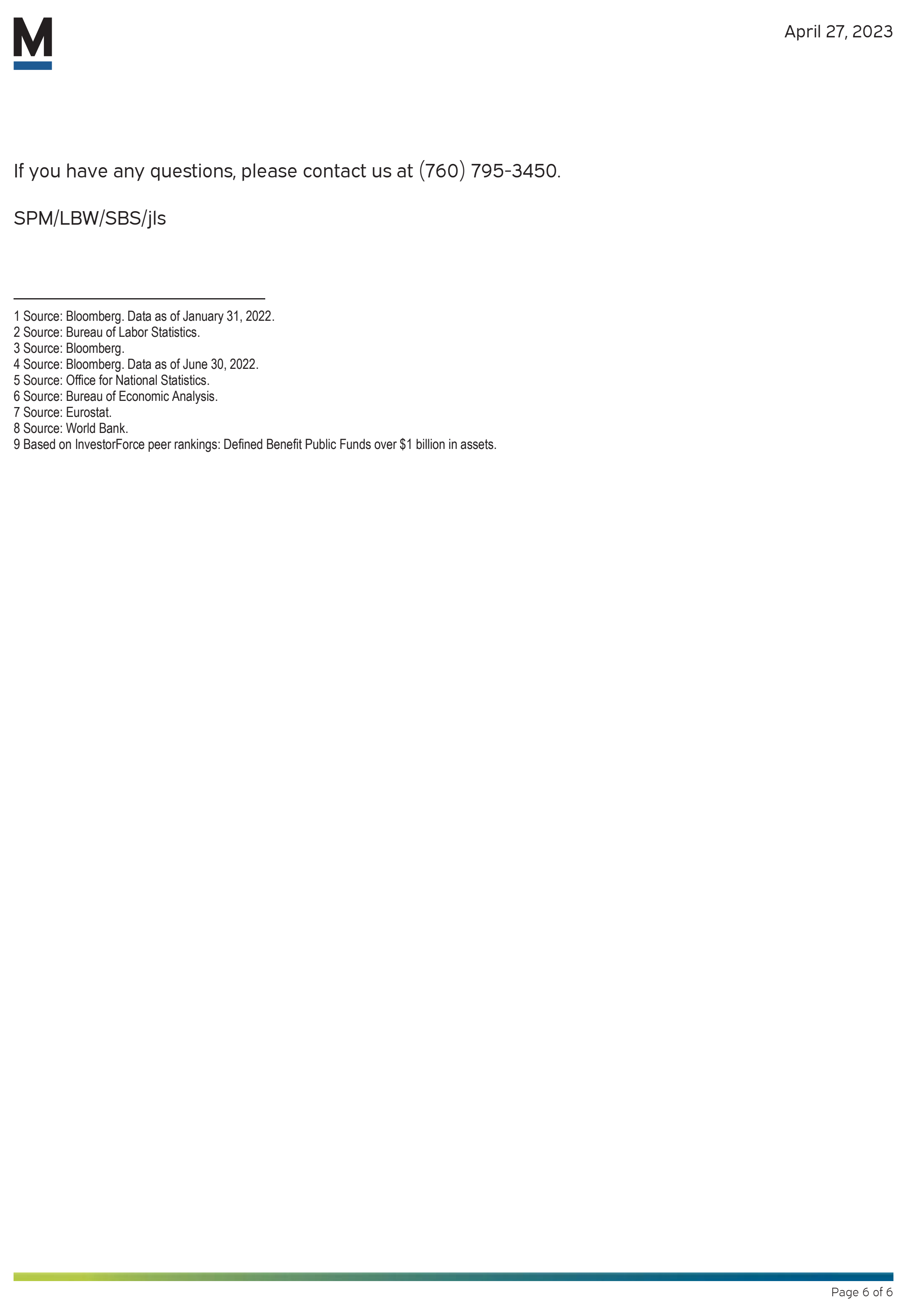
April 27, 2023

- → The Federal Reserve and other Central Banks find that the tools they have to fight inflation may be too blunt to reduce it without sending economies into a recession.
  - Among developed markets, the Federal Reserve's pace of increasing interest rates and reducing its balance sheet puts the US at the front of the inflation fighting efforts.
  - The ECB has been more cautious and the Bank of Japan apparently reluctant to tighten policy causing noteworthy interest rate differentials between the US and other developed markets. This may widen further as Fed messaging has signaled higher rates for a longer period.
  - Questions remain about the track of policy going forward with the recent issues in the banking sector creating challenges for central banks to balance financial stability with continuing to fight inflation.
- → US – unemployment and recession.
  - Headline unemployment numbers are still at or near historical lows and usually there needs to be some uptick in jobless numbers for a recession to occur.
  - An increase in the labor force participation rate could help alleviate some of the issues with the tight labor market and associated wage increases.
  - The Federal Reserve has referenced the tight labor market as one of the reasons that their preferred, core inflation measure has remained stubbornly elevated.
- → China – reopening & implications for global supply chains.
  - China waited longer than any other country to reduce or remove COVID-related restrictions on mobility. They have since reopened their economy, which could affect global growth and inflation, both positively and negatively.
  - As the second largest economy, a successful reopening could help to ignite global growth just as some developed economies are slowing. This also has the possibility to increase energy demand and pricing, leading to upward pressures on global price increases.
  - A successful reopening could also help to alleviate any remaining pressures on supply chains, as China remains an important center of manufacturing and trade.

OCERS 2022 Performance

OCERS' portfolio returned -7.8% in 2022, compared to the Policy Index's trailing 12-month return of -9.0%. The portfolio return ranked in the top 15% of the Public Defined Benefit > $1 Billion peer universe. Real Assets had the strongest absolute performance of all asset classes, returning 18.7%, while the Emerging Market Equity asset class had the weakest 2022 performance of -25.1%, driven by economic weakness and the zero COVID policy in China.

Over the trailing three- and five-year periods, the OCERS portfolio returned 6.2% and 6.1% on average annually. For the trailing three years, OCERS ranked in the 17th percentile compared to peers[9], and over the trailing five years, ranked in the 28th percentile.



April 27, 2023

If you have any questions, please contact us at (760) 795-3450.

SPM/LBW/SBS/jls

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1 Source: Bloomberg. Data as of January 31, 2022.
2 Source: Bureau of Labor Statistics.
3 Source: Bloomberg.
4 Source: Bloomberg. Data as of June 30, 2022.
5 Source: Office for National Statistics.
6 Source: Bureau of Economic Analysis.
7 Source: Eurostat.
8 Source: World Bank.
9 Based on InvestorForce peer rankings: Defined Benefit Public Funds over $1 billion in assets.

Investment Returns

The table below details the annualized rates of return for the different asset categories over various time periods ended December 31, 2022. The returns for each asset class represent the composite returns of all the manager portfolios within the asset class. All returns are net of fees, which is a change from the reporting in prior years when only indirect or at source fees were deducted from the returns being presented. The method of computation of investment returns is time-weighted approximation.

	1 Year	3 Year	5 Year
Global Public Equity (%)	-18.53	4.57	5.34
MSCI ACWI IMI (1) (%)	*-18.40*	*3.89*	*5.12*
Private Equity (%)	0.56	20.60	17.90
Cambridge Private Equity Lagged (%)	*2.52*	*19.77*	*17.09*
Core Fixed Income (%)	-10.54	-0.70	1.23
Fixed Income Custom Index (2) (%)	*-11.20*	*-1.19*	*0.91*
Credit (%)	-5.59	1.19	2.17
Credit Custom Index (3) (%)	*-9.43*	*-1.07*	*1.30*
Real Assets (%)	18.70	9.93	7.49
Real Assets Custom Index (4) (%)	*10.98*	*8.42*	*6.85*
Risk Mitigation (%)	7.02	4.78	5.45
Risk Mitigation Custom Index (5) (%)	*-0.24*	*2.65*	*2.91*
Unique Strategies (%)	0.77	N/A	N/A
Short Term Investments (%)	*1.63*	*0.71*	*1.33*
Cash Overlay (%)	-18.80	0.48	1.59
91-day Treasury Bill (%)	*1.46*	*0.72*	*1.26*
Total Fund (%)	**-7.84**	**6.16**	**6.12**
Composite Policy Benchmark [6] (%)	***-9.02***	***5.54***	***5.86***

[1] 100% MSCI AC World Net USD Index through 12/31/2018, 100% MSCI ACWI IMI Net Index thereafter

[2] Fixed Income Custom Index = 100% Bloomberg Capital Universal Index through 12/31/2017, 60% Bloomberg U.S. Aggregate Index + 20% Bloomberg U.S. Universal Index + 20% Bloomberg U.S. TIPS Index through 6/30/2020, 18% Bloomberg U.S. TIPS Index + 82% Bloomberg U.S. Universal Index thereafter

[3] Credit Custom Index = 50% Merrill Lynch High Yield Constrained Index + 50% Credit Suisse Levered Loan Index through 12/31/2017, 40% Bloomberg U.S. High Yield Index + 40% Credit Suisse Levered Loan Index + 13% JPMorgan GBI-EM Global Diversified Un-hedged Index + 7% JPMorgan EM Bond Index through 6/30/2020, 35% Bloomberg U.S. High Yield Index + 21.6% Credit Suisse Levered Loan Index + 14.4% Credit Suisse Western European Levered Loan Index +14.5% JPMorgan GBI-EM Global Diversified Un-hedged Index + 14.5% JPMorgan EM Bond Index through 12/31/20, 35% Bloomberg U.S. High Yield Index + 22% Credit Suisse Levered Loan Index + 14% Credit Suisse Western European Levered Loan Index +14.5% JPMorgan GBI-EM Global Diversified Un-hedged Index + 14.5% JPMorgan EM Bond Index thereafter

[4] Real Assets Custom Index = 45% NCREIF ODCE Index + 36% Cambridge Private Equity Energy Lagged + 13% Cambridge Infrastructure Index + 6% NCREIF Farmland Index through 6/30/2020, 58% NCREIF ODCE Index + 17% Cambridge Private Equity Energy Lagged + 25% Cambridge Infrastructure Index thereafter

[5] Risk Mitigation Custom Index = 50% HFRI Macro: Systematic Diversified CTA + 50% Bloomberg Long Term U.S. Treasury Index through 9/30/2019, 33.33% Bloomberg Long Term U.S. Treasury Index + 33.33% HFRI Macro: Systematic Diversified CTA + 33.33% SG Trend Index through 12/31/2019, 25% Bloomberg Long Term U.S. Treasury Index + 25% HFRI Macro: Systematic Diversified CTA + 25% SG Trend Index + 25% SG Multi Alternative Risk Premia through 6/30/2020, 25% Bloomberg Long Term U.S. Treasury Index + 25% HFRI Macro Total Index + 25% SG Trend Index + 25% SG Multi Alternative Risk Premia thereafter

[6] Policy Benchmark = 48% MSCI ACWI IMI Index[1] + 15% Cambridge Private Equity 1-Quarter Lag Index + 11% Fixed Income Custom Index[2] + 7% Credit Custom Index[3] + 10% Real Assets Custom Index[4] + 9% Risk Mitigation Custom Index[5]

N/A - Represents new investment category and custom index; data not available.

Statement of Investment Objectives and Policies

General

The primary goal of the Orange County Employees Retirement System's investment program is to provide Plan participants with retirement benefits as required by the County Employees Retirement Law of 1937. This goal is accomplished through Employers' and Plan participants' contributions and the implementation of a carefully planned and monitored long-term investment program. The Board of Retirement (with the participation of the Investment Committee, staff and advisors) has exclusive control of all investments of the Plan and is responsible for the establishment of investment objectives, strategies and policies.

The Board of Retirement is authorized to invest in any form or type of investment deemed prudent in the informed opinion of the Board. The Investment Committee has adopted an Investment Policy Statement that provides a frame work for the management of OCERS' investments. This purpose of the Investment Policy Statement is to assist the Investment Committee in effectively supervising, monitoring, and evaluating the investment of the System's assets.

Investment Objectives

OCERS' goal is to meet the promised retirement benefits due its members. OCERS invests the assets of the system solely for the benefit of plan participants and beneficiaries while minimizing employer contributions and investment and administration costs. The long-term performance objective for the portfolio is to exceed the actuarially assumed rate of return net of fees and expenses, with a secondary objective of exceeding the return on an appropriate designated benchmark over a complete economic cycle and relevant longer periods, also net of fees and expenses.

Strategic Asset Allocation Policy and Maintenance

A pension fund's strategic asset allocation policy, implemented in a consistent and timely manner, is generally recognized to have the most impact on a fund's investment performance. The asset allocation policy determines a fund's optimal long-term asset class mix (target allocation). This policy is expected to achieve a specific set of investment goals, such as risk and return objectives. The policy also established ranges for the targeted levels around which asset levels are permitted to fluctuate. Fluctuations outside the permitted range act as triggers for reallocating assets to ensure adherence to targeted weights.

Program Administration and Manager Structure

For each major asset class, the System shall diversify assets by employing managers with demonstrated skill in their particular areas of expertise. The System will retain managers who utilize varied investment approaches and allocate assets in a manner that is consistent with the overall investment plan. For example, the sum of all domestic equity managers should exhibit characteristics that are similar, but not necessarily identical, to the overall equity market. When asset fluctuation causes the asset class to exhibit characteristics that are dissimilar from the plan, Investment Team shall direct cash flows to or from the various managers so that actual characteristics are consistent with the plan.

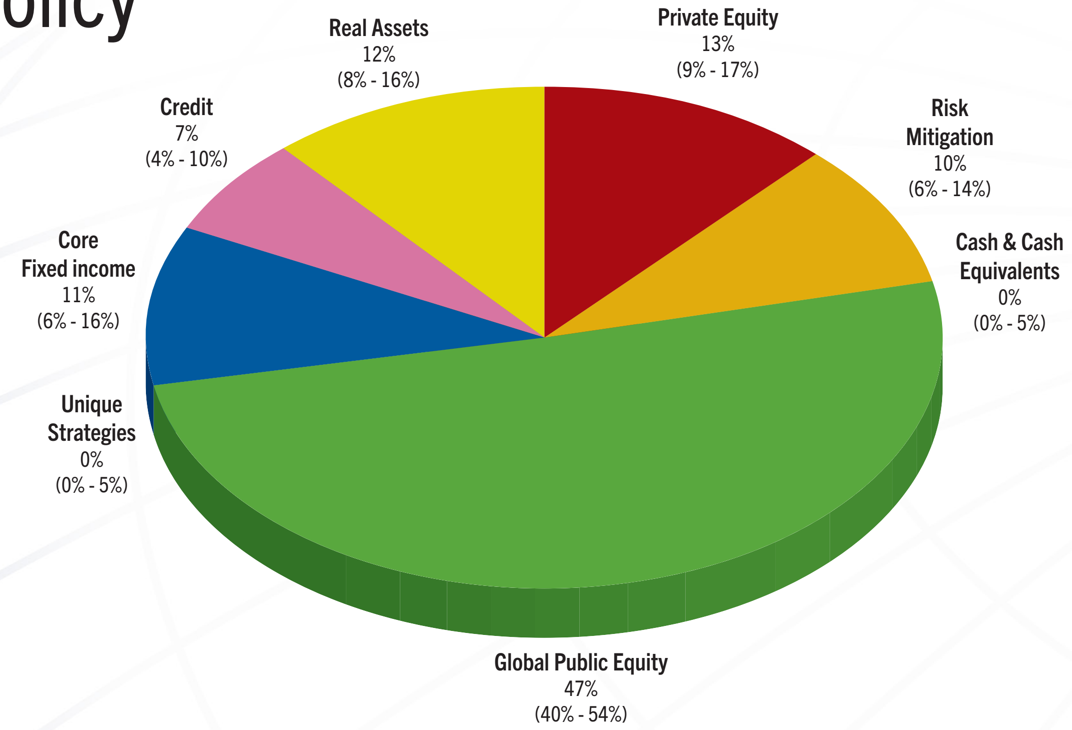
Use of Proxies

OCERS utilizes the services of Institutional Shareholder Services (ISS) to vote public equity proxies on OCERS' behalf. ISS is solely responsible for voting all proxies for securities, consistent with the ISS Benchmark Policy, as approved by the Investment Committee. If the ISS Benchmark Policy does not contain recommended voting guidelines for the subject of the proxy vote, ISS will contact OCERS for guidance prior to casting the vote to ensure proxy votes are in accordance with OCERS' guidelines to protect and enhance returns on behalf of plan participants.

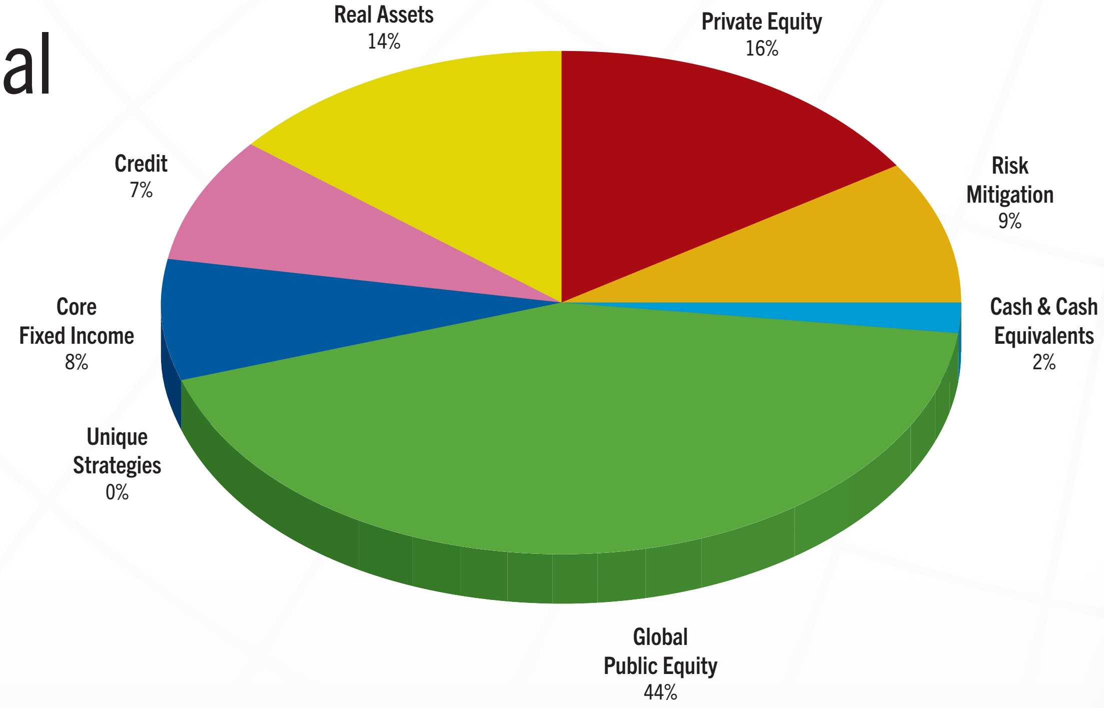
Asset Diversification

December 31, 2022

Policy

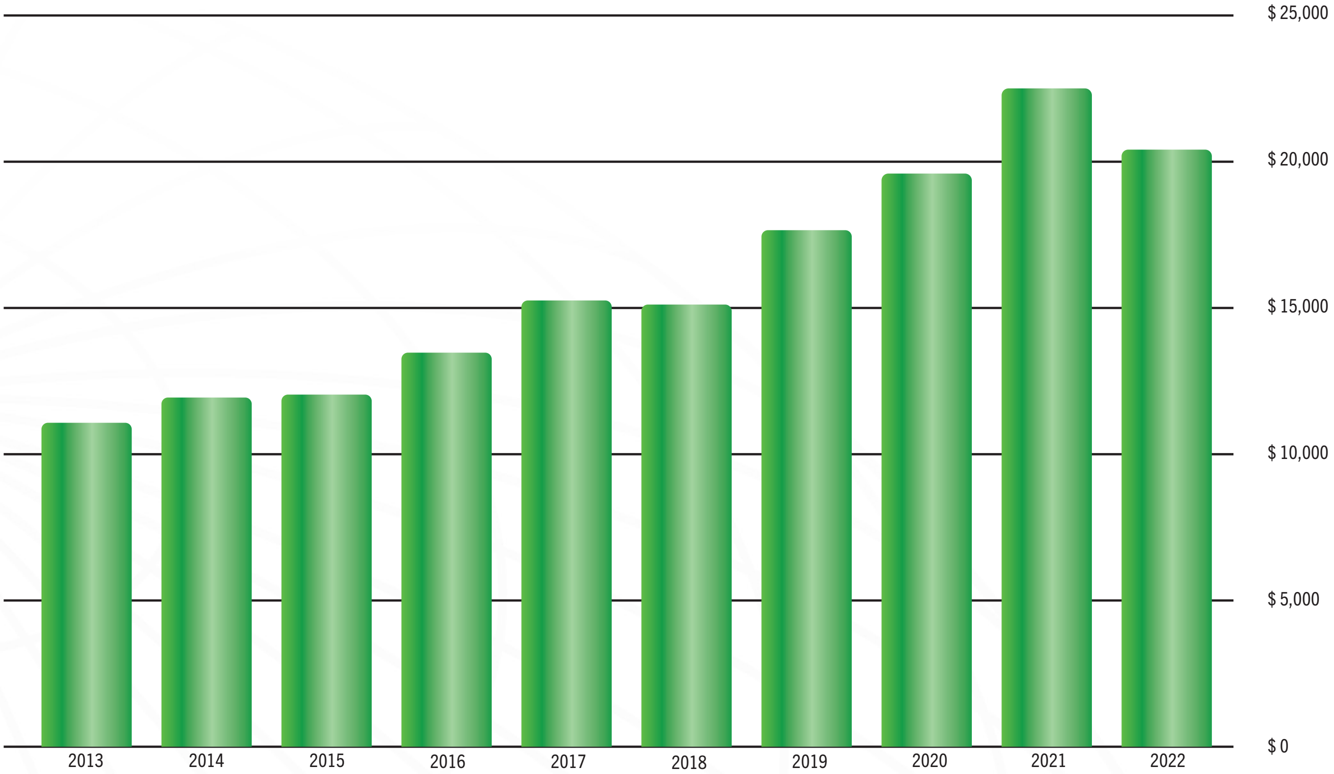


Actual



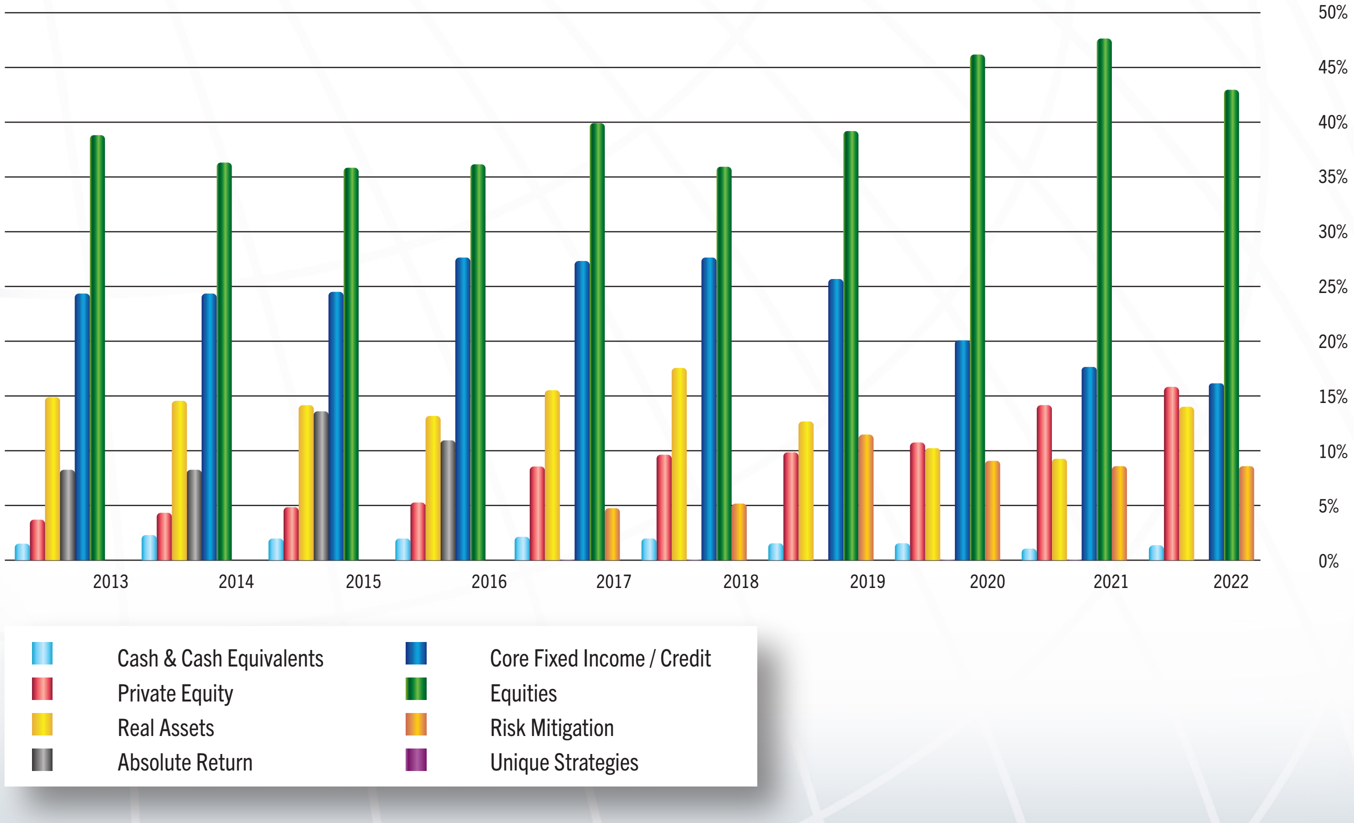
Growth of System Net Investments at Fair Value

For the Ten Years Ended December 31, 2022
(in Millions of Dollars)



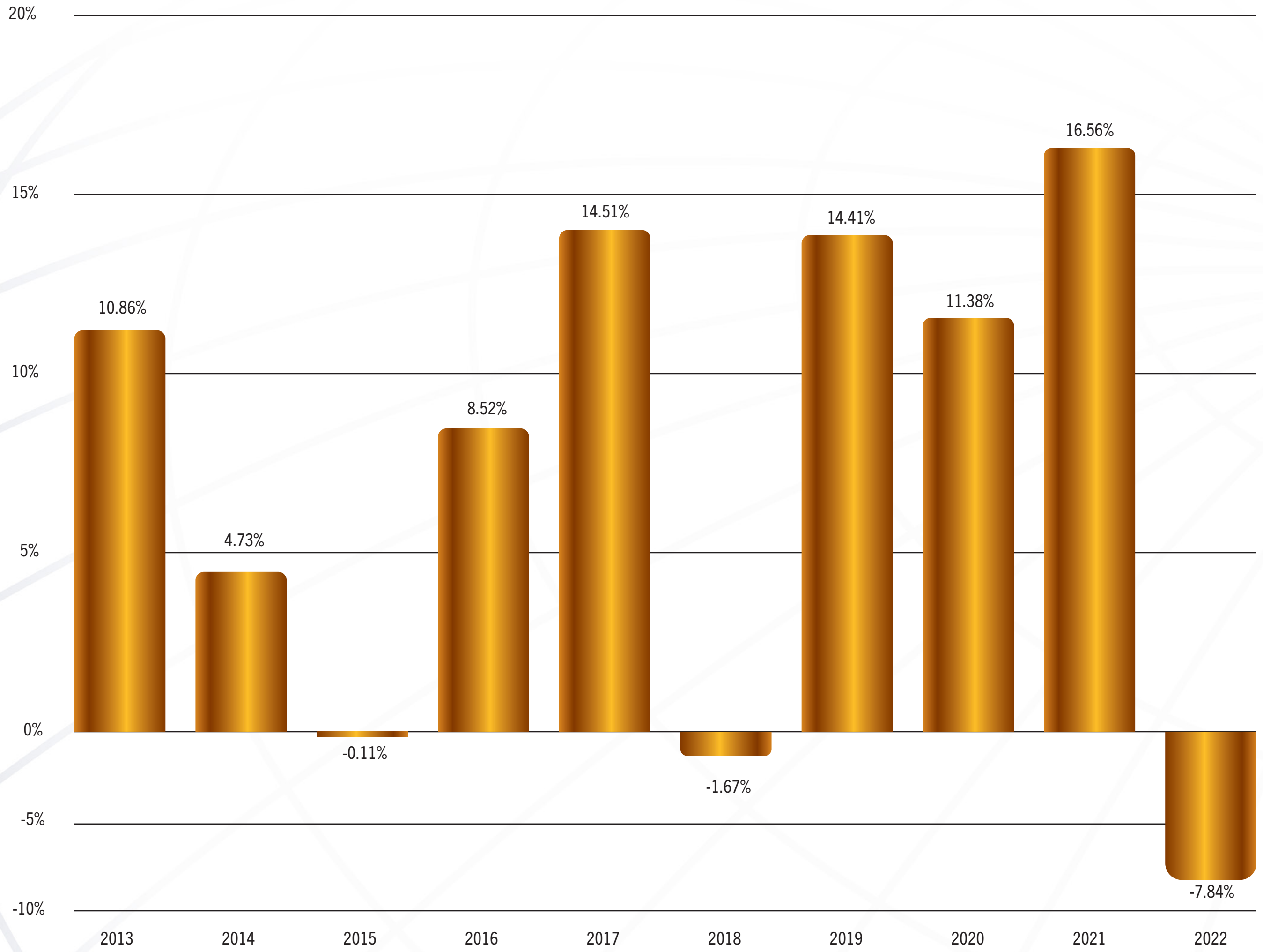
Historical Asset Allocation

December 2013 - December 2022
(Actual)



History of Performance - Net

December 2013 - December 2022
(Actual)



As of 2016, all History of Performance rates of returns have been recalculated from the prior years' reporting to report net of all fees. In prior years, the rates of returns in the above schedule included indirect or at source fees, but excluded other direct fees.

Schedule of Commissions

For the Year Ended December 31, 2022
(Amounts in Thousands)

Broker Name	Number of Shares Traded	Commission per Share (in cents)	Total Commission
Bank of America Securities, Inc.	636	2.36	$ 15
BNP Paribas Securities	5,969	0.15	9
Citigroup Global Markets, Inc.	1,543	0.91	14
Credit Lyonnais Securities	1,415	0.42	6
Credit Suisse	5,997	0.27	16
CSFB Ltd.	1,067	0.19	2
Exane S.A.	542	0.55	3
Goldman Sachs	12,489	0.39	49
Instinet	3,014	0.66	20
J.P. Morgan Securities	8,170	0.34	28
Jefferies	2,119	1.32	28
Liquidnet	1,491	1.27	19
MacQuarie	1,357	0.37	5
Merrill Lynch	9,317	0.21	20
Morgan Stanley & Company, Inc.	7,458	0.34	25
Pershing	1,653	1.81	30
UBS	11,009	0.20	22
Virtu	1,967	1.07	21
Other*	6,930	1.70	118
Total	84,143	0.53	$ 450

* Other includes 93 additional firms that comprise approximately 26% of total commissions and approximately 8% of the total number of shares traded. The average commission per share is 1.70 cents.

Commission Recapture Program

OCERS implemented a direct brokerage program where investment managers can trade with specific brokerage firms for the purpose of reducing trading commissions. The brokerage firms utilized for these services are Abel Noser, Capital Institutional Services, Cowen Execution Services Limited, and State Street Bank.

Schedule of Investment Expenses and Investment Summary

For the Year Ended December 31, 2022
(Dollars in Thousands)

Type of Investment Expenses	Assets Under Management at Fair Value	Percentage	Fees
Investment Management Fees*			
Investments at Fair Value:			
Global Public Equity	$ 8,828,613	44%	$ 15,287
Core Fixed Income	1,639,761	8%	2,404
Credit	1,750,047	9%	9,786
Real Assets	2,907,077	14%	32,314
Private Equity	3,301,871	16%	31,508
Risk Mitigation	1,757,155	9%	19,186
Unique Strategies	74,365	0%	1,049
Total Investments at Fair Value	**20,258,889**		**111,534**
Short-Term Investments[1]	49,758	0%	201
Total Investment Management Fees	**$ 20,308,647**	**100%**	**111,735**
Other Fund Expenses[2]			**31,823**
Other Investment Expenses			
Consulting/Research Fees			2,310
Investment Department Expenses			2,865
Legal Services			539
Custodian Services			580
Investment Service Providers			41
Total Other Investment Expenses			**6,335**
Securities Lending Activity			
Securities Lending Fees			204
Rebate Fees			3,408
Total Securities Lending Activity			**3,612**
Custodial Fund - OCTA Investment Fees and Expenses			**3**
Total Investment Expenses			**$ 153,508**

* Does not include undisclosed fees deducted at source.

[1] Short-Term Investments are categorized as Cash and Cash Equivalents in the Statement of Fiduciary Net Position.

[2] These costs include, but are not limited to, foreign income tax and other indirect flow-through investment expenses such as organizational expenses in limited partnership structures.

Schedule of Largest Equity Holdings

(by Fair Value)[1, 2]

As of December 31, 2022
(Amounts in Thousands)

Common Stock	Shares	Fair Value
ASML HOLDING NV	23	$ 12,177
NOVO NORDISK A/S B	82	11,036
TOTALENERGIES SE	152	9,490
EVOLUTION AB	94	9,176
LVMH MOET HENNESSY LOUIS VUI	12	8,868
GENMAB A/S	21	8,849
FIRST CITIZENS BCSHS CL A	11	8,626
VIPER ENERGY PARTNERS LP	262	8,337
ASTRAZENECA PLC	55	7,441
BRITISH AMERICAN TOBACCO PLC	183	7,226

Schedule of Largest Fixed Income Holdings

(by Fair Value)[1]

As of December 31, 2022
(Amounts in Thousands)

Asset	CPN/ Maturity	Fair Value
SWU01H7M4 IRS USD R F 1.27000	1.3% / 11-04-2023	$ 33,022
FNMA TBA 30 YR 2.5	2.5% / 02-13-2053	27,451
US TREASURY N/B	3.4% / 08-15-2042	24,789
US TREASURY N/B	3.2% / 08-31-2024	19,969
US TREASURY N/B	3.0% / 08-15-2052	17,189
US TREASURY N/B	1.4% / 12-31-2028	16,918
JAPAN TREASURY DISC BILL	0.0% / 01-23-2023	16,675
SWPC0LB90 CDS USD R F 1.00000	1.0% / 12-20-2027	15,523
FNMA TBA 30 YR 3.5	3.5% / 02-13-2053	14,721
US TREASURY N/B	1.2% / 12-15-2023	13,899

[1] A complete list of portfolio holdings is available for review at the OCERS' office.

[2] The holding schedules pertain to holdings of individual securities; they do not reflect OCERS' investments in commingled funds.

List of Investment Managers

As of December 31, 2022

Cash Overlay
Parametric

Core Fixed Income
BlackRock Institutional Trust Company
Dodge & Cox
Longfellow Investment Management Co., LLC
Pacific Investment Management Company
Schroder Investment Management

Credit
Alcentra
Arcmont Asset Management
Ashmore Investment Advisors
Beach Point Capital Management
BlackRock Institutional Trust Company
Blue Owl Capital
Crayhill
Crescent Capital Group
Cross Ocean Partners
CarVal Investors
Hayfin Capital Management
Loomis, Sayles & Company, L.P.
Monroe Capital
NXT Capital
OCP Asia
Pathlight Capital
Pacific Investment Management Company
Pharo Management
Silver Rock Financial
Strategic Value Partners
Wellington Trust Company, NA

Global Public Equity
Acadian Asset Management
AQR Capital Management, LLC
Artisan Partners
BlackRock Institutional Trust Company
Capital Group
City of London
Eagle Asset Management
Fidelity Institutional Asset Management
GQG Partners
Harris Associates
Systematic Financial Management
William Blair & Co.

Private Equity
Abbott Capital
Accel-KKR
Adams Street Partners, LLC.
Advent International Corporation
Alcentra
Altaris Partners
Altor Fund Manager AB
Archimed Group
Battery Ventures
CBC Group
Cinven
Clearlake Capital Partners
DBL Partners
EQT
FSN Capital
General Catalyst
Genstar Capital
GGV Capital
Greenoaks Capital Partners
H.I.G. Capital
HarbourVest Partners, LLC
Harvest Partners
HealthQuest Capital Management
Hellman & Friedman Capital Partners
Hg
Insight Partners
Mayfield
Mesirow Financial
Monroe Capital
NEA
Oak HC/FT
One Rock Capital Partners
OCP Asia
Orchid Asia Group
Pantheon Ventures
Park Square Capital
Spark Capital
Stellex Capital Partners
Stone Point Capital
Thoma Bravo, LLC
Vista Equity Partners
Vitruvian Partners
WestCap

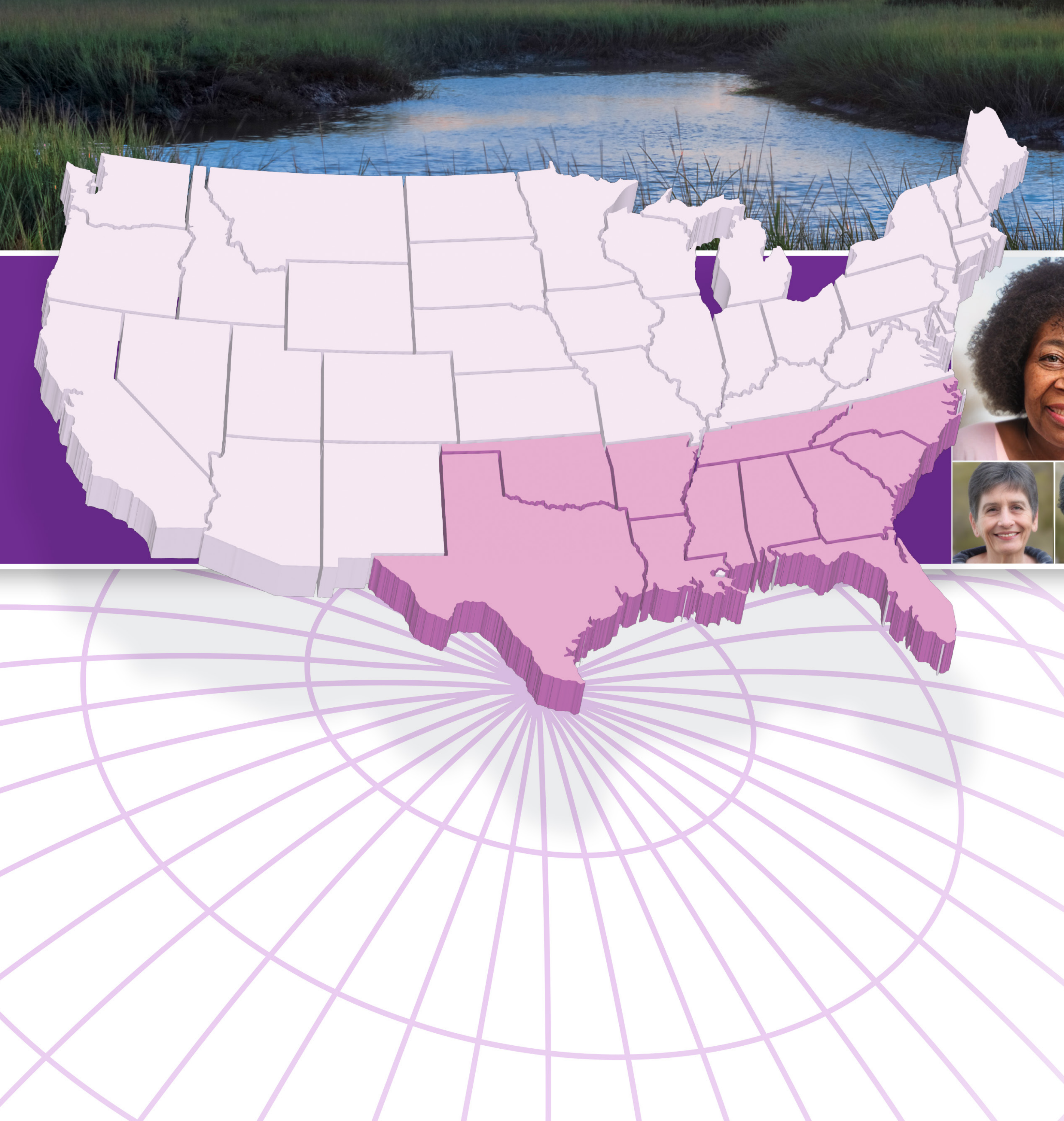
Real Assets
AEW Capital Management
Almanac Realty Investors
Angelo, Gordon & Co.
Argo Infrastructure Partners

Real Assets (continued)
Asana Partners
BlackRock Institutional Trust Company
Blackstone
Brigade
BTG Pactual
Cerberus Institutional Real Estate GP
Clarion Partners
Cortland
DigitalBridge
EIG Management Company, LLC
EnCap
EnerVest, Ltd
EQT
Global Infrastructure Partners
Grain Management
ISQ Global Infrastructure
Jamestown
Kayne Anderson Capital Advisors
LBA Logistics
Manulife Investment Management
Morgan Stanley
Oaktree Capital Management
Principal Financial Group
Quantum Energy Partners
Stonepeak Infrastructure Partners
TPG Real Estate
True North Management Group
Warwick Group
Waterton Associates
Westbrook Partners

Risk Mitigation
Alpha Simplex Group, LLC
Alpstone Capital
AQR Capital Management, LLC
Brevan Howard - DG Partners
BlackRock Institutional Trust Company
Graham Capital Management, L.P.
Pacific Investment Management Company
Systematica Investments
Two Sigma Investments

Unique Strategies
Blackstone
Capital Constellation
Waterfront Capital Partners

Section 4 - Actuarial



Southeast

Photo Caption: Chasing the sun as it sets over the Matanzas River in historic St. Augustine, Florida.

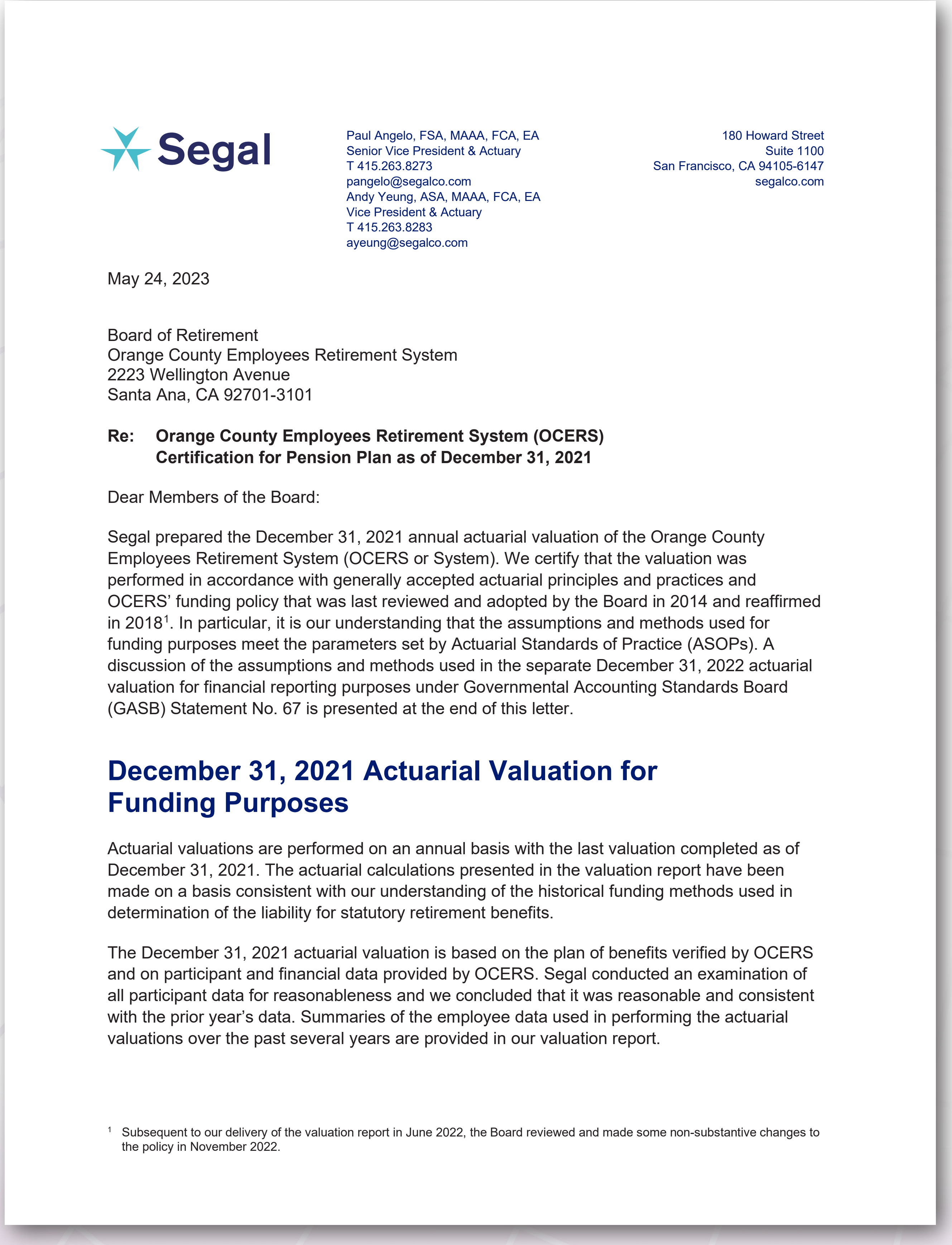
Retirement Benefits: The Southeast region offers many benefits for retirees looking to enjoy their golden years in a warm and welcoming environment, making it an ideal place for outdoor activities such as golfing, hiking, and fishing. Retirees who value cultural experiences will find many museums, theaters, and galleries, showcasing the region's rich history and artistic heritage.

Alabama	34	North Carolina	108
Arkansas	66	Oklahoma	66
Georgia	67	South Carolina	51
Florida	218	Tennessee	172
Louisiana	11	Texas	496
Mississippi	11		

Total Payees

1,300

Actuary's Certification Letter



Segal

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San Francisco, CA 94105-6147
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May 24, 2023

Board of Retirement
Orange County Employees Retirement System
2223 Wellington Avenue
Santa Ana, CA 92701-3101

Re: Orange County Employees Retirement System (OCERS)
Certification for Pension Plan as of December 31, 2021

Dear Members of the Board:

Segal prepared the December 31, 2021 annual actuarial valuation of the Orange County Employees Retirement System (OCERS or System). We certify that the valuation was performed in accordance with generally accepted actuarial principles and practices and OCERS' funding policy that was last reviewed and adopted by the Board in 2014 and reaffirmed in 2018[1]. In particular, it is our understanding that the assumptions and methods used for funding purposes meet the parameters set by Actuarial Standards of Practice (ASOPs). A discussion of the assumptions and methods used in the separate December 31, 2022 actuarial valuation for financial reporting purposes under Governmental Accounting Standards Board (GASB) Statement No. 67 is presented at the end of this letter.

December 31, 2021 Actuarial Valuation for Funding Purposes

Actuarial valuations are performed on an annual basis with the last valuation completed as of December 31, 2021. The actuarial calculations presented in the valuation report have been made on a basis consistent with our understanding of the historical funding methods used in determination of the liability for statutory retirement benefits.

The December 31, 2021 actuarial valuation is based on the plan of benefits verified by OCERS and on participant and financial data provided by OCERS. Segal conducted an examination of all participant data for reasonableness and we concluded that it was reasonable and consistent with the prior year's data. Summaries of the employee data used in performing the actuarial valuations over the past several years are provided in our valuation report.

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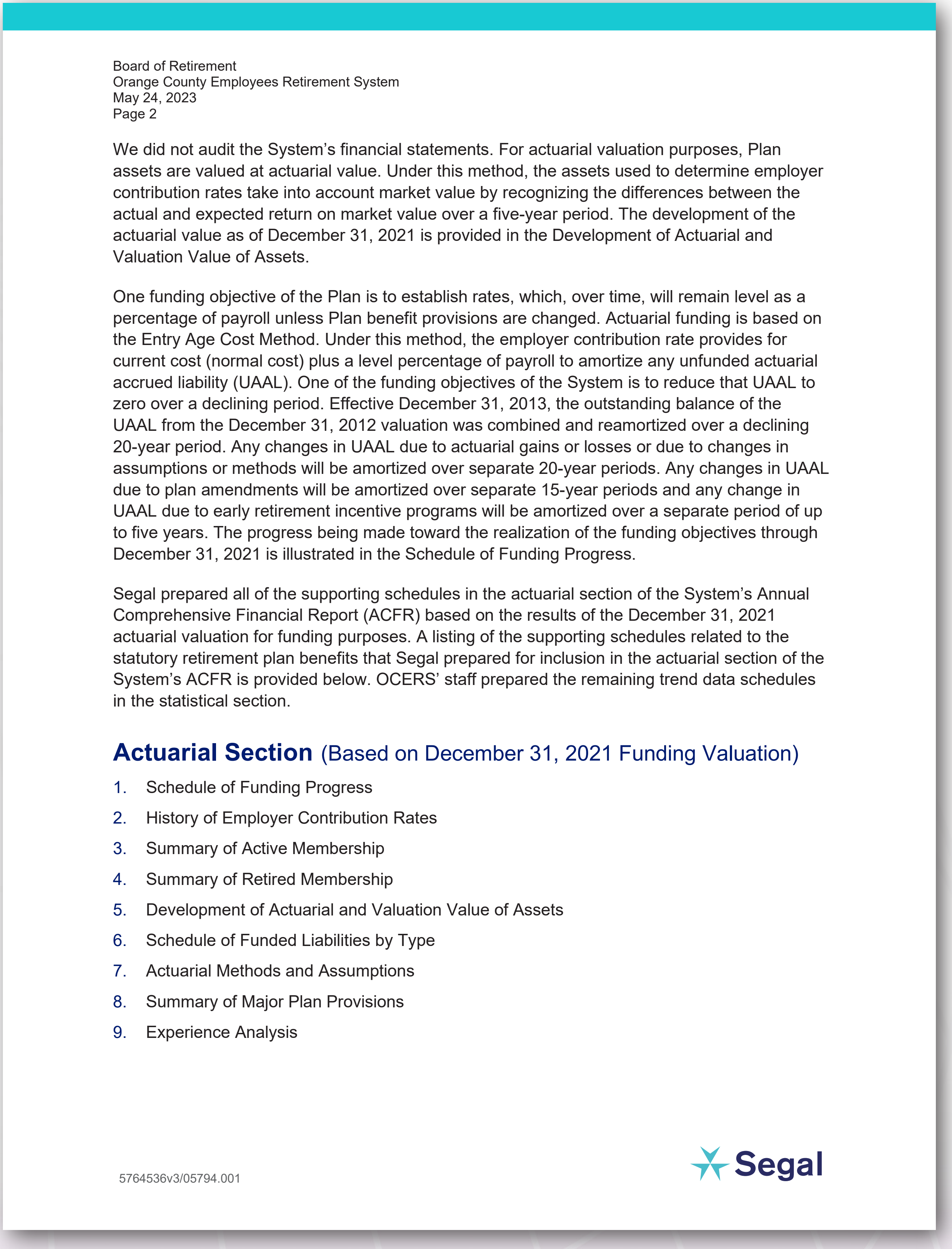
[1] Subsequent to our delivery of the valuation report in June 2022, the Board reviewed and made some non-substantive changes to the policy in November 2022.



Board of Retirement
Orange County Employees Retirement System
May 24, 2023
Page 2

We did not audit the System's financial statements. For actuarial valuation purposes, Plan assets are valued at actuarial value. Under this method, the assets used to determine employer contribution rates take into account market value by recognizing the differences between the actual and expected return on market value over a five-year period. The development of the actuarial value as of December 31, 2021 is provided in the Development of Actuarial and Valuation Value of Assets.

One funding objective of the Plan is to establish rates, which, over time, will remain level as a percentage of payroll unless Plan benefit provisions are changed. Actuarial funding is based on the Entry Age Cost Method. Under this method, the employer contribution rate provides for current cost (normal cost) plus a level percentage of payroll to amortize any unfunded actuarial accrued liability (UAAL). One of the funding objectives of the System is to reduce that UAAL to zero over a declining period. Effective December 31, 2013, the outstanding balance of the UAAL from the December 31, 2012 valuation was combined and reamortized over a declining 20-year period. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to five years. The progress being made toward the realization of the funding objectives through December 31, 2021 is illustrated in the Schedule of Funding Progress.

Segal prepared all of the supporting schedules in the actuarial section of the System's Annual Comprehensive Financial Report (ACFR) based on the results of the December 31, 2021 actuarial valuation for funding purposes. A listing of the supporting schedules related to the statutory retirement plan benefits that Segal prepared for inclusion in the actuarial section of the System's ACFR is provided below. OCERS' staff prepared the remaining trend data schedules in the statistical section.

Actuarial Section (Based on December 31, 2021 Funding Valuation)

1. Schedule of Funding Progress
2. History of Employer Contribution Rates
3. Summary of Active Membership
4. Summary of Retired Membership
5. Development of Actuarial and Valuation Value of Assets
6. Schedule of Funded Liabilities by Type
7. Actuarial Methods and Assumptions
8. Summary of Major Plan Provisions
9. Experience Analysis

The valuation assumptions used in this valuation were included in the Actuarial Section. The results of this valuation were prepared using the actuarial assumptions and methods developed in the triennial actuarial experience study as of December 31, 2019. All of the assumptions recommended in the study were adopted by the Board. Actuarial valuations are performed on an annual basis and the experience analysis is performed every three years. The next experience analysis is due to be performed as of December 31, 2022 and any changes in assumptions will be reflected in the December 31, 2023 valuation.

In the December 31, 2021 valuation, the ratio of the valuation value of assets to actuarial accrued liabilities increased from 76.5% to 81.2%. The aggregate employer rate (average of the County and all special districts rates combined) has changed from 40.76% of payroll to 37.82% of payroll. The aggregate member's rate has changed from 12.01% of payroll to 12.08% of payroll.

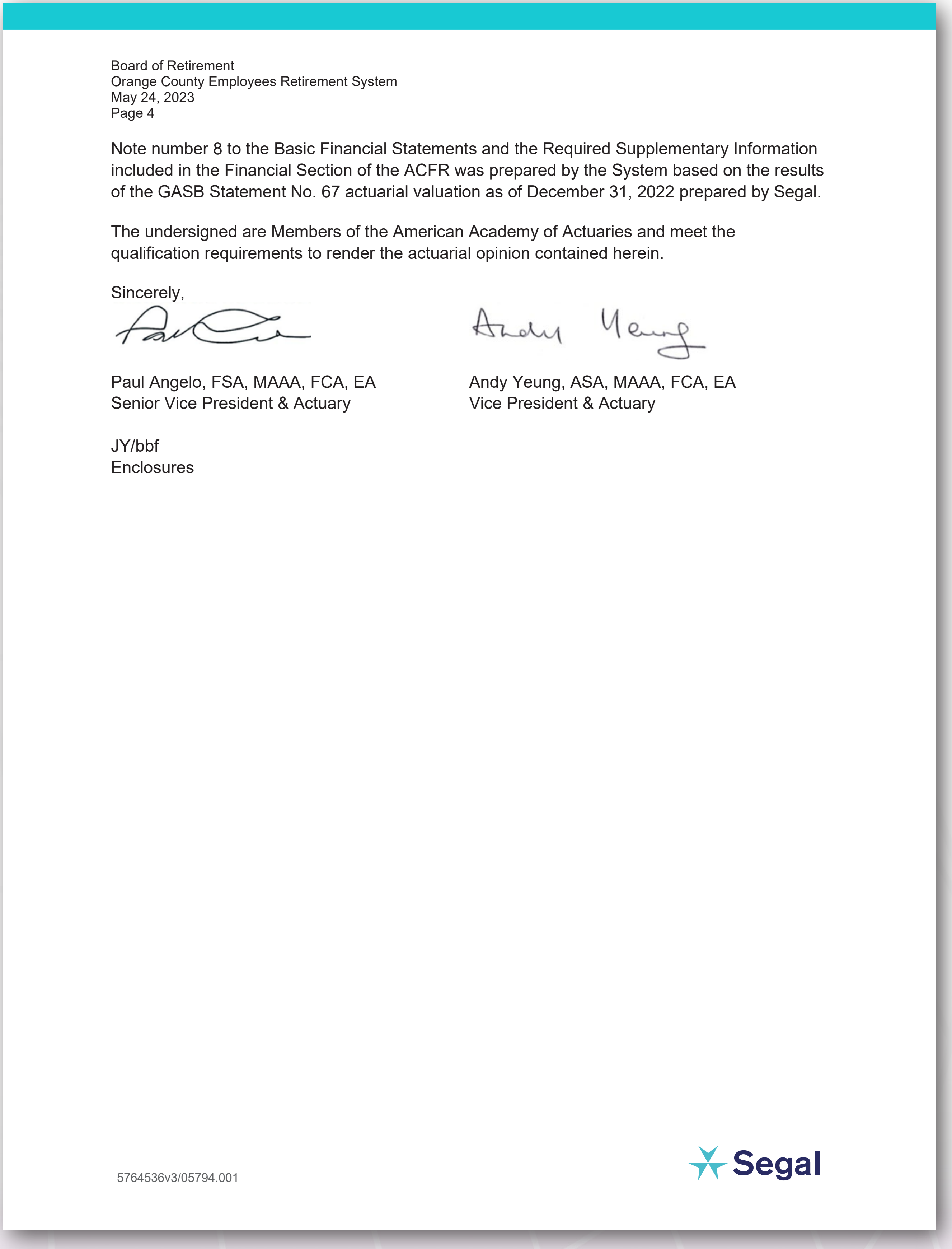
In the December 31, 2021 valuation, the actuarial value of assets excluded $2,250.0 million in unrecognized investment gains, which represented 10.4% of the market value of assets. If these deferred investment gains were recognized immediately in the actuarial value of assets, the funded percentage would increase from 81.2% to 90.5% and the aggregate employer contribution rate, expressed as a percent of payroll would decrease from 37.8% to 29.4%.

To the best of our knowledge, the December 31, 2021 funding valuation report is complete and accurate and in our opinion presents the Plan's current funding information.

December 31, 2022 GASB Statement 67 Actuarial Valuation for Financial Reporting Purposes

Segal prepared the December 31, 2022 GASB Statement 67 actuarial valuation for financial reporting purposes. The valuation was performed in order to comply with GASB Statement 67 and we certify that the assumptions and methods used for financial reporting purposes meet the parameters set by ASOPs and our understanding of generally accepted accounting principles (GAAP) applicable in the United States of America as promulgated by GASB. The GASB rules only redefine pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes.

When measuring pension liability, GASB uses the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as OCERS uses for funding. The Net Pension Liabilities (NPLs) measured as of December 31, 2022 and December 31, 2021 have been determined by rolling forward the Total Pension Liabilities (TPLs) for the statutory Retirement Plan benefits as of December 31, 2021 and December 31, 2020, respectively. In addition, any changes in actuarial assumptions or plan provisions that occurred between the valuation date and the measurement date have been reflected.



Note number 8 to the Basic Financial Statements and the Required Supplementary Information included in the Financial Section of the ACFR was prepared by the System based on the results of the GASB Statement No. 67 actuarial valuation as of December 31, 2022 prepared by Segal.

The undersigned are Members of the American Academy of Actuaries and meet the qualification requirements to render the actuarial opinion contained herein.

Sincerely,

Andy Yeung

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President & Actuary

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

JY/bbf
Enclosures

Schedule of Funding Progress

(Dollars in Thousands)

Valuation Date	Actuarial Accrued Liability	Valuation Value of Assets	Unfunded Actuarial Accrued Liability	Ratio of Assets to Actuarial Accrued Liability	Projected Covered Payroll	Ratio of Unfunded Actuarial Accrued Liability to Projected Covered Payroll
12/31/12	$ 15,144,888	$ 9,469,208	$ 5,675,680	62.52%	$ 1,609,600	352.55%
12/31/13	15,785,042	10,417,125	5,367,917	65.99%	1,604,496	334.55%
12/31/14	16,413,124	11,449,911	4,963,213	69.76%	1,648,160	301.14%
12/31/15	17,050,357	12,228,009	4,822,348	71.72%	1,633,112	295.29%
12/31/16	17,933,461	13,102,978	4,830,483	73.06%	1,759,831	274.49%
12/31/17	19,635,427	14,197,125	5,438,302	72.30%	1,811,877	300.15%
12/31/18	20,703,349	14,994,420	5,708,929	72.43%	1,875,370	304.42%
12/31/19	21,916,730	16,036,869	5,879,861	73.17%	1,952,534	301.14%
12/31/20	22,904,975	17,525,117	5,379,858	76.51%	1,962,869	274.08%
12/31/21	24,016,073	19,488,761	4,527,312	81.15%	2,052,706	220.55%

Notes:

- **There were no assumption or plan changes in the 12/31/21 valuation.**
- **The 12/31/20 valuation included the following changes:**

  Assumption Changes:

  Changes in inflation, mortality, disability, termination, retirement, salary scale, and additional cash-out assumptions in the December 31, 2019 triennial experience study increased the UAAL by $24 million.

  Method Change:

  A refinement to the Entry Age actuarial cost method was made. Before the refinement, Entry Age was calculated as the age of the member as of the valuation date minus years of employment, including non-OCERS reciprocal employers. After the refinement, only years of employment with OCERS employers are used.

  Other Change:

  The actual COLA granted by OCERS for the upcoming April 1st was reflected in the valuation.

- **There were no assumption or plan changes in the 12/31/19 valuation.**
- **There were no assumptions or plan changes in the 12/31/18 valuation.**
- **The 12/31/17 valuation included the following assumptions changes:**

  Changes in investment return, inflation, mortality, disability, termination, retirement, salary scale, and additional cash-out assumptions in the December 31, 2016 triennial experience study increased the UAAL by $854 million.

Schedule of Funding Progress

(continued)

- **The 12/31/16 valuation included the following change:**
  O.C. Law Library was separated from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the valuation as of December 31, 2015.

- **The 12/31/15 valuation included the following benefit changes:**
  City of San Juan Capistrano adopted an optional 1.62% of final average salary at age 65 for members hired on or after July 1, 2016.

  Effective January 1, 2015, new OCTA members were placed in CalPEPRA Plan U (2.50% of final average salary at age 67).

- **The 12/31/14 valuation included the following changes:**
  Assumption Changes:
  Changes in inflation, mortality, disability, termination, retirement, salary scale, and additional cashout assumptions in the December 31, 2013 triennial experience study decreased the UAAL by $122 million.

  Method Change:
  The cashout assumptions are now used in developing basic member contribution rates for employees in the legacy plans (impact is only on Normal Cost).

- **The 12/31/13 valuation included the following method change:**
  The outstanding balance of the December 31, 2012 UAAL was combined and re-amortized over a 20-year period.

- **The 12/31/12 valuation included the following changes:**
  Assumption Changes:
  Changes in investment return, inflation, and across the board salary increase assumptions in the December 31, 2012 review of economic assumptions report increased the UAAL by $935 million.

  Benefit Changes:
  Members with membership date on or after January 1, 2013 were placed in CalPEPRA tiers (1.62% of final average salary at age 65, 2.50% of final average salary at age 67 and 2.70% of final average salary at age 57).

Schedule of Funding Progress

(continued)

The assets exclude amounts in the County Investment Account and prepaid employer contributions. For years ending December 31, 2016, December 31, 2017, December 31, 2019, December 31, 2020, and December 31, 2021, the assets also exclude amounts in the O.C. Sanitation District UAAL Deferred Account.

Valuation Date	Amount Excluded from Assets		
	County Investment Account	**Prepaid Employer Contributions**	**O.C. Sanitation District UAAL Deferred Account**
12/31/12	$ 103,261,000	$ 177,632,000	$ -
12/31/13	109,254,000	172,348,000	-
12/31/14	109,103,000	207,829,000	-
12/31/15	108,789,000	227,166,000	-
12/31/16	117,723,000	222,524,000	34,067,000
12/31/17	134,417,000	244,552,000	14,871,000
12/31/18	131,890,000	246,133,000	-
12/31/19	150,416,000	259,285,000	12,057,000
12/31/20	160,378,000	293,948,000	13,433,000
12/31/21	167,745,000	304,504,000	15,643,000

For informational purposes only, we have also developed the funded ratio determined using the historical market value of assets after adjustment for amounts in the County Investment Account, prepaid employer contributions, amounts in the O.C. Sanitation District UAAL Deferred Account, unclaimed member reserve and Medicare Medical Insurance Reserve.

Valuation Date	Funded Ratio based on Net Market Value of Assets
12/31/12	63.17%
12/31/13	67.65%
12/31/14	69.63%
12/31/15	67.73%
12/31/16	70.58%
12/31/17	74.62%
12/31/18	69.31%
12/31/19	75.36%
12/31/20	80.74%
12/31/21	90.52%

History of Employer Contribution Rates

Employer Contribution Rate (% of pay)

Valuation Date	General (Non-OCTA, Non-OCSD)	General (1.62% @ 65, Non-OCTA)	General (2.7% @ 55)	General (2.0% @ 57)	General (OCTA)	General (2.5% @ 55, OCSD)
12/31/12	NC 9.68%	NC 5.56%	NC 13.69%	NC 12.10%	NC 11.83%	NC 12.88%
	UAAL 12.91	UAAL 25.85	UAAL 25.85	UAAL 25.85	UAAL 16.48	UAAL 25.60
	Total 22.59%	**Total 31.41%**	**Total 39.54%**	**Total 37.95%**	**Total 28.31%**	**Total 38.48%**
With 2-Year Phase-In	**21.04%**	**29.84%**	**37.45%**	**35.96%**	**26.62%**	**36.57%**
12/31/13[1]	NC 9.82%	NC 5.61%	NC 13.66%	NC 12.46%	NC 11.81%	NC 12.89%
	UAAL 11.34	UAAL 23.72	UAAL 23.72	UAAL 23.72	UAAL 15.22	UAAL[2] 21.87
	Total 21.16%	**Total 29.33%**	**Total 37.38%**	**Total 36.18%**	**Total 27.03%**	**Total 34.76%**
12/31/14	NC 9.67%	NC 5.49%	NC 13.22%	NC 10.54%	NC 10.78%	NC 12.40%
	UAAL[4] 8.62	UAAL 21.72	UAAL 21.72	UAAL 21.72	UAAL 14.40	UAAL[5] 6.26
	Total 18.29%	**Total 27.21%**	**Total 34.94%**	**Total 32.26%**	**Total 25.18%**	**Total 18.66%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
12/31/15	NC 9.58%	NC 5.46%	NC 13.19%	NC 11.40%	NC 10.70%	NC 12.33%
	UAAL[6] 9.22	UAAL 22.45	UAAL 22.45	UAAL 22.45	UAAL 15.52	UAAL[7] 1.42
	Total 18.80%	**Total 27.91%**	**Total 35.64%**	**Total 33.85%**	**Total 26.22%**	**Total 13.75%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
12/31/16	NC 9.51%	NC 5.53%	NC 13.19%	NC 10.35%	NC 10.76%	NC 12.28%
	UAAL[9] 7.25	UAAL 21.72	UAAL[10] 21.72	UAAL 21.72	UAAL 14.76	UAAL 0.00
	Total 16.76%	**Total 27.25%**	**Total 34.91%**	**Total 32.07%**	**Total 25.52%**	**Total 12.28%**
12/31/17	NC 10.73%	NC 6.21%	NC 14.39%	NC 11.51%	NC 12.10%	NC 13.30%
	UAAL[12] 9.58	UAAL 25.05	UAAL[13] 25.05	UAAL 25.05	UAAL 18.26	UAAL 0.00
	Total 20.31%	**Total 31.26%**	**Total 39.44%**	**Total 36.56%**	**Total 30.36%**	**Total 13.30%**
With 3-Year Phase-In	**18.62%**	**28.88%**	**37.06%**	**34.18%**	**28.04%**	**N/A**
12/31/18	NC 10.73%	NC 6.23%	NC 14.36%	NC 12.13%	NC 12.03%	NC 13.24%
	UAAL[14] 9.40	UAAL 26.24	UAAL[15] 26.24	UAAL 26.24	UAAL 19.76	UAAL[16] 0.86
	Total 20.13%	**Total 32.47%**	**Total 40.60%**	**Total 38.37%**	**Total 31.79%**	**Total 14.10%**
With 3-Year Phase-In	**19.28%**	**31.28%**	**39.41%**	**37.18%**	**30.63%**	**N/A**
12/31/19	NC 10.68%	NC 6.10%	NC 14.34%	NC 12.61%	NC 11.97%	NC 13.22%
	UAAL[18] 5.16	UAAL 27.38	UAAL[19] 27.38	UAAL 27.38	UAAL 19.54	UAAL 0.00
	Total 15.84%	**Total 33.48%**	**Total 41.72%**	**Total 39.99%**	**Total 31.51%**	**Total 13.22%**
12/31/20	NC 10.38%	NC 6.26%	NC 14.69%	NC 16.45%	NC 12.59%	NC 13.46%
	UAAL[18] 5.03	UAAL 28.97	UAAL[20] 28.97	UAAL 28.97	UAAL 19.12	UAAL 0.00
	Total 15.41%	**Total 35.23%**	**Total 43.66%**	**Total 45.42%**	**Total 31.71%**	**Total 13.46%**
12/31/21	NC 10.42%	NC 6.22%	NC 14.67%	NC 16.61%	NC 12.54%	NC 13.47%
	UAAL[18] 3.33	UAAL 26.14	UAAL[21] 26.14	UAAL 26.14	UAAL 16.37	UAAL 0.00
	Total 13.75%	**Total 32.36%**	**Total 40.81%**	**Total 42.75%**	**Total 28.91%**	**Total 13.47%**

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date	**General (1.64% @ 57, OCSD)**		**General (2.0% @ 55, TCA)**		**General (2.0% @ 55, Cemetery, future service)**		**General (2.7% @ 55, OCFA)**		**General (2.0% @ 55, OCFA)**		**General (2.5% @ 55, Law Library)**	
12/31/12	NC	11.02%	NC	14.20%	NC	12.34%	NC	13.92%	NC	14.01%	NC	12.88%
	UAAL	25.60	UAAL	12.97	UAAL	12.28	UAAL	24.76	UAAL	24.76	UAAL	25.60
	Total	**36.62%**	**Total**	**27.17%**	**Total**	**24.62%**	**Total**	**38.68%**	**Total**	**38.77%**	**Total**	**38.48%**
With 2-Year Phase-In		**34.87%**		**25.71%**		**22.99%**		**36.70%**		**36.99%**		**36.57%**
12/31/13[1]	NC	10.53%	NC	14.13%	NC	12.33%	NC	14.06%	NC	14.15%	NC	12.89%
	UAAL[2]	21.87	UAAL	12.28	UAAL[3]	9.87	UAAL	23.34	UAAL	23.34	UAAL	21.87
	Total	**32.40%**	**Total**	**26.41%**	**Total**	**22.20%**	**Total**	**37.40%**	**Total**	**37.49%**	**Total**	**34.76%**
12/31/14	NC	10.30%	NC	13.59%	NC	11.79%	NC	13.53%	NC	12.47%	NC	12.40%
	UAAL[5]	6.26	UAAL	12.78	UAAL	0.00	UAAL	20.28	UAAL	20.28	UAAL	20.21
	Total	**16.56%**	**Total**	**26.37%**	**Total**	**11.79%**	**Total**	**33.81%**	**Total**	**32.75%**	**Total**	**32.61%**
With 3-Year Phase-In		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**
12/31/15	NC	10.30%	NC	13.44%	NC	11.33%	NC	13.44%	NC	12.72%	NC	12.33%
	UAAL[7]	1.42	UAAL	13.79	UAAL	0.00	UAAL	20.53	UAAL	20.53	UAAL[8]	22.08
	Total	**11.72%**	**Total**	**27.23%**	**Total**	**11.33%**	**Total**	**33.97%**	**Total**	**33.25%**	**Total**	**34.41%**
With 3-Year Phase-In		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**		**N/A**
12/31/16	NC	10.21%	NC	13.30%	NC	11.09%	NC	13.61%	NC	12.64%	NC	13.32%
	UAAL	0.00	UAAL	11.46	UAAL	0.00	UAAL	18.35	UAAL	18.35	UAAL[11]	9.69
	Total	**10.21%**	**Total**	**24.76%**	**Total**	**11.09%**	**Total**	**31.96%**	**Total**	**30.99%**	**Total**	**23.01%**
12/31/17	NC	11.25%	NC	14.51%	NC	11.98%	NC	14.72%	NC	13.46%	NC	14.11%
	UAAL	0.00	UAAL	12.74	UAAL	1.44	UAAL	17.62	UAAL	17.62	UAAL	0.00
	Total	**11.25%**	**Total**	**27.25%**	**Total**	**13.42%**	**Total**	**32.34%**	**Total**	**31.08%**	**Total**	**14.11%**
With 3-Year Phase-In		**N/A**		**26.00%**		**12.46%**		**30.46%**		**29.20%**		**N/A**
12/31/18	NC	11.11%	NC	14.51%	NC	12.05%	NC	14.71%	NC	13.50%	NC	14.28%
	UAAL[16]	0.86	UAAL[17]	15.29	UAAL	0.22	UAAL	15.90	UAAL	15.90	UAAL	1.77
	Total	**11.97%**	**Total**	**29.80%**	**Total**	**12.27%**	**Total**	**30.61%**	**Total**	**29.40%**	**Total**	**16.05%**
With 3-Year Phase-In		**N/A**		**29.17%**		**12.05%**		**29.67%**		**28.46%**		**N/A**
12/31/19	NC	11.23%	NC	14.23%	NC	11.62%	NC	14.75%	NC	13.68%	NC	14.20%
	UAAL	0.00	UAAL	0.39	UAAL	3.01	UAAL	14.06	UAAL	14.06	UAAL	0.19
	Total	**11.23%**	**Total**	**14.62%**	**Total**	**14.63%**	**Total**	**28.81%**	**Total**	**27.74%**	**Total**	**14.39%**
12/31/20	NC	13.25%	NC	14.95%	NC	12.83%	NC	15.22%	NC	16.83%	NC	13.88%
	UAAL	0.00	UAAL	0.00	UAAL	2.85	UAAL	11.49	UAAL	11.49	UAAL	0.00
	Total	**13.25%**	**Total**	**14.95%**	**Total**	**15.68%**	**Total**	**26.71%**	**Total**	**28.32%**	**Total**	**13.88%**
12/31/21	NC	13.09%	NC	14.89%	NC	12.71%	NC	15.25%	NC	16.98%	NC	13.79%
	UAAL	0.00	UAAL	0.00	UAAL	1.02	UAAL	9.37	UAAL	9.37	UAAL	0.00
	Total	**13.09%**	**Total**	**14.89%**	**Total**	**13.73%**	**Total**	**24.62%**	**Total**	**26.35%**	**Total**	**13.79%**

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date		Safety Law Enforcement (3% @ 50)	Safety Law Enforcement (3% @ 55)	Safety Fire Authority (3% @ 50)	Safety Fire Authority (3% @ 55)	Safety Probation
12/31/12	NC	24.24%	24.20%	26.16%	21.12%	21.26%
	UAAL	36.71	36.71	26.84	26.84	21.91
	Total	**60.95%**	**60.91%**	**53.00%**	**47.96%**	**43.17%**
With 2-Year Phase-In		**57.27%**	**57.37%**	**49.83%**	**44.85%**	**40.52%**
12/31/13[1]	NC	24.23%	22.58%	25.86%	21.70%	21.00%
	UAAL	32.47	32.47	24.14	24.14	19.72
	Total	**56.70%**	**55.05%**	**50.00%**	**45.84%**	**40.72%**
12/31/14	NC	25.79%	23.55%	27.05%	22.38%	22.17%
	UAAL	37.46	37.46	24.42	24.42	25.01
	Total	**63.25%**	**61.01%**	**51.47%**	**46.80%**	**47.18%**
With 3-Year Phase-In		**58.92%**	**56.88%**	**48.60%**	**43.93%**	**42.84%**
12/31/15	NC	25.56%	23.24%	26.87%	22.10%	21.92%
	UAAL	39.16	39.16	23.81	23.81	25.32
	Total	**64.72%**	**62.40%**	**50.68%**	**45.91%**	**47.24%**
With 3-Year Phase-In		**62.55%**	**60.34%**	**49.24%**	**44.47%**	**45.07%**
12/31/16	NC	25.63%	23.00%	26.84%	21.86%	21.87%
	UAAL	38.19	38.19	22.27	22.27	26.06
	Total	**63.82%**	**61.19%**	**49.11%**	**44.13%**	**47.93%**
12/31/17	NC	26.69%	23.69%	27.24%	21.97%	23.71%
	UAAL	41.07	41.07	23.09	23.09	33.00
	Total	**67.76%**	**64.76%**	**50.33%**	**45.06%**	**56.71%**
With 3-Year Phase-In		**64.05%**	**61.05%**	**48.04%**	**42.77%**	**52.45%**
12/31/18	NC	26.64%	23.48%	26.97%	21.83%	23.45%
	UAAL	42.56	42.56	24.99	24.99	34.41
	Total	**69.20%**	**66.04%**	**51.96%**	**46.82%**	**57.86%**
With 3-Year Phase-In		**67.35%**	**64.19%**	**50.81%**	**45.67%**	**55.73%**
12/31/19	NC	26.57%	23.58%	27.48%	25.77%	23.25%
	UAAL	43.65	43.65	23.79	23.79	36.92
	Total	**70.22%**	**67.23%**	**51.27%**	**49.56%**	**60.17%**
12/31/20	NC	26.66%	24.23%	27.31%	27.25%	23.39%
	UAAL	39.73	39.73	16.36	16.36	34.06
	Total	**66.39%**	**63.96%**	**43.67%**	**43.61%**	**57.45%**
12/31/21	NC	26.62%	24.74%	27.09%	26.65%	23.16%
	UAAL	35.53	35.53	12.35	12.35	30.55
	Total	**62.15%**	**60.27%**	**39.44%**	**39.00%**	**53.71%**

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date	CalPEPRA Rate Group #1 2.5% @ 67	CalPEPRA Rate Group #2 1.62% @ 65 (Plan T)	CalPEPRA Rate Group #2 2.5% @ 67	CalPEPRA Rate Group #2 1.62% @ 67 (Plan W)	CalPEPRA Rate Group #3 2.5% @ 67	CalPEPRA Rate Group #5 2.5% @ 67
12/31/12 With 2-Year Phase-In	NC 8.68% UAAL 12.91 **Total 21.59%** **20.33%**	NC 6.78% UAAL 25.85 **Total 32.63%** **31.10%**	NC 7.44% UAAL 25.85 **Total 33.29%** **32.05%**	N/A	NC 9.38% UAAL 25.60 **Total 34.98%** **33.52%**	N/A
12/31/13[1]	NC 9.39% UAAL 11.34 **Total 20.73%**	NC 6.70% UAAL 23.72 **Total 30.42%**	NC 8.56% UAAL 23.72 **Total 32.28%**	N/A	NC 9.66% UAAL[2] 21.87 **Total 31.53%**	N/A
12/31/14 With 3-Year Phase-In	NC 8.87% UAAL[4] 8.62 **Total 17.49%** **N/A**	NC 6.61% UAAL 21.72 **Total 28.33%** **N/A**	NC 8.33% UAAL 21.72 **Total 30.05%** **N/A**	N/A	NC 9.00% UAAL[5] 6.26 **Total 15.26%** **N/A**	NC 10.04% UAAL 14.40 **Total 24.44%** **N/A**
12/31/15 With 3-Year Phase-In	NC 8.92% UAAL[6] 9.22 **Total 18.14%** **N/A**	NC 6.56% UAAL 22.45 **Total 29.01%** **N/A**	NC 8.35% UAAL 22.45 **Total 30.80%** **N/A**	NC 6.68% UAAL 22.45 **Total 29.13%** **N/A**	NC 9.25% UAAL[7] 1.42 **Total 10.67%** **N/A**	NC 10.12% UAAL 15.52 **Total 25.64%** **N/A**
12/31/16	NC 8.63% UAAL[9] 7.25 **Total 15.88%**	NC 6.58% UAAL 21.72 **Total 28.30%**	NC 8.28% UAAL[10] 21.72 **Total 30.00%**	NC 6.68% UAAL 21.72 **Total 28.40%**	NC 9.27% UAAL 0.00 **Total 9.27%**	NC 10.25% UAAL 14.76 **Total 25.01%**
12/31/17 With 3-Year Phase-In	NC 9.93% UAAL[12] 9.58 **Total 19.51%** **17.82%**	NC 7.11% UAAL 25.05 **Total 32.16%** **29.78%**	NC 8.78% UAAL[13] 25.05 **Total 33.83%** **31.45%**	NC 8.56% UAAL 25.05 **Total 33.61%** **31.23%**	NC 10.37% UAAL 0.00 **Total 10.37%** **N/A**	NC 11.32% UAAL 18.26 **Total 29.58%** **27.26%**
12/31/18 With 3-Year Phase-In	NC 9.93% UAAL[14] 9.40 **Total 19.33%** **18.48%**	NC 7.12% UAAL 26.24 **Total 33.36%** **32.17%**	NC 8.78% UAAL[15] 26.24 **Total 35.02%** **33.83%**	NC 8.73% UAAL 26.24 **Total 34.97%** **33.78%**	NC 10.02% UAAL[16] 0.86 **Total 10.88%** **N/A**	NC 11.32% UAAL 19.76 **Total 31.08%** **29.92%**
12/31/19	NC 10.05% UAAL[18] 5.16 **Total 15.21%**	NC 7.14% UAAL 27.38 **Total 34.52%**	NC 8.81% UAAL[19] 27.38 **Total 36.19%**	NC 8.54% UAAL 27.38 **Total 35.92%**	NC 9.88% UAAL 0.00 **Total 9.88%**	NC 11.59% UAAL 19.54 **Total 31.13%**
12/31/20	NC 9.89% UAAL[18] 5.03 **Total 14.92%**	NC 7.06% UAAL 28.97 **Total 36.03%**	NC 8.37% UAAL[20] 28.97 **Total 37.34%**	NC 8.43% UAAL 28.97 **Total 37.40%**	NC 9.86% UAAL 0.00 **Total 9.86%**	NC 11.73% UAAL 19.12 **Total 30.85%**
12/31/21	NC 10.08% UAAL[18] 3.33 **Total 13.41%**	NC 7.09% UAAL[22] 26.14 **Total 33.23%**	NC 9.17% UAAL[21, 22] 26.14 **Total 35.31%**	NC 8.95% UAAL 26.14 **Total 35.09%**	NC 9.82% UAAL 0.00 **Total 9.82%**	NC 11.99% UAAL 16.37 **Total 28.36%**

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[1] The outstanding balance of the December 31, 2012 UAAL has been combined and re-amortized over a period of 20 years.

[2] This is the UAAL rate for O.C. Sanitation District for FY 15-16 before reflecting the additional UAAL contributions made during calendar year 2014.

[3] This is the UAAL rate for O.C. Cemetery District for FY 15-16 before reflecting the additional UAAL contributions made during calendar year 2014.

[4] The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I and Department of Education) is 5.67% as of December 31, 2014.

[5] This is the UAAL rate for O.C. Sanitation District for FY 16-17 before reflecting the additional UAAL contributions made during calendar year 2015.

[6] The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I and Department of Education) is 5.57% as of December 31, 2015.

[7] This is the UAAL rate for O.C. Sanitation District for FY 17-18 before reflecting the additional UAAL contributions made during calendar year 2016.

[8] The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I and Department of Education) is 4.18% as of December 31, 2016.

[9] This is the UAAL rate for O.C. Children and Families Commission for FY 18-19 before reflecting the additional UAAL contributions made during calendar year 2017.

[10] This is the UAAL rate for Law Library for FY 17-18 before reflecting the additional UAAL contributions made during calendar year 2016.

[11] This is the UAAL rate for Law Library for FY 18-19 before reflecting the additional UAAL contributions made during calendar year 2017.

[12] The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I., Department of Education and Cypress Recreation and Parks) is 6.09% (or 4.61% after the three-year phase-in) as of December 31, 2017.

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date	CalPEPRA Rate Group #9 2.5% @ 67	CalPEPRA Rate Group #10 2.5% @ 67	CalPEPRA Rate Group #11 2.5% @ 67	CalPEPRA Rate Group #12 2.5% @ 67	CalPEPRA Rate Group #6 2.7% @ 57	CalPEPRA Rate Group #7 2.7% @ 57	CalPEPRA Rate Group #8 2.7% @ 57
12/31/12	NC 10.97% UAAL 12.97 **Total 23.94%**	NC 8.50% UAAL 24.76 **Total 33.26%**	NC 8.66% UAAL 12.28 **Total 20.94%**	NC 9.38% UAAL 25.60 **Total 34.98%**	NC 13.91% UAAL 21.91 **Total 35.82%**	NC 17.05% UAAL 36.71 **Total 53.76%**	NC 16.41% UAAL 26.84 **Total 43.25%**
With 2-Year Phase-In	**22.87%**	**31.81%**	**19.63%**	**33.52%**	**33.40%**	**50.61%**	**40.96%**
12/31/13[1]	NC 11.40% UAAL 12.28 **Total 23.68%**	NC 9.71% UAAL 23.34 **Total 33.05%**	NC 8.66% UAAL[3] 9.87 **Total 18.53%**	NC 9.66% UAAL 21.87 **Total 31.53%**	NC 13.95% UAAL 19.72 **Total 33.67%**	NC 19.17% UAAL 32.47 **Total 51.64%**	NC 16.85% UAAL 24.14 **Total 40.99%**
12/31/14	NC 9.85% UAAL 12.78 **Total 22.63%**	NC 9.63% UAAL 20.28 **Total 29.91%**	NC 11.81% UAAL 0.00 **Total 11.81%**	NC 9.00% UAAL 20.21 **Total 29.21%**	NC 15.25% UAAL 25.01 **Total 40.26%**	NC 20.10% UAAL 37.46 **Total 57.56%**	NC 15.71% UAAL 24.42 **Total 40.13%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**	**N/A**	**36.02%**	**54.01%**	**38.08%**
12/31/15	NC 10.57% UAAL 13.79 **Total 24.36%**	NC 8.81% UAAL 20.53 **Total 29.34%**	NC 12.23% UAAL 0.00 **Total 12.23%**	NC 9.25% UAAL[8] 22.08 **Total 31.33%**	NC 15.00% UAAL 25.32 **Total 40.32%**	NC 20.04% UAAL 39.16 **Total 59.20%**	NC 15.30% UAAL 23.81 **Total 39.11%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**	**N/A**	**38.20%**	**57.42%**	**38.09%**
12/31/16	NC 10.40% UAAL 11.46 **Total 21.86%**	NC 8.99% UAAL 18.35 **Total 27.34%**	NC 9.98% UAAL 0.00 **Total 9.98%**	NC 7.59% UAAL[11] 9.69 **Total 17.28%**	NC 15.24% UAAL 26.06 **Total 41.30%**	NC 19.39% UAAL 38.19 **Total 57.58%**	NC 14.84% UAAL 22.27 **Total 37.11%**
12/31/17	NC 11.02% UAAL 12.74 **Total 23.76%**	NC 10.41% UAAL 17.62 **Total 28.03%**	NC 12.03% UAAL 1.44 **Total 13.47%**	NC 9.36% UAAL 0.00 **Total 9.36%**	NC 16.63% UAAL 33.00 **Total 49.63%**	NC 19.29% UAAL 41.07 **Total 60.36%**	NC 15.44% UAAL 23.09 **Total 38.53%**
With 3-Year Phase-In	**22.51%**	**26.15%**	**12.51%**	**N/A**	**45.37%**	**56.65%**	**36.24%**
12/31/18	NC 11.13% UAAL[17] 15.29 **Total 26.42%**	NC 10.16% UAAL 15.90 **Total 26.06%**	NC 12.33% UAAL 0.22 **Total 12.55%**	NC 10.32% UAAL 1.77 **Total 12.09%**	NC 16.76% UAAL 34.41 **Total 51.17%**	NC 19.04% UAAL 42.56 **Total 61.60%**	NC 15.27% UAAL 24.99 **Total 40.26%**
With 3-Year Phase-In	**25.79%**	**25.12%**	**12.33%**	**N/A**	**49.04%**	**59.75%**	**39.11%**
12/31/19	NC 11.14% UAAL 0.39 **Total 11.53%**	NC 10.05% UAAL 14.06 **Total 24.11%**	NC 12.25% UAAL 3.01 **Total 15.26%**	NC 10.37% UAAL 0.19 **Total 10.56%**	NC 16.82% UAAL 36.92 **Total 53.74%**	NC 18.46% UAAL 43.65 **Total 62.11%**	NC 15.66% UAAL 23.79 **Total 39.45%**
12/31/20	NC 10.98% UAAL 0.00 **Total 10.98%**	NC 9.82% UAAL 11.49 **Total 21.31%**	NC 11.80% UAAL 2.85 **Total 14.65%**	NC 10.51% UAAL 0.00 **Total 10.51%**	NC 16.26% UAAL 34.06 **Total 50.32%**	NC 17.73% UAAL 39.73 **Total 57.46%**	NC 15.11% UAAL 16.36 **Total 31.47%**
12/31/21	NC 11.18% UAAL 0.00 **Total 11.18%**	NC 9.87% UAAL 9.37 **Total 19.24%**	NC 11.97% UAAL 1.02 **Total 12.99%**	NC 10.48% UAAL 0.00 **Total 10.48%**	NC 16.11% UAAL 30.55 **Total 46.66%**	NC 17.76% UAAL 35.53 **Total 53.29%**	NC 15.29% UAAL 12.35 **Total 27.64%**

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[13] The net UAAL contribution rates for O.C. Children and Families Commission is 3.13% (or 1.04% after the three-year phase-in) as of December 31, 2017.

[14] The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I., Department of Education and Cypress Recreation and Parks) is 5.80% (or 5.06% after the three-year phase-in) as of December 31, 2018.

[15] The net UAAL contribution rates for O.C. Children and Families Commission is 4.30% (or 3.26% after the three-year phase-in) as of December 31, 2018.

[16] This is the UAAL rate for O.C. Sanitation District for FY 20-21 before reflecting the additional UAAL contributions made during calendar year 2019.

[17] This is the UAAL rate for Transportation Corridor Agency for FY 20-21 before reflecting the additional UAAL contributions made during calendar year 2019.

[18] This is the net UAAL contribution rate for County and IHSS Public Authority without reflecting the UAAL contributions required for Vector Control, Cypress Parks and Recreation, U.C.I. and DOE.

[19] The net UAAL contribution rates for O.C. Children and Families Commission is 5.36% as of December 31, 2019.

[20] The net UAAL contribution rate for O.C. Children and Families Commission is 5.98% as of December 31, 2020.

[21] The net UAAL contribution rate for O.C. Children and Families Commission is 3.50% as of December 31, 2021.

[22] After reflecting implementation of Plan U by Superior Court for their PEPRA members.

Summary of Active Membership

Valuation Date	Number	Annual Salary	Annual Average Salary	Increase in Average Salary (%)
12/31/12				
General	17,529	$ 1,238,958,000	$ 70,680	0.25
Safety	3,727	370,643,000	99,448	-0.55
Total	**21,256**	**$ 1,609,601,000**	**$ 75,725**	**0.16**
12/31/13				
General	17,547	$ 1,227,153,000	$ 69,935	-1.05
Safety	3,821	377,343,000	98,755	-0.70
Total	**21,368**	**$ 1,604,496,000**	**$ 75,089**	**-0.84**
12/31/14				
General	17,705	$ 1,267,582,000	$ 71,595	2.37
Safety	3,754	380,578,000	101,379	2.66
Total	**21,459**	**$ 1,648,160,000**	**$ 76,805**	**2.29**
12/31/15				
General	17,839	$ 1,254,521,000	$ 70,325	-1.77
Safety	3,686	378,590,000	102,710	1.31
Total	**21,525**	**$ 1,633,111,000**	**$ 75,870**	**-1.22**
12/31/16				
General	18,072	$ 1,353,363,000	$ 74,887	6.49
Safety	3,674	406,470,000	110,634	7.71
Total	**21,746**	**$ 1,759,833,000**	**$ 80,927**	**6.67**
12/31/17				
General	17,941	$ 1,385,356,000	$ 77,217	3.11
Safety	3,780	426,523,000	112,837	1.99
Total	**21,721**	**$ 1,811,879,000**	**$ 83,416**	**3.08**
12/31/18				
General	18,150	$ 1,432,041,000	$ 78,900	2.18
Safety	3,779	443,331,000	117,314	3.97
Total	**21,929**	**$ 1,875,372,000**	**$ 85,520**	**2.52**
12/31/19				
General	18,356	$ 1,481,966,000	$ 80,735	2.33
Safety	3,901	470,568,000	120,628	2.82
Total	**22,257**	**$ 1,952,534,000**	**$ 87,727**	**2.58**
12/31/20				
General	17,733	$ 1,479,418,000	$ 83,427	3.33
Safety	3,826	483,451,000	126,359	4.75
Total	**21,559**	**$ 1,962,869,000**	**$ 91,046**	**3.78**
12/31/21				
General	18,128	$ 1,548,180,000	$ 85,403	2.37
Safety	3,883	504,526,000	129,932	2.83
Total	**22,011**	**$ 2,052,706,000**	**$ 93,258**	**2.43**

Excludes Deferred and Pending members.

Summary of Retired Membership

Plan Year Ending	At Beginning of Year	Added to Rolls		Removed from Rolls		At End of Year	Annual Allowance (in 000's)	% Increase in Annual Allowance	Average Monthly Allowance
		Number	Annual Allowance (in 000's)	Number	Annual Allowance (in 000's)				
2012	13,289	1,026	$ 58,344	(368)	$ (9,036)	13,947	$ 543,505	9.98	$ 3,247
2013	13,947	911	52,319	(353)	(9,958)	14,505	585,866	7.79	3,366
2014	14,505	995	52,838	(331)	(9,812)	15,169	628,892	7.34	3,455
2015	15,169	1,053	58,679	(412)	(12,077)	15,810	675,494	7.41	3,560
2016	15,810	989	51,759	(430)	(12,895)	16,369	714,358	5.75	3,637
2017	16,369	1,039	62,374	(461)	(15,155)	16,947	761,577	6.61	3,745
2018	16,947	1,155	82,438	(428)	(14,191)	17,674	829,824	8.96	3,913
2019	17,674	1,207	86,521	(461)	(15,215)	18,420	901,130	8.59	4,077
2020	18,420	1,449	104,439	(450)	(14,896)	19,419	990,673	9.94	4,251
2021	19,419	953	71,304	(546)	(20,271)	19,826	1,041,706	5.15	4,379

Note: Annual allowances exclude RMBR and STAR COLA.

Development of Actuarial and Valuation Value of Assets

As of December 31, 2021

Plan Year Ending	Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain/ (Loss)	Deferred Factor	Deferred Return
2017	$ 1,878,172,000	$ 920,426,000	$ 957,746,000	0.0	$ -
2018	(361,321,000)	1,026,583,000	(1,387,904,000)	0.2	(277,581,000)
2019	2,123,258,000	1,004,779,000	1,118,479,000	0.4	447,392,000
2020	1,982,757,000	1,155,523,000	827,234,000	0.6	496,340,000
2021	3,273,348,000	1,293,495,000	1,979,853,000	0.8	1,583,882,000

(1)	Total Deferred Return	$ 2,250,033,000
(2)	Net Market Value of Assets (Excludes $167,745,000 in County Investment Account, $304,504,000 in Prepaid Employer Contributions and $15,643,000 in O.C. Sanitation District UAAL Deferred Account)	$ 21,738,794,000
(3)	Actuarial Value of Assets (2) – (1)	$ 19,488,761,000[1]
(4)	Non-valuation Reserves	
	(a) Unclaimed member deposit	$ -
	(b) Medicare medical insurance reserve	-
	(c) Subtotal	$ -
(5)	Valuation Value of Assets (3) – (4)(c)	$ 19,488,761,000
(6)	Deferred Return Recognized in Each of the Next 4 Years	
	(a) Amount recognized on 12/31/2022	$ 507,532,000
	(b) Amount recognized on 12/31/2023	785,113,000
	(c) Amount recognized on 12/31/2024	561,417,000
	(d) Amount recognized on 12/31/2025	395,971,000
	(e) Subtotal (may not total exactly due to rounding)	$ 2,250,033,000

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[1] Ratio of Actuarial Value of Assets to Net Market Value of Assets is 89.6% ((3) ÷ (2)).

Schedule of Funded Liabilities by Type

(Dollars in Thousands)

Valuation Date	(1) Active Member Contributions	(2) Liability for Inactive Participants	(3) Liability for Active Members (Employer Financed Portion)	Valuation Value of Assets	Portion of Accrued Liability Covered by Valuation Assets (%)		
					(1)	(2)	(3)
12/31/12	$ 1,967,117	$ 7,919,478	$ 5,258,293	$ 9,469,208	100	94.73	0.00
12/31/13	2,126,182	8,502,269	5,156,591	10,417,125	100	97.51	0.00
12/31/14	2,298,744	9,017,874	5,096,506	11,449,911	100	100	2.62
12/31/15	2,488,757	9,696,776	4,864,824	12,228,009	100	100	0.87
12/31/16	2,654,599	10,109,528	5,169,334	13,102,978	100	100	6.56
12/31/17	2,815,839	11,121,965	5,697,623	14,197,125	100	100	4.55
12/31/18	2,980,108	12,018,354	5,704,887	14,994,420	100	99.97	0.00
12/31/19	3,116,707	13,131,453	5,668,570	16,036,869	100	98.39	0.00
12/31/20	3,167,835	14,109,921	5,627,219	17,525,117	100	100	4.40
12/31/21	3,364,884	14,921,449	5,729,740	19,488,761	100	100	20.99

Actuarial Methods and Assumptions

Economic Assumptions

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2017 through December 31, 2019 Actuarial Experience Study dated August 6, 2020 and PowerPoint presentation dated August 17, 2020. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers. These assumptions were adopted by the Board.

Net Investment Return: 7.00%; net of investment expenses and administrative expenses.

Member Contribution Crediting Rate: 5.00%, compounded semi-annually.

Inflation and Cost of Living Adjustments: Increase of 2.50% per year, retiree COLA increases of 2.75% per year subject to a 3.0% maximum change per year. The actual COLA granted by OCERS on April 1, 2022 has been reflected in the December 31, 2021 valuation.

Payroll Growth: Inflation of 2.50% per year plus "across the board" real salary increases of 0.50% per year.

Increase in Section 7522.10 Compensation Limit: Increase of 2.50% per year from the valuation date.

Individual Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 2.50% per year, plus "across the board" real salary increases of 0.50% per year, plus the following merit and promotion increases:		
Years of Service	**General**	**Safety**
Less than 1	8.00	12.00
1-2	7.25	10.00
2-3	6.25	8.50
3-4	5.25	7.50
4-5	4.25	6.50
5-6	3.50	5.50
6-7	2.75	5.00
7-8	2.50	4.00
8-9	1.70	3.00
9-10	1.70	2.50
10-11	1.60	1.85
11-12	1.60	1.85
12-13	1.50	1.85
13-14	1.50	1.85
14-15	1.25	1.85
15-16	1.25	1.60
16-17	1.00	1.60
17-18	1.00	1.60
18-19	1.00	1.60
19-20	1.00	1.60
20 & over	1.00	1.60

In addition to the individual salary increase assumptions, we have applied an average of two hours of additional salary annually for leap-year salary adjustment.

Actuarial Methods and Assumptions

(continued)

Demographic Assumptions

Post-Retirement Mortality Rates:

Healthy:

For General Members: Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2019.

For Safety Members: Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.

Disabled:

For General Members: Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) with rates decreased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2019.

For Safety Members: Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.

All Beneficiaries:

Pub-2010 General Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 5%, projected generationally with the two-dimensional mortality improvement scale MP-2019.

The Pub-2010 mortality tables and adjustments as shown above reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Employee Contribution Rates:

For General Members: Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) with rates increased by 5%, projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP 2019, weighted 40% male and 60% female.

For Safety Members: Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 80% male and 20% female.

Pre-Retirement Mortality Rates:

For General Members: Pub-2010 General Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.

For Safety Members: Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.

Actuarial Methods and Assumptions

(continued)

Termination Rates Before Retirement

Mortality Rates

Age	Rate (%)[1] Mortality			
	General		Safety	
	Male	Female	Male	Female
25	0.02	0.01	0.03	0.02
30	0.03	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.14
65	0.41	0.27	0.35	0.20
70	0.61	0.44	0.66	0.39

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

All General pre-retirement deaths are assumed to be non-service connected. For Safety, 90% of pre-retirement deaths are assumed to be non-service connected. The other 10% are assumed to be service connected.

Disability Incidence Rates

Age	Rate (%) Disability			
	General All Other [1]	General OCTA [2]	Safety - Law & Fire [3]	Safety - Probation [4]
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.01	0.03
30	0.01	0.03	0.07	0.08
35	0.03	0.20	0.19	0.10
40	0.08	0.39	0.31	0.13
45	0.14	0.48	0.44	0.21
50	0.20	0.53	1.10	0.28
55	0.27	0.70	2.70	0.42
60	0.33	1.22	5.00	0.20

[1] 65% of General All Other disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected.

[2] 80% of General OCTA disabilities are assumed to be service connected disabilities. The other 20% are assumed to be non-service connected.

[3] 100% of Safety Law Enforcement and Fire disabilities are assumed to be service connected disabilities.

[4] 75% of Safety Probation disabilities are assumed to be service connected disabilities. The other 25% are assumed to be non-service connected.

Actuarial Methods and Assumptions

(continued)

Termination Rates Before Retirement

(continued)

Termination Rates

Years of Service	Rate (%) Termination			
	General All Other	General OCTA	Safety - Law & Fire	Safety - Probation
Less than 1	11.00	17.00	4.25	14.00
1-2	7.25	11.50	2.75	13.00
2-3	6.50	9.00	2.25	11.00
3-4	5.50	8.50	1.75	5.00
4-5	5.00	8.00	1.50	4.00
5-6	4.50	7.00	1.25	3.25
6-7	4.00	4.25	1.00	2.75
7-8	3.50	4.00	0.95	2.75
8-9	3.25	3.25	0.90	2.50
9-10	3.00	3.00	0.85	1.75
10-11	2.50	2.75	0.80	1.50
11-12	2.00	2.50	0.75	1.50
12-13	2.00	2.50	0.70	1.25
13-14	2.00	2.25	0.65	1.00
14-15	1.50	2.25	0.60	0.75
15-16	1.40	2.25	0.55	0.75
16-17	1.30	2.00	0.50	0.75
17-18	1.20	1.80	0.45	0.75
18-19	1.10	1.60	0.40	0.50
19-20	1.00	1.40	0.30	0.25
20 & over	0.75	1.20	0.15	0.15

Election for Withdrawal of Contributions Rates

Years of Service	Rate (%) Election for Withdrawal of Contributions			
	General All Other	General OCTA	Safety - Law & Fire	Safety - Probation
Less than 5	30.00	40.00	20.00	25.00
5-9	25.00	30.00	20.00	25.00
10-14	25.00	25.00	10.00	25.00
15 & over	17.50	15.00	10.00	15.00

Actuarial Methods and Assumptions

(continued)

Retirement Rates

Age	Rate (%)[1] Retirement			
	General		General Non-Enhanced[2]	
	Less than 30 Years of Service	Greater than 30 Years of Service	Less than 30 Years of Service	Greater than 30 Years of Service
49	0.00	30.00	0.00	25.00
50	2.00	4.00	3.00	3.00
51	2.00	4.00	3.00	3.00
52	2.50	5.00	2.00	2.00
53	2.50	5.00	3.50	3.50
54	7.00	14.00	2.75	2.75
55	12.00	30.00	3.25	3.25
56	9.00	19.00	3.50	3.50
57	9.00	18.00	5.00	5.00
58	9.00	18.00	5.50	5.50
59	10.00	20.00	6.50	6.50
60	11.00	20.00	9.00	13.50
61	11.00	20.00	9.00	13.50
62	13.00	20.00	9.00	18.00
63	13.00	22.00	9.50	19.00
64	16.00	24.00	10.00	20.00
65	24.00	28.00	22.00	26.40
66	24.00	30.00	25.00	30.00
67	24.00	30.00	25.00	30.00
68	22.00	27.50	30.00	27.50
69	22.00	27.50	30.00	27.50
70	25.00	27.50	20.00	27.50
71	25.00	27.50	20.00	27.50
72	25.00	27.50	20.00	27.50
73	20.00	27.50	20.00	27.50
74	20.00	27.50	20.00	27.50
75	100.00	100.00	100.00	100.00

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[1] The retirement rates only apply to members that are eligible to retire at the age shown.

[2] These assumptions are also used for the CalPEPRA 1.62% @ 65 formula (Plan T and Plan W).

Actuarial Methods and Assumptions

(continued)

Retirement Rates

(continued)

Age	Rate (%)[1] Retirement					
	Safety Law (31664.1)		Safety Law (31664.1)		Safety Probation (31664.1)	
	Less than 30 Years of Service	Greater than 30 Years of Service	Less than 30 Years of Service	Greater than 30 Years of Service	Less than 30 Years of Service	Greater than 30 Years of Service
45	1.00	16.00	2.00	10.00	3.00	5.00
46	1.00	16.00	2.00	10.00	3.00	5.00
47	1.00	16.00	2.00	10.00	3.00	5.00
48	1.00	16.00	2.00	10.00	3.00	5.00
49	11.00	16.00	2.00	10.00	3.00	5.00
50	16.00	16.00	4.00	10.00	9.00	12.00
51	16.00	16.00	4.00	10.00	7.00	10.00
52	17.00	16.00	4.00	10.00	5.00	9.00
53	19.00	30.00	9.00	20.00	7.00	9.00
54	24.00	30.00	12.00	25.00	7.00	12.00
55	24.00	30.00	12.00	25.00	12.00	30.00
56	22.00	30.00	12.00	25.00	18.00	30.00
57	22.00	30.00	18.00	25.00	25.00	30.00
58	22.00	40.00	18.00	30.00	25.00	30.00
59	22.00	40.00	18.00	30.00	18.00	30.00
60	30.00	40.00	18.00	30.00	20.00	40.00
61	30.00	40.00	18.00	30.00	20.00	40.00
62	30.00	40.00	18.00	35.00	20.00	40.00
63	30.00	40.00	18.00	35.00	20.00	40.00
64	30.00	40.00	18.00	35.00	20.00	40.00
65	100.00	100.00	100.00	100.00	100.00	100.00

[1] The retirement rates only apply to members that are eligible to retire at the age shown.

Actuarial Methods and Assumptions

(continued)

Retirement Rates

(continued)

Age	Rate (%)[1] Retirement		
	General SJC (31676.12)	Safety Law (31664.2)	Safety Probation (31664.1)
50	4.00	11.50	8.00
51	4.00	12.00	9.00
52	4.00	12.70	10.00
53	4.00	17.90	12.00
54	4.00	18.80	14.00
55	4.00	35.00	23.00
56	5.00	25.00	22.00
57	6.00	25.00	25.00
58	7.00	25.00	25.00
59	9.00	30.00	35.00
60	10.00	40.00	40.00
61	12.00	40.00	40.00
62	13.00	40.00	40.00
63	13.00	40.00	40.00
64	19.00	40.00	40.00
65	20.00	100.00	100.00
66	25.00	100.00	100.00
67	25.00	100.00	100.00
68	25.00	100.00	100.00
69	25.00	100.00	100.00
70	45.00	100.00	100.00
71	45.00	100.00	100.00
72	45.00	100.00	100.00
73	45.00	100.00	100.00
74	45.00	100.00	100.00
75	100.00	100.00	100.00

[1] The retirement rates only apply to members that are eligible to retire at the age shown.

Actuarial Methods and Assumptions

(continued)

Retirement Rates

(continued)

	Rate (%)[1] Retirement			
Age	CalPEPRA 2.5% @ 67 General Formula	CalPEPRA 2.5% @ 57 Safety Formula Probation	CalPEPRA 2.5% @ 57 Safety Formula Law	CalPEPRA 2.5% @ 57 Safety Formula Fire
50	0.00	3.00	11.00	6.00
51	0.00	3.00	11.50	6.50
52	6.00	3.50	12.00	8.00
53	2.00	3.50	16.00	10.00
54	2.00	6.00	17.00	11.50
55	2.50	12.00	29.00	20.00
56	3.50	12.00	19.00	19.00
57	5.50	15.00	19.00	21.00
58	7.50	25.00	23.00	24.00
59	7.50	25.00	26.00	30.00
60	7.50	40.00	40.00	40.00
61	7.50	40.00	40.00	40.00
62	14.00	40.00	40.00	40.00
63	14.00	40.00	40.00	40.00
64	14.00	40.00	40.00	40.00
65	20.00	100.00	100.00	100.00
66	22.00	100.00	100.00	100.00
67	23.00	100.00	100.00	100.00
68	23.00	100.00	100.00	100.00
69	23.00	100.00	100.00	100.00
70	25.00	100.00	100.00	100.00
71	25.00	100.00	100.00	100.00
72	25.00	100.00	100.00	100.00
73	25.00	100.00	100.00	100.00
74	25.00	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00

[1] The retirement rates only apply to members that are eligible to retire at the age shown.

Actuarial Methods and Assumptions

(continued)

Retirement Age and Benefit for Deferred Vested Members: For current and future deferred vested members, we make the following retirement age assumptions:

General Age: 59

Safety Age: 54

Future deferred vested members who terminate with less than five years of service and are not vested are assumed to retire at age 70 for both General and Safety if they decide to leave their contributions on deposit.

15% of future General and 20% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 4.00% and 4.60% compensation increases are assumed per annum for General and Safety, respectively.

Liability Calculation for Current Deferred Vested Members: Liability for a current deferred vested member is calculated based on salary (adjusted with the additional cash out assumptions for non-CalPEPRA members), service, and eligibility for reciprocal benefit as provided by the Retirement System. For those members without salary information that have three or more years of service, we used an average salary. For those members without salary information that have less than three years of service or for those members without service information, we assumed a refund of account balance.

Future Benefit Accruals: 1.0 year of service per year of employment. There is no assumption to anticipate conversion of unused sick leave at retirement.

Unknown Data for Members: Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.

Percent Married: For all active and inactive members, 75% of male members and 55% of female members are assumed to be married at pre-retirement death or retirement.

Age and Gender of Spouse: For all active and inactive members, male members are assumed to have a female spouse who is three years younger than the member and female members are assumed to have a male spouse who is two years older than the member.

Additional Cashout Assumptions: Additional compensation amounts are expected to be received during a member's final average earnings period. The percentages used in this valuation are:

Years of Service	Rate (%)	
	Final One Year Salary	Final Three Year Salary
General Non-CalPEPRA	3.00%	2.90%
Safety Probation Non-CalPEPRA	3.80%	3.40%
Safety Law Non-CalPEPRA	N/A	6.90%
Safety Fire Non-CalPEPRA	N/A	1.50%
General CalPEPRA	N/A	N/A
Safety Probation CalPEPRA	N/A	N/A
Safety Law CalPEPRA	N/A	N/A
Safety Fire CalPEPRA	N/A	N/A

The additional cashout assumptions are the same for service and disability retirements.

Actuarial Methods and Assumptions

(continued)

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and the expected return on a market value basis, and is recognized over a five-year period.
Valuation Value of Assets:	The Valuation Value of Assets is the Actuarial Value of Assets reduced by the value of the non-valuation reserves.
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus the lesser of years of employment or years of benefit service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation. The normal cost rate is calculated assuming their Entry Age is the date they entered service with OCERS. Please note that for Probation members who have prior benefit service in another General OCERS plan, the normal cost rate for the current plan is calculated assuming their Entry Age is the date they entered service with their current plan.
Amortization Policy:	Effective December 31, 2013, the outstanding balance of the UAAL from the December 31, 2012 valuation was combined and re-amortized over a declining 20-year period. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to 5 years. Please note that for Probation members who have prior benefit service in another OCERS plan, the normal cost rate for the current plan is calculated assuming their Entry Age is the date they entered service with their current plan.

Summary of Major Plan Provisions

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

Membership Eligibility:	Membership with OCERS begins with the day of employment in an eligible position by the County or a participating employer.
Non-CalPEPRA General Plans:	
2.5% @ 55 Plans	*(Orange County Sanitation District[1] and Law Library[2])*
Plan G	General members hired before September 21, 1979.
Plan H	General members hired on or after September 21, 1979.
	[1] Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010 are in Plan B.
	[2] Improvement is prospective only for service after June 23, 2005.
2.7% @ 55 Plans	*(City of San Juan Capistrano, Orange County Employees except bargaining unit AFSCME members, Orange County Superior Court, Orange County Local Agency Formation Commission[3], Orange County Employees Retirement System[4], Children and Family Commission[5] and Orange County Fire Authority)*
Plan I	General members hired before September 21, 1979.
Plan J	General members hired on or after September 21, 1979.
	[3] Improvement is prospective only for service after June 23, 2005.
	[4] Improvement for management employees is prospective only for service after June 30, 2005.
	[5] Improvement is prospective only for service after December 22, 2005.
2.0% @ 55 Plans	*(Transportation Corridor Agency, Cemetery District[6] and General OCFA employees effective July 1, 2011)*
Plan M	General members hired before September 21, 1979.
Plan N	General members hired on or after September 21, 1979.
	[6] Improvement is prospective only for service after December 7, 2007.
1.62% @ 65 Plans	*(Orange County Employees, Orange County Superior Court, Orange County Local Agency Formation Commission and Orange County Managers Unit)*
Plan O	County OCEA members and Superior Court members rehired on or after May 7, 2010, LAFCO members rehired on or after July 1, 2010 and County Managers unit members rehired on or after August 17, 2010 and not electing to rejoin Plan I.
Plan P	County OCEA members and Superior Court members hired on or after May 7, 2010, LAFCO members hired on or after July 1, 2010 and County Managers unit members hired on or after August 17, 2010 and not electing Plan J.
2.0% @ 57 Plan	*(City of San Juan Capistrano)*
Plan S	*General members hired on or after July 1, 2012.*
All Other General Employers:	
Plan A	General members hired before September 21, 1979.
1.67% @ 57.5 Plans *Plan B*	General members hired on or after September 21, 1979 and Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010.

Summary of Major Plan Provisions

(continued)

Membership Eligibility: (continued)

Non-CalPEPRA Safety Plans:

3% @ 50 Plans	*(Law Enforcement, Fire Authority and Probation)*
Plan E	Safety members hired before September 21, 1979.
Plan F	Safety members hired on or after September 21, 1979 and before April 9, 2010 for Law Enforcement, before July 1, 2011 for Safety employees of OCFA Executive Management, and before July 1, 2012 for other OCFA Safety employees.
3% @ 55 Plans	*(Law Enforcement and Fire Authority)*
Plan Q	Safety Law Enforcement members rehired on or after April 9, 2010, Safety employees of OCFA Executive Management rehired on or after July 1, 2011, and other OCFA Safety employees rehired on or after July 1, 2012 and previously in Plan E.
Plan R	Safety Law Enforcement members hired on or after April 9, 2010, Safety employees of OCFA Executive Management hired on or after July 1, 2011, and other OCFA Safety employees hired on or after July 1, 2012.

CalPEPRA General Plans:

1.62% @ 65 Plan	*(Orange County Employees except County Attorneys, Orange County Employees Retirement System except Management Employees, Children and Family Commission, Local Agency Formation Commission, and Orange County Superior Court)*[1]
Plan T	General members with membership dates on or after January 1, 2013.
2.5% @ 67 Plan	*(All Other General Employers, Orange County Attorneys, Orange County Employees Retirement System Management Employees)*
Plan U	General Non-Orange County Transportation Authority members with membership dates on or after January 1, 2013 and Orange County Transportation Authority members with membership dates on or after January 1, 2015.
1.62% @ 65 Plan	*(City of San Juan Capistrano)*
Plan W	General members with membership dates on or after January 1, 2016 and not electing Plan U.

CalPEPRA Safety Plans:

2.7% @ 57 Plan	*(Law Enforcement, Fire Authority and Probation Members)*
Plan V	Safety members with membership dates on or after January 1, 2013.

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[1] Orange County Superior Court adopted Plan U (2.5% at 67 Plan) on a go forward basis for all existing employees in Plan T (1.62% at 65 Plan) and any future PEPRA eligible employees with an effective date of July 1, 2023.

Summary of Major Plan Provisions

(continued)

Final Compensation for Benefit Determination:

Plans A, E, G, I, M, O and Q	Highest consecutive twelve months of compensation earnable. (§31462.1) (FAS1)
Plans B, F, H, J, N, P, R and S	Highest consecutive thirty-six months of compensation earnable. (§31462) (FAS3)
Plan T	Highest consecutive thirty-six months of pensionable compensation. (§7522.32 and §7522.34) (FAS3)
Plans U, V and W	Highest consecutive thirty-six months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)
Service:	Years of service. (Yrs)

Service Retirement Eligibility:

Plans A, B, G, H, I, J, M, N, O, P, S, T, and W	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years, regardless of age. (§31672) All part-time employees over age 55 with 10 years of employment may retire with 5 years of service.
Plan U	Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service. (§31672.3)
Plans E, F, Q and R	Age 50 with 10 years of service, or after 20 years, regardless of age. (§31663.25) All part-time employees over age 55 with 10 years of employment may retire with 5 years of service.
Plan V	Age 50 with 5 years of service (§7522.20(d)) or age 70 regardless of service. (§31672.3)

Summary of Major Plan Provisions

(continued)

Benefit Formula: General Plans

General Plans	Retirement Age	Benefit Formula
2.5% @ 55		
Plan G (§31676.18) *Tier 1*	50	(2.00% x FAS1 x Yrs)
	55	(2.50% x FAS1 x Yrs)
	60	(2.50% x FAS1 x Yrs)
	62	(2.62% x FAS1 x Yrs)[1]
	65 or later	(2.62% x FAS1 x Yrs)[1]
Plan H (§31676.18)	50	(2.00% x FAS3 x Yrs)
Tier 2	55	(2.50% x FAS3 x Yrs)
	60	(2.50% x FAS3 x Yrs)
	62	(2.50% x FAS3 x Yrs)
	65 or later	(2.50% x FAS3 x Yrs)

[1] Reflects benefit factors from Plan A as they provide a better benefit than those under 2.5% @ 55.

2.7% @ 55		
Plan I (§31676.19) *Tier 1*	50	(2.00% x FAS1 x Yrs)
	55	(2.70% x FAS1 x Yrs)
	60	(2.70% x FAS1 x Yrs)
	62	(2.70% x FAS1 x Yrs)
	65 or later	(2.70% x FAS1 x Yrs)
Plan J (§31676.19)	50	(2.00% x FAS3 x Yrs)
Tier 2	55	(2.70% x FAS3 x Yrs)
	60	(2.70% x FAS3 x Yrs)
	62	(2.70% x FAS3 x Yrs)
	65 or later	(2.70% x FAS3 x Yrs)
2.0% @ 55		
Plan M (§31676.16) *Tier 1*	50	(1.43% x FAS1 x Yrs)
	55	(2.00% x FAS1 x Yrs)
	60	(2.34% x FAS1 x Yrs)[1]
	62	(2.62% x FAS1 x Yrs)[1]
	65 or later	(2.62% x FAS1 x Yrs)[1]
Plan N (§31676.16)	50	(1.43% x FAS3 x Yrs)
Tier 2	55	(2.00% x FAS3 x Yrs)
	60	(2.26% x FAS3 x Yrs)
	62	(2.37% x FAS3 x Yrs)
	65 or later	(2.43% x FAS3 x Yrs)[2]

[1] Reflects benefit factors from Plan A as they provide a better benefit than those under 2.0% @ 55.

[2] Reflects benefit factors from Plan B as they provide a better benefit than those under 2.0% @ 55.

Summary of Major Plan Provisions

(continued)

Benefit Formula: General Plans (continued)

General Plans	Retirement Age	Benefit Formula
1.62% @ 65		
Plan O (§31676.01) *Tier 1*	50	(0.79% x FAS1 x Yrs)
	55	(0.99% x FAS1 x Yrs)
	60	(1.28% x FAS1 x Yrs)
	62	(1.39% x FAS1 x Yrs)
	65 or later	(1.62% x FAS1 x Yrs)
Plan P, Plan T and Plan W (§31676.01)	50	(0.79% x FAS3 x Yrs)
Tier 2	55	(0.99% x FAS3 x Yrs)
	60	(1.28% x FAS3 x Yrs)
	62	(1.39% x FAS3 x Yrs)
	65 or later	(1.62% x FAS3 x Yrs)
2.0% @ 57		
Plan S (§31676.12) *Tier 2*	50	(1.34% x FAS3 x Yrs)
	55	(1.77% x FAS3 x Yrs)
	60	(2.34% x FAS3 x Yrs)
	62	(2.62% x FAS3 x Yrs)
	65 or later	(2.62% x FAS3 x Yrs)
Plan A (§31676.12) *Tier 1*	50	(1.34% x FAS1 x Yrs)
	55	(1.77% x FAS1 x Yrs)
	60	(2.34% x FAS1 x Yrs)
	62	(2.62% x FAS1 x Yrs)
	65 or later	(2.62% x FAS1 x Yrs)
1.67% @ 57.5		
Plan B (§31676.1) *Tier 2*	50	(1.18% x FAS3 x Yrs)
	55	(1.49% x FAS3 x Yrs)
	60	(1.92% x FAS3 x Yrs)
	62	(2.09% x FAS3 x Yrs)
	65 or later	(2.43% x FAS3 x Yrs)
2.5% @ 67		
Plan U (§7522.20(a))	52	(1.00% x FAS3 x Yrs)
	55	(1.30% x FAS3 x Yrs)
	60	(1.80% x FAS3 x Yrs)
	62	(2.00% x FAS3 x Yrs)
	65	(2.30% x FAS3 x Yrs)
	67 or later	(2.50% x FAS3 x Yrs)

Summary of Major Plan Provisions

(continued)

Benefit Formula: Safety Plans

Safety Plans	Retirement Age	Benefit Formula
3% @ 50		
Plan E (§31664.1) *Tier 1*	50	(3.00% x FAS1 x Yrs)
	55	(3.00% x FAS1 x Yrs)
	60 or later	(3.00% x FAS1 x Yrs)
Plan F (§31664.1)	50	(3.00% x FAS3 x Yrs)
Tier 2	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
3% @ 55		
Plan Q (§31664.2)	50	(2.29% x FAS1 x Yrs)
Tier 1	55	(3.00% x FAS1 x Yrs)
	60 or later	(3.00% x FAS1 x Yrs)
Plan R (§31664.2) *Tier 2*	50	(2.29% x FAS3 x Yrs)
	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
2.7% @ 57		
Plan V (§7522.25(d))	50	(2.00% x FAS3 x Yrs)
	55	(2.50% x FAS3 x Yrs)
	57 or later	(2.70% x FAS3 x Yrs)

Summary of Major Plan Provisions

(continued)

Maximum Benefit:

Plans A, B, E, F, G, H, I, J, M, N, O, P, Q, R, S, T and W	100% of Highest Average Compensation. (§31676.01, §31676.1, §31676.12, §31676.16, §31676.18, §31676.19, §31664.1, §31664.2)
Plans U and V	None

Ordinary Disability:

General Plans:

Plans A, B, G, H, I, J, M, N, O, P, S, T, U and W

Eligibility	Five years of service. (§31720)
Benefit Formula	• **Plans A, G, I, M, and O:** 1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 62, but the total benefit cannot be more than one-third of Final Compensation. (§31727.1) • **Plans B, H, J, N, P, S, T, U and W:** 1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation. (§31727)

Safety Plans:

Plans E, F, Q, R and V

Eligibility	Five years of service. (§31720)
Benefit Formula	1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation (§31727.2) For all members, 100% of the service retirement benefit will be paid, if greater.

Line-of-Duty Disability:

All Members:

Eligibility	No age or service requirements. (§31720)
Benefit Formula	50% of the Final Compensation or 100% of Service Retirement benefit, if greater. (§31727.4)

Pre-Retirement Death:

All Members:

Eligibility	None
Benefit	Refund of employee contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation. (§31781) A lump sum benefit in the amount of $1,000 is payable upon death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)
Death in line of duty	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor-children. (§31787)

Or

Vested Members:

Eligibility	Five years of service.
Benefit	60% of the greater of Service or Ordinary Disability Retirement benefit payable to eligible surviving spouse (§31765.1, §31781.1), in lieu of §31781.

Summary of Major Plan Provisions

(continued)

Death After Retirement:

All Members:

Service or Ordinary Disability Retirement	60% of member's unmodified allowance continued to eligible spouse. (§31760.1) A lump sum benefit in the amount of $1,000 is payable upon death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790) An eligible spouse is a surviving spouse who was married to or registered with the member one year prior to the effective retirement date. Certain surviving spouses or domestic partners may also be eligible if marriage or domestic partnership was at least two years prior to the date of death and the surviving spouse or domestic partner has attained age 55. (§31760.1)
Line-of-Duty Disability	100% of member's allowance continued to eligible spouse. (§31786) A lump sum benefit in the amount of $1,000 is payable upon death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)

Withdrawal Benefits:

Less than Five Years of Service	Refund of accumulated employee contributions with interest or earned benefit at age 70 (§31628). Effective January 1, 2003, a member may also elect to leave their contributions on deposit in the retirement fund. (§31629.5)
Five or More Years of Service	Refund of accumulated employee contributions with interest. If contributions left on deposit, a member is entitled to earned benefits commencing at any time after eligible to retire. (§31700)

Post-Retirement Cost-of-Living Benefits:	Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked." (§31870.1)
Supplemental Benefit:	Non-vested supplemental COLA and medical benefits are also paid by the System to eligible retirees and survivors. These benefits have been excluded from this valuation.

Member Contributions:

Non-CalPEPRA General Plans:

Plan A	
Basic	Provide for an average annuity at age 60 equal to 1/200 of FAS1. (§31621.5)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan B	
Basic	Provide for an average annuity at age 60 equal to 1/120 of FAS3. (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans G, H, I and J	
Basic	Provide for an average annuity at age 55 equal to 1/100 of FAS3 (FAS1 for Plans G and I). (§31621.8)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans M, N, O and P	
Basic	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3 (FAS1 for Plans M and O). (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan S	
Basic	Provide for an average annuity at age 60 equal to 1/100 of FAS3. (§31621.2)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.

Summary of Major Plan Provisions

(continued)

Member Contributions: (continued)

Non-CalPEPRA Safety Plans:	
Plans E and Q	
Basic	Provide for an average annuity at age 50 equal to 1/200 FAS1. (§31639.5)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans F and R	
Basic	Provide for an average annuity at age 50 equal to 1/100 of FAS3. (§31639.25)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
CalPEPRA Plans:	
Plans T, U, V and W	50% of total Normal Cost rate.
Other Information:	Non-CalPEPRA Safety members with 30 or more years of benefit service are exempt from paying member contributions. The same applies for General members hired on or before March 7, 1973.

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

Experience Analysis

(2012 - 2021)
(Dollars in Thousands)

Gains & Losses in Actuarial Accrued Liabilities During Years Ended December 31, Resulting from Differences Between Assumed Experience & Actual Experience

	Gains (or Losses) Per Year				
Type of Activity	**2012**	**2013**	**2014**	**2015**	**2016**
Retirements	$ -	$ -	$ -	$ (62,070)	$ -
Pay Increases	244,750	294,326	125,746	282,696	(204,603)
COLA Increases	-	-	153,484	119,367	186,039
Investment Income	(387,808)	176,930	9,570	(229,138)	(113,103)
Other	(19,979)	30,354	(4,476)	10,056	(4,119)
Gain (or Loss) During Year From Experience	**$ (163,037)**	**$ 501,610**	**$ 284,324**	**$ 120,911**	**$ (135,786)**
Nonrecurring Items:					
Method and Procedure Changes	-	-	-	-	92,587[2]
Plan Amendments and Assumption Changes	(934,619)	-	122,171	-	-
Composite Gain (or Loss) During Year	**$ (1,097,656)**	**$ 501,610**	**$ 406,495**	**$ 120,911**	**$ (43,199)**

Gains & Losses in Actuarial Accrued Liabilities During Years Ended December 31, Resulting from Differences Between Assumed Experience & Actual Experience

	Gains (or Losses) Per Year				
Type of Activity	**2017**	**2018**	**2019**	**2020**	**2021**
Retirements	$ -	$ -	$ -	$ -	$ -
Pay Increases	66,399	71,908	52,716	62,291	87,162
COLA Increases	95,796	(24,279)	(131,220)	123,844[1]	(148,830)
Investment Income	24,401	(255,908)	(50,514)	370,675	767,019
Other	5,316	(143,172)	(161,090)	(193,593)	(10,716)
Gain (or Loss) During Year From Experience	**$ 191,912**	**$ (351,451)**	**$ (290,108)**	**$ 363,217**	**$ 694,635**
Nonrecurring Items:					
Method and Procedure Changes	-	-	-	37,783[3]	-
Plan Amendments and Assumption Changes	(853,538)	-	-	(24,273)	-
Composite Gain (or Loss) During Year	**$ (661,626)**	**$ (351,451)**	**$ (290,108)**	**$ 376,727**	**$ 694,635**

[1] Beginning with the December 31, 2020 valuation, the COLA for the upcoming April 1 is reflected in the valuation.

[2] Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

[3] Effect of reallocating present value benefits between NC and AAL.

Section 5 - Statistical

Northeast

Photo Caption: Taking in the stunning skyline of Cleveland, the city of champions.

Retirement Benefits: The Northeast region offers a range of lifestyle options to suit every preference, from bustling cities to charming small towns. Additionally, the Northeast has excellent transportation infrastructure, with access to major airports and public transportation, making it easy for retirees to travel domestically and internationally.

Connecticut	2
Delaware	4
Indiana	33
Kentucky	27
Maine	8
Maryland	11
Massachusetts	11
New Hampshire	7
New Jersey	5
New York	48
Ohio	43
Pennsylvania	38
Rhode Island	5
Vermont	2
Virginia	46
West Virginia	1

Total Payees

291

Statistical Section Review

The Statistical Section of the Annual Comprehensive Financial Report provides additional information in order to promote a more comprehensive understanding of the financial statements, note disclosures and supplemental information.

The Governmental Accounting Standards Board (GASB) established five categories of information to be provided in the Statistical Section: Financial Trends, Revenues, Expenses, Demographic and Economic, and Operating Information.

This section provides multi-year trend information to facilitate an understanding of how OCERS as an organization has changed over time.

Information of financial trends, revenues and expenses for the last ten years is presented in the Schedules of Changes in Fiduciary Net Position, Schedule and Graph of Fiduciary Revenue by Source, and Schedule and Graph of Expenses by Type.

Schedule of Changes in Fiduciary Net Position - Pension Trust Fund

2013 – 2022

(Dollars in Thousands)

Years Ended December 31	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Additions										
Employer Contributions	$ 427,095	$ 625,520	$ 571,298	$ 567,196	$ 572,104	$ 580,905	$ 653,793	$ 659,807	$ 698,791	$ 719,691
Employee Contributions	209,301	232,656	249,271	258,297	262,294	270,070	279,373	279,384	271,334	269,999
Investment Income/(Loss)	1,151,193	497,760	(11,903)	1,060,040	1,938,025	(326,145)	2,182,666	2,172,339	3,221,132	(2,059,364)
Net Securities Lending	1,454	1,435	1,030	1,203	1,610	1,517	1,142	845	933	774
Total Additions	**$ 1,789,043**	**$ 1,357,371**	**$ 809,696**	**$ 1,886,736**	**$ 2,774,033**	**$ 526,347**	**$ 3,116,974**	**$ 3,112,375**	**$ 4,192,190**	**$ (1,068,900)**
Deductions										
Benefits	$ 586,284	$ 630,678	$ 675,963	$ 717,976	$ 764,344	$ 828,278	$ 900,902	$ 973,325	$ 1,045,738	$ 1,139,715
Administrative Expenses	11,705	11,905	12,521	16,870	17,002	18,284	19,171	20,428	21,473	23,546
Total Deductions	**$ 597,989**	**$ 642,583**	**$ 688,484**	**$ 734,846**	**$ 781,346**	**$ 846,562**	**$ 920,073**	**$ 993,753**	**$ 1,067,211**	**$ 1,163,261**
Changes in Fiduciary Net Position	**$ 1,191,054**	**$ 714,788**	**$ 121,212**	**$ 1,151,890**	**$ 1,992,687**	**$ (320,215)**	**$ 2,196,901**	**$ 2,118,622**	**$ 3,124,979**	**$ (2,232,161)**

Schedule of Changes in Fiduciary Net Position - Health Care Fund - County

2013 – 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions										
Employer Contributions	$ 66,057	$ 64,852	$ 36,557	$ 42,411	$ 59,864	$ 52,520	$ 54,788	$ 41,559	$ 41,049	$ 41,889
Investment Income/(Loss)	13,702	7,374	(698)	16,902	34,087	(5,888)	43,523	40,706	66,688	(38,483)
Net Securities Lending	20	25	18	21	32	31	25	19	21	18
Total Additions	**$ 79,779**	**$ 72,251**	**$ 35,877**	**$ 59,334**	**$ 93,983**	**$ 46,663**	**$ 98,336**	**$ 82,284**	**$ 107,758**	**$ 3,424**
Deductions										
Benefits	$ 28,293	$ 29,299	$ 30,107	$ 30,818	$ 32,042	$ 33,290	$ 35,012	$ 36,784	$ 37,262	$ 37,013
Administrative Expenses	20	20	22	22	22	20	20	22	23	23
Total Deductions	**$ 28,313**	**$ 29,319**	**$ 30,129**	**$ 30,840**	**$ 32,064**	**$ 33,310**	**$ 35,032**	**$ 36,806**	**$ 37,285**	**$ 37,036**
Changes in Fiduciary Net Position	**$ 51,466**	**$ 42,932**	**$ 5,748**	**$ 28,494**	**$ 61,919**	**$ 13,353**	**$ 63,304**	**$ 45,478**	**$ 70,473**	**$ (33,612)**

Schedule of Changes in Fiduciary Net Position - Health Care Fund - OCFA

2013 – 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions										
Employer Contributions	$ 18,349	$ 2,667	$ 2,624	$ 2,414	$ 2,380	$ 4,536	$ 2,111	$ 1,976	$ 16,773	$ 2,932
Investment Income/(Loss)	1,963	1,583	(99)	2,845	5,113	(725)	5,288	4,140	6,746	(4,705)
Net Securities Lending	4	5	3	3	4	4	3	2	2	2
Total Additions	**$ 20,316**	**$ 4,255**	**$ 2,528**	**$ 5,262**	**$ 7,497**	**$ 3,815**	**$ 7,402**	**$ 6,118**	**$ 23,521**	**$ (1,771)**
Deductions										
Benefits	$ 2,550	$ 3,138	$ 3,448	$ 3,867	$ 3,978	$ 5,077	$ 5,018	$ 5,539	$ 5,999	$ 6,658
Administrative Expenses	14	22	22	22	27	30	21	22	24	22
Total Deductions	**$ 2,564**	**$ 3,160**	**$ 3,470**	**$ 3,889**	**$ 4,005**	**$ 5,107**	**$ 5,039**	**$ 5,561**	**$ 6,023**	**$ 6,680**
Changes in Fiduciary Net Position	**$ 17,752**	**$ 1,095**	**$ (942)**	**$ 1,373**	**$ 3,492**	**$ (1,292)**	**$ 2,363**	**$ 557**	**$ 17,498**	**$ (8,451)**

Schedule of Changes in Fiduciary Net Position - Custodial Fund - OCTA

2013 – 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Additions										
Employer OPEB Contributions	N/A	N/A	N/A	N/A	N/A	N/A	$ 613	$ 613	$ 605	$ 655
Investment Income/(Loss)	N/A	N/A	N/A	N/A	N/A	N/A	3,250	2,350	2,715	(3,402)
Total Additions	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 3,863**	**$ 2,963**	**$ 3,320**	**$(2,747)**
Deductions										
Employer OPEB Payments	N/A	N/A	N/A	N/A	N/A	N/A	$ 1,318	$ 1,383	$ 1,419	$ 1,466
Administrative Expenses	N/A	N/A	N/A	N/A	N/A	N/A	20	22	23	23
Total Deductions	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,338**	**$ 1,405**	**$ 1,442**	**$ 1,489**
Changes in Fiduciary Net Position	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 2,525**	**$ 1,558**	**$ 1,878**	**$ (4,236)**

N/A: Detailed information not available. This is a 10-year schedule. Information in this schedule is not available prior to 2019 due to the implementation of GASB 84. Additional years will be added to this schedule in future fiscal years until 10 years of data is presented.

Schedule and Graph of Fiduciary Revenues by Source

2013 – 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pension Trust Fund										
Employee Contributions	$ 209,301	$ 232,656	$ 249,271	$ 258,297	$ 262,294	$ 270,070	$ 279,373	$ 279,384	$ 271,334	$ 269,999
Employer Contributions	427,095	625,520	571,298	567,196	572,104	580,905	653,793	659,807	698,791	719,691
Investment Income/(Loss)[1]	1,152,647	499,195	(10,873)	1,061,243	1,939,635	(324,628)	2,183,808	2,173,184	3,222,065	(2,058,590)
Health Care Fund - County										
Employer Contributions	66,057	64,852	36,557	42,411	59,864	52,520	54,788	41,559	41,049	41,889
Investment Income/(Loss)[1]	13,722	7,399	(680)	16,923	34,119	(5,857)	43,548	40,725	66,709	(38,465)
Health Care Fund - OCFA										
Employer Contributions	18,349	2,667	2,624	2,414	2,380	4,536	2,111	1,976	16,773	2,932
Investment Income/(Loss)[1]	1,967	1,588	(96)	2,848	5,117	(721)	5,291	4,142	6,748	(4,703)
Custodial Fund - OCTA										
Employer OPEB Contributions	N/A	N/A	N/A	N/A	N/A	N/A	613	613	605	655
Investment Income/(Loss)[1]	N/A	N/A	N/A	N/A	N/A	N/A	3,250	2,350	2,715	(3,402)
Total	$ 1,889,138	$ 1,433,877	$ 848,101	$ 1,951,332	$ 2,875,513	$ 576,825	$ 3,226,575	$ 3,203,740	$ 4,326,789	$ (1,069,994)

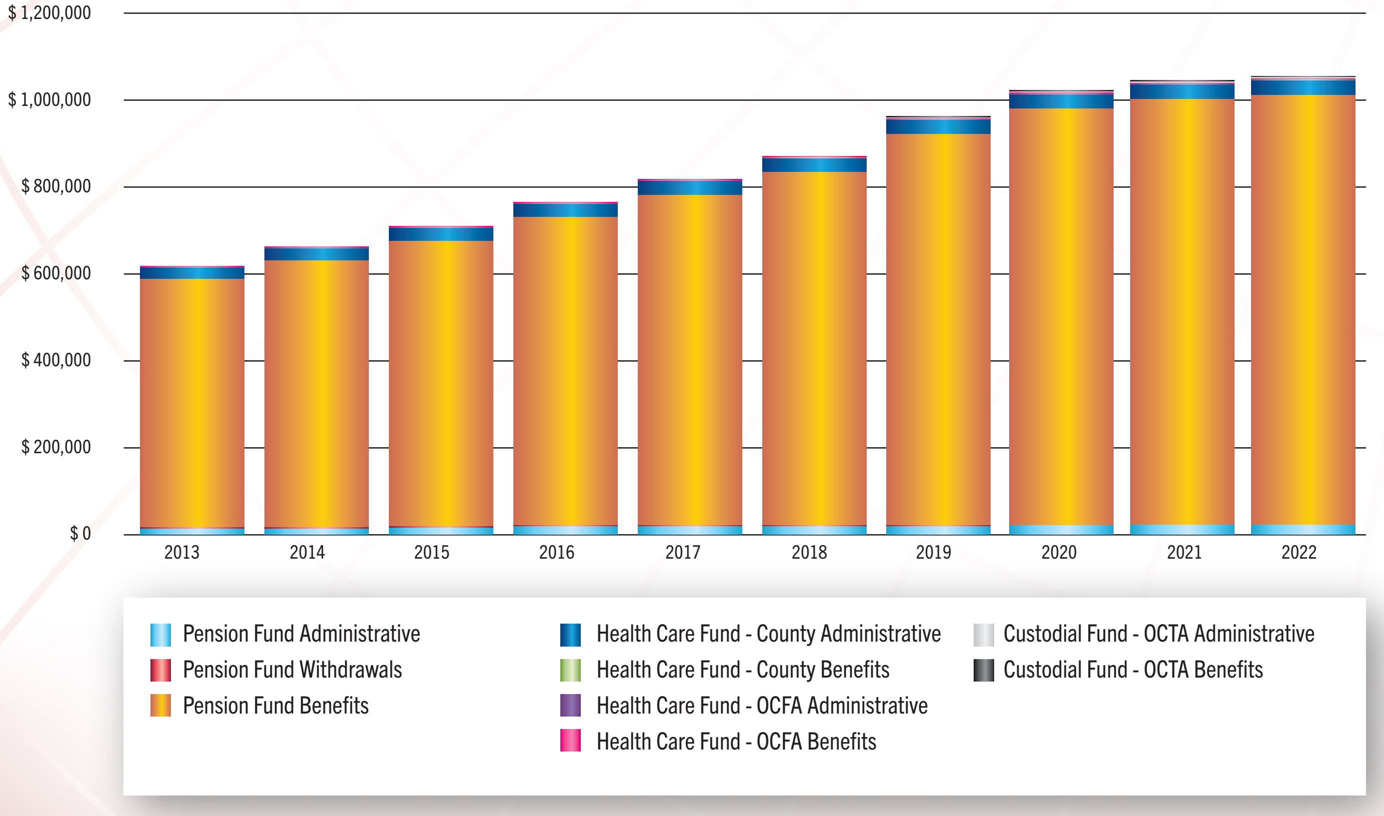
N/A: Detailed information not available.

[1] Investment Income/(Loss) includes net appreciation/(depreciation) less investment manager fees, security lending fees and commission recapture.

Schedule and Graph of Expenses by Type

2013 – 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pension Trust Fund										
Administrative	$ 11,705	$ 11,905	$ 12,521	$ 16,870	$ 17,002	$ 18,284	$ 19,171	$ 20,428	$ 21,473	$ 23,546
Withdrawals										
Separation	7,516	9,843	10,764	9,411	9,294	10,681	9,458	6,883	8,323	12,810
Death	2,348	1,887	1,093	4,232	4,572	3,252	3,791	4,664	6,126	9,429
Benefits	576,420	618,948	664,106	704,333	750,478	814,345	887,653	961,778	1,031,289	1,117,476
Health Care Fund - County										
Administrative	20	20	22	22	22	20	20	22	23	23
Benefits	28,293	29,299	30,107	30,818	32,042	33,290	35,012	36,784	37,262	37,013
Health Care Fund - OCFA										
Administrative	14	22	22	22	27	30	21	22	24	22
Benefits	2,550	3,138	3,448	3,867	3,978	5,077	5,018	5,539	5,999	6,658
Custodial Fund - OCTA										
Administrative	N/A	N/A	N/A	N/A	N/A	N/A	20	22	23	23
Benefits	N/A	N/A	N/A	N/A	N/A	N/A	1,318	1,383	1,419	1,466
Total	$ 628,866	$ 675,062	$ 722,083	$ 769,575	$ 817,415	$ 884,979	$ 961,482	$ 1,037,525	$ 1,111,961	$ 1,208,466

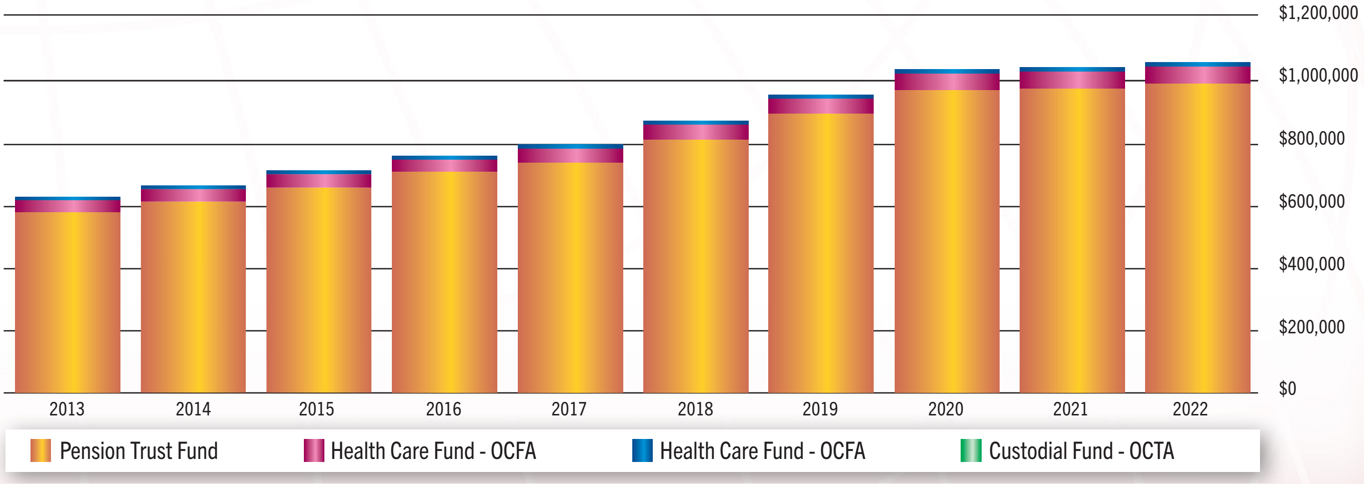


N/A: Detailed information not available.

Schedule and Graph of Benefit Expenses by Type

2013– 2022
(Dollars in Thousands)

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pension Trust Fund										
Participant Benefits										
Service Retiree Payroll										
General	N/A	N/A	$ 446,534	$ 475,838	$ 502,396	$ 545,028	$ 593,394	$ 644,351	$ 691,732	$ 744,922
Safety	N/A	N/A	158,247	167,723	180,747	199,029	218,482	238,671	252,733	285,227
Service Retiree Payroll	N/A	N/A	604,781	643,561	683,143	744,057	811,876	883,022	944,465	1,030,149
Disability Retiree Payroll										
General	N/A	N/A	25,298	25,891	29,462	29,177	31,474	30,831	31,980	31,980
Safety	N/A	N/A	33,503	34,497	37,179	40,541	43,653	46,993	53,789	53,789
Disability Retiree Payroll	N/A	N/A	58,801	60,388	66,641	69,718	75,127	77,824	85,769	85,769
Total Participant Benefits										
General	N/A	N/A	471,832	501,729	531,858	574,205	624,868	675,182	723,712	776,902
Safety	N/A	N/A	191,750	202,220	217,926	239,570	262,135	285,664	306,522	339,016
Total Participant Benefits	$ 575,633	$ 618,233	663,582	703,949	749,784	813,775	887,003	960,846	1,030,234	1,115,918
Membership Withdrawals and Refunds										
General Membership	N/A	N/A	N/A	12,778	13,063	12,288	12,536	10,693	12,897	18,311
Safety Membership	N/A	N/A	N/A	865	803	1,645	713	854	1,552	3,928
Total Withdrawals and Refunds	9,864	11,730	11,857	13,643	13,866	13,933	13,249	11,547	14,449	22,239
Death Benefits										
Total Death Benefits	787	715	524	384	694	570	650	932	1,055	1,558
Total Pension Trust Fund	586,284	630,678	675,963	717,976	764,344	828,278	900,902	973,325	1,045,738	1,139,715
Health Care Fund - County										
Health Care	28,293	29,299	30,107	30,818	32,042	33,290	35,012	36,784	37,262	37,013
Health Care Fund - OCFA										
Health Care	2,550	3,138	3,448	3,867	3,978	5,077	5,018	5,539	5,999	6,658
Custodial Fund - OCTA										
Employer OPEB Payments	N/A	N/A	N/A	N/A	N/A	N/A	1,318	1,383	1,419	1,466
Total	$ 617,127	$ 663,115	$ 709,518	$ 752,661	$ 800,364	$ 866,645	$ 942,250	$1,017,031	$1,090,418	$1,184,852

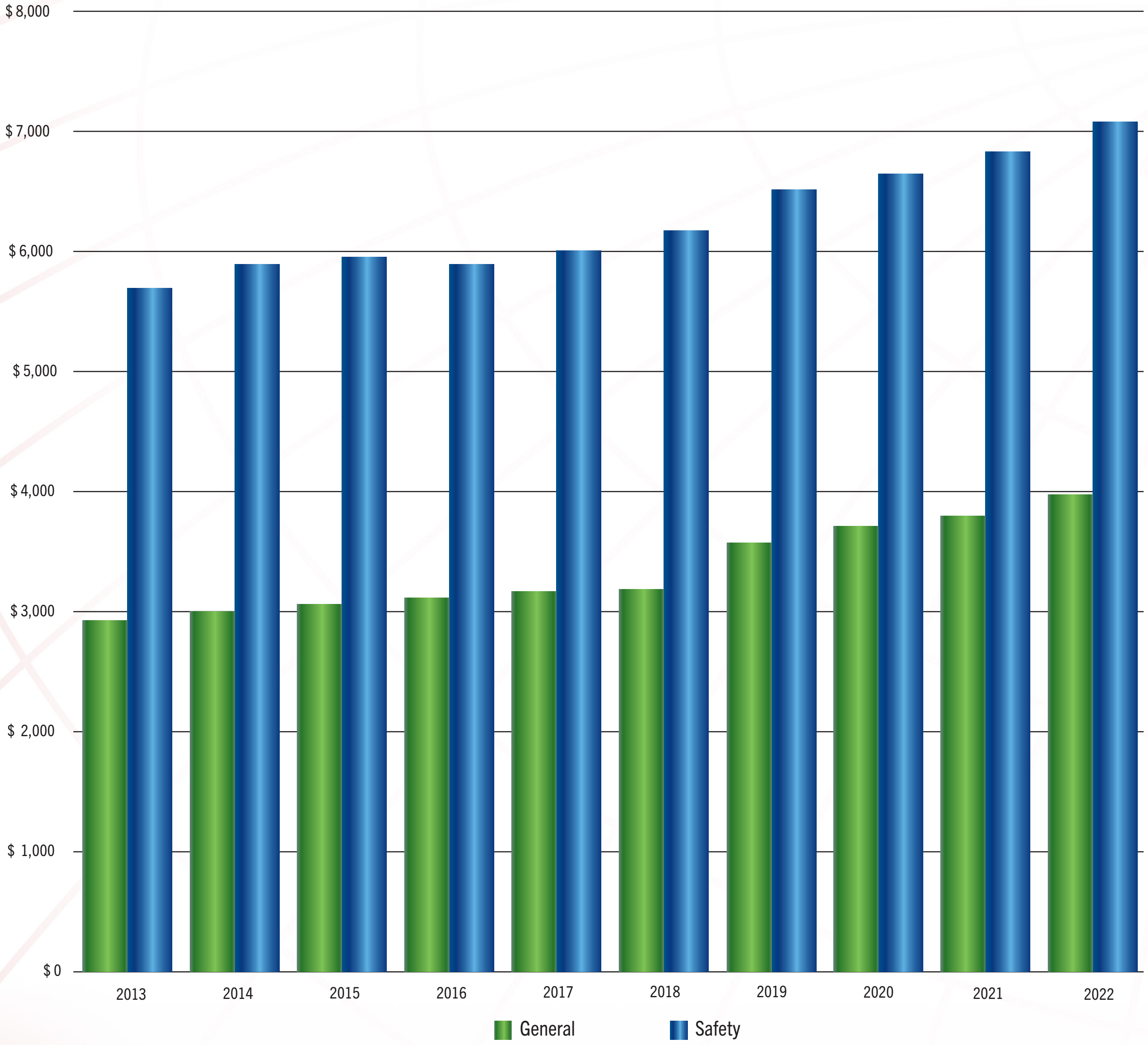


N/A: Detailed information not available.

Schedule and Graph of Average Monthly Pension Check

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General	$ 2,924	$ 2,991	$ 3,103	$ 3,142	$ 3,244	$ 3,372	$ 3,520	$ 3,686	$ 3,791	$ 3,944
Safety	$ 5,679	$ 5,914	$ 5,974	$ 5,917	$ 6,017	$ 6,245	$ 6,499	$ 6,680	$ 6,825	$ 7,048



Source: OCERS' Pension Administration System Solution

Schedule of Average Pension Benefit Payments by Years of Service

	Years of Service						
Service Retirement Effective Dates	**0-5**	**5-10**	**10-15**	**15-20**	**20-25**	**25-30**	**30 & Over**
Period 1/1/13-12/31/13							
Average Monthly Pension Benefits	$ 435	$ 1,166	$ 2,039	$ 2,946	$ 3,794	$ 6,409	$ 7,732
Monthly Final Average Salary	$ 8,199	$ 6,347	$ 6,458	$ 6,492	$ 6,431	$ 8,432	$ 8,482
Number of Retired Members	29	55	139	82	161	147	131
Period 1/1/14-12/31/14							
Average Monthly Pension Benefits	$ 421	$ 1,152	$ 1,925	$ 3,188	$ 4,117	$ 6,444	$ 6,719
Monthly Final Average Salary	$ 8,176	$ 6,955	$ 6,301	$ 6,961	$ 7,003	$ 8,463	$ 7,349
Number of Retired Members	23	45	146	96	143	192	138
Period 1/1/15-12/31/15							
Average Monthly Pension Benefits	$ 582	$ 1,263	$ 1,755	$ 2,850	$ 3,895	$ 5,679	$ 7,235
Monthly Final Average Salary	$ 8,802	$ 6,888	$ 5,970	$ 6,673	$ 6,800	$ 7,893	$ 8,352
Number of Retired Members	22	63	128	119	110	200	182
Period 1/1/16-12/31/16							
Average Monthly Pension Benefits	$ 427	$ 1,244	$ 2,135	$ 2,886	$ 4,272	$ 5,549	$ 6,782
Monthly Final Average Salary	$ 8,298	$ 6,907	$ 6,911	$ 6,580	$ 7,383	$ 7,651	$ 7,762
Number of Retired Members	24	56	121	120	113	195	163
Period 1/1/17-12/31/17							
Average Monthly Pension Benefits	$ 541	$ 1,215	$ 2,073	$ 3,062	$ 4,513	$ 5,851	$ 7,069
Monthly Final Average Salary	$ 7,952	$ 6,800	$ 6,844	$ 6,810	$ 7,743	$ 7,975	$ 7,931
Number of Retired Members	21	47	122	147	112	190	153
Period 1/1/18-12/31/18							
Average Monthly Pension Benefits	$ 554	$ 1,190	$ 1,943	$ 2,879	$ 4,681	$ 6,074	$ 7,439
Monthly Final Average Salary	$ 10,584	$ 7,287	$ 6,904	$ 6,859	$ 8,134	$ 8,246	$ 8,561
Number of Retired Members	23	62	125	144	127	205	208
Period 1/1/19-12/31/19							
Average Monthly Pension Benefits	$ 367	$ 1,424	$ 2,332	$ 3,073	$ 4,831	$ 6,475	$ 7,324
Monthly Final Average Salary	$ 7,568	$ 8,243	$ 7,509	$ 6,985	$ 8,088	$ 8,591	$ 8,249
Number of Retired Members	31	54	121	150	135	249	191
Period 1/1/20-12/31/20							
Average Monthly Pension Benefits	$ 536	$ 1,475	$ 2,149	$ 3,422	$ 4,697	$ 6,151	$ 6,825
Monthly Final Average Salary	$ 9,267	$ 8,556	$ 6,784	$ 7,473	$ 8,046	$ 8,340	$ 7,917
Number of Retired Members	29	59	128	166	237	281	288
Period 1/1/21-12/31/21							
Average Monthly Pension Benefits	$ 540	$ 1,524	$ 2,361	$ 3,532	$ 5,406	$ 6,602	$ 7,219
Monthly Final Average Salary	$ 9,897	$ 8,823	$ 7,781	$ 7,749	$ 9,348	$ 8,941	$ 8,377
Number of Retired Members	27	53	87	102	142	112	128
Period 1/1/22-12/31/22							
Average Monthly Pension Benefits	$ 644	$ 1,545	$ 2,631	$ 3,798	$ 5,690	$ 7,481	$ 8,077
Monthly Final Average Salary	$10,744	$ 9,289	$ 8,821	$ 8,432	$ 9,473	$10,023	$ 9,238
Number of Retired Members	33	91	117	127	226	210	224

Source: OCERS' Pension Administration System Solution

Schedule of Pension Benefit Recipients by Type of Benefit

December 31, 2022

Monthly Benefit	Normal Retirement for Age and Service	Survivor Payment - Normal Retirement	Service-Connected Disability Retirement	Nonservice-Connected Disability Retirement	Survivor Payment - Disability Retirement	DRO (Domestic Relations Order Payees)	Active Deaths	Total
$1-500	538	117	2	2	14	83	11	767
$501-1,000	941	237	1	14	28	122	53	1,396
$1,001-1,500	1,146	216	4	41	35	116	81	1,639
$1,501-2,000	1,168	175	48	67	24	89	63	1,634
$2,001-2,500	1,097	129	118	38	23	72	23	1,500
$2,501-3,000	1,160	115	242	14	29	48	24	1,632
$3,001-3,500	1,048	105	184	20	33	45	6	1,441
$3,501-4,000	1,013	90	107	12	23	36	8	1,289
$4,001-4,500	866	62	81	7	20	16	5	1,057
$4,501-5,000	789	52	99	2	22	11	6	981
$5,001-5,500	788	40	85	1	15	9	7	945
$5,501-6,000	720	52	49	1	8	7	2	839
$6,001-6,500	584	26	41	2	7	2	2	664
$6,501-7,000	570	19	34	2	5	3	2	635
Over $7,000	3,883	72	269	1	27	3	4	4,259
Total	16,311	1,507	1,364	224	313	662	297	20,678

Definition of Terms

Eligible Spouse: A member's spouse is considered eligible if the member has been legally married for at least one year at the time of retirement and remains married throughout the member's retirement. Eligible Spouse also includes Qualified Domestic Partner registered in accordance with applicable Family Law provisions.

Eligible Child: An eligible child is an unmarried child under the age of 18, or under the age of 22 if a full-time student. This includes adopted children. Eligible Child can also include a stepchild living or domiciled with the member at the time of the member's death for purposes of an active member Nonservice-connected or Service-connected death benefit only.

Source: OCERS' Pension Administration System Solution

Schedule of Pension Benefit Recipients by Option Selected

December 31, 2022

Monthly Benefit	UM	OP1	OP2	OP3	OP4	DB	UMC	O2C	O3C	O4C	SCDC	NSCDC	LSRC	AN	Total
$1-500	500	1	24	2	4	82	115	8	8	-	1	9	1	12	767
$501-1,000	896	1	55	2	2	122	242	17	4	2	5	32	16	-	1,396
$1,001-1,500	1,140	-	46	3	2	116	242	11	-	2	4	63	10	-	1,639
$1,501-2,000	1,245	1	36	1	-	89	191	11	4	-	-	52	4	-	1,634
$2,001-2,500	1,205	1	32	5	10	72	137	18	2	1	-	13	4	-	1,500
$2,501-3,000	1,385	-	25	1	5	48	136	12	-	-	1	16	3	-	1,632
$3,001-3,500	1,223	-	21	3	5	45	133	4	1	-	2	4	-	-	1,441
$3,501-4,000	1,101	1	22	1	7	36	107	7	-	1	1	4	1	-	1,289
$4,001-4,500	929	1	9	3	12	16	71	12	-	-	1	1	2	-	1,057
$4,501-5,000	861	-	20	-	9	11	74	6	-	-	-	-	-	-	981
$5,001-5,500	846	-	20	2	6	9	53	5	-	-	2	2	-	-	945
$5,501-6,000	749	-	12	1	8	7	53	8	-	-	-	1	-	-	839
$6,001-6,500	613	-	9	1	4	2	31	3	1	-	-	-	-	-	664
$6,501-7,000	587	1	4	-	14	3	20	5	-	-	1	-	-	-	635
Over $7,000	4,048	2	54	2	47	3	88	13	-	-	-	1	1	-	4,259
Total	17,328	9	389	27	135	661	1,693	140	20	6	18	198	42	12	20,678

Definition of Options:

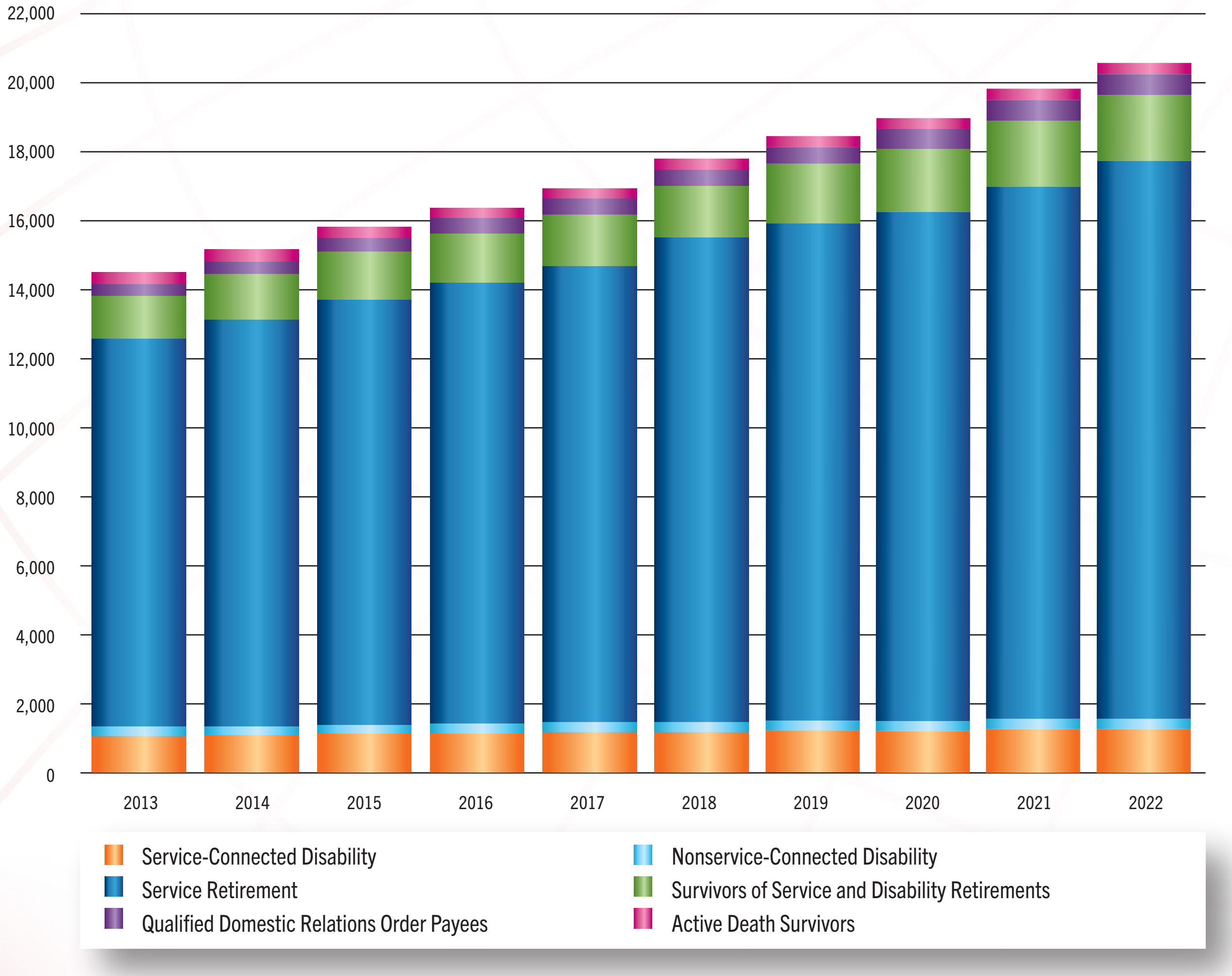
UM: Unmodified -- Maximum retirement allowance
OP1: Option 1 -- Reduced retirement allowance, at death of retiree beneficiary receives remaining balance on account
OP2: Option 2 -- Reduced retirement allowance
OP3: Option 3 -- Reduced retirement allowance
OP4: Option 4 -- Reduced retirement allowance
DB: DRO benefit -- Benefit as provided in Domestic Relations Order
UMC: Unmodified continuance -- Beneficiary receives 60% of maximum retirement allowance
O2C: Option 2 continuance -- Beneficiary receives same monthly allowance
O3C: Option 3 continuance -- Beneficiary receives 50% of monthly allowance
O4C: Option 4 continuance -- Multiple beneficiaries receive allowance as previously approved
SCDC: SCD continuance -- Service Connected Disability
NSCDC: NSCD continuance -- Non Service Connected Disability
LSRC: Lump sum and reduced continuance
AN: Annuity

Source: OCERS' Pension Administration System Solution

Schedule and Graph of Pension Benefit Recipients

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Service-Connected Disability	1,072	1,098	1,131	1,161	1,185	1,232	1,261	1,289	1,333	1,364
Nonservice-Connected Disability	263	265	271	257	261	250	244	236	228	224
Service Retirement	11,226	11,760	12,278	12,768	13,240	13,827	14,448	15,339	15,607	16,311
Survivors of Service and Disability Retirements	1,261	1,336	1,423	1,448	1,496	1,559	1,631	1,678	1,744	1,820
Qualified Domestic Relations Order Payees	340	366	399	426	455	495	530	573	616	662
Active Death Survivors	343	344	308	309	310	311	306	304	298	297
Total	**14,505**	**15,169**	**15,810**	**16,369**	**16,947**	**17,674**	**18,420**	**19,419**	**19,826**	**20,678**



Source: OCERS' Pension Administration System Solution

Schedule of Average Retirement Age

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General	61.32	60.79	59.37	59.44	60.79	61.30	61.14	61.02	60.49	60.70
Safety	54.80	54.06	53.51	53.58	55.09	55.15	54.53	54.15	53.63	55.33

Schedule of Average Years of Service at Retirement

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General	20.00	21.13	18.22	19.56	21.41	22.08	21.95	23.18	20.87	21.99
Safety	24.25	24.47	24.18	22.81	23.92	24.60	24.36	23.87	22.16	21.82

Schedule of Beneficiaries Receiving a Pension

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General	1,503	1,457	1,498	1,514	1,540	1,593	1,652	1,685	1,728	1,780
Safety	187	223	233	243	266	277	285	297	314	337
Total	1,690	1,680	1,731	1,757	1,806	1,870	1,937	1,982	2,042	2,117

Schedule of Active and Deferred Members

2013 – 2022

Years Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
General										
Active	17,637	17,873	17,838	18,072	17,941	18,150	18,356	17,733	18,128	18,184
Deferred	4,205	4,380	4,668	4,940	5,341	5,547	6,004	6,280	6,680	7,323
Safety										
Active	3,731	3,587	3,687	3,674	3,780	3,779	3,901	3,826	3,883	3,877
Deferred	408	409	424	430	462	479	516	538	558	571
Total	25,981	26,249	26,617	27,116	27,524	27,955	28,777	28,377	29,249	29,955

Source: OCERS' Pension Administration System Solution

Schedule of Participating Employers - Pension Plan

2013 – 2022

Years Ended December 31		Total	Orange County	OCTA	OC Superior Court	OC Fire Authority	OC Sanitation District	City of San Juan Capistrano	Trans-portation Corridor Agencies	All Other Employers
2013	Number of Covered Employees	21,368	16,281	1,519	1,492	1,185	587	81	77	146
	Percentage to Total System	100%	76.19%	7.11%	6.98%	5.55%	2.75%	0.38%	0.36%	0.68%
2014	Number of Covered Employees	21,460	16,453	1,454	1,460	1,213	594	80	65	141
	Percentage to Total System	100%	76.67%	6.78%	6.80%	5.65%	2.77%	0.37%	0.30%	0.66%
2015	Number of Covered Employees	21,525	16,574	1,409	1,462	1,224	572	75	63	146
	Percentage to Total System	100%	77.00%	6.55%	6.79%	5.69%	2.66%	0.35%	0.29%	0.68%
2016	Number of Covered Employees	21,746	16,756	1,372	1,486	1,263	578	80	68	143
	Percentage to Total System	100%	77.05%	6.31%	6.83%	5.81%	2.66%	0.37%	0.31%	0.66%
2017	Number of Covered Employees	21,721	16,778	1,313	1,455	1,288	592	81	64	150
	Percentage to Total System	100%	77.24%	6.04%	6.70%	5.93%	2.73%	0.37%	0.29%	0.69%
2018	Number of Covered Employees	21,929	17,048	1,279	1,419	1,262	616	78	62	165
	Percentage to Total System	100%	77.75%	5.83%	6.47%	5.75%	2.81%	0.36%	0.28%	0.75%
2019	Number of Covered Employees	22,257	17,160	1,350	1,419	1,416	608	76	61	167
	Percentage to Total System	100%	77.10%	6.07%	6.38%	6.36%	2.73%	0.34%	0.27%	0.75%
2020	Number of Covered Employees	21,559	16,474	1,322	1,399	1,457	618	67	54	168
	Percentage to Total System	100%	76.42%	6.13%	6.48%	6.76%	2.87%	0.31%	0.25%	0.78%
2021	Number of Covered Employees	22,011	16,899	1,315	1,384	1,508	620	51	61	173
	Percentage to Total System	100%	76.78%	5.97%	6.28%	6.85%	2.82%	0.23%	0.28%	0.79%
2022	Number of Covered Employees	22,061	16,915	1,279	1,437	1,528	605	55	55	187
	Percentage to Total System	100%	76.68%	5.80%	6.50%	6.93%	2.74%	0.25%	0.25%	0.85%

Source: OCERS' Pension Administration System Solution

History of Actuarial Assumption Rates

For the Period January 1945 - December 2022

The table shown below is a comprehensive history of the change in interest rate assumption and the salary assumption rates corresponding to the Orange County Employees Retirement System since the inception of the System. These rates are adopted by the Retirement Board and used by the consulting actuary in the creation of the actuarial valuation of the System.

Specifically, the interest rate assumption estimates the rate at which the funds of the System's investment portfolio will realize earnings over many years into the future. The salary assumption rate estimates the relative increases in the salary of a member from the date of the valuation to the estimated date of separation of the member from active service.

Effective Date	Interest Rate	Salary Assumption Rate
1/1/45	2.50%	0.00%
7/1/62	3.50%	0.00%
12/31/65	4.00%	0.00%
7/1/69	4.50%	0.00%
6/30/70	5.00%	0.00%
8/31/73	5.75%	0.00%
7/1/75	6.00%	0.00%
7/1/81	7.25%	5.00%
7/1/89	7.50%	5.50%
7/1/91	8.00%	6.00%
7/1/96	8.00%	3.50%
7/1/00	8.00%	5.50%
7/1/03	7.50%	4.50%
12/31/04	7.75%	3.50%[1]
12/31/07	7.75%	3.50%[2]
12/31/11	7.75%	3.50%[3]
12/31/12	7.25%	3.25%[4]
12/31/14	7.25%	3.25%[4]
12/31/17	7.00%	3.25%[4]
12/31/20	7.00%	3.00%[4]

[1] Inflation per year plus merit and promotion increases ranging from 0.6% to 0.7%

[2] Inflation per year plus merit and promotion increases ranging from 1% to 10%

[3] Inflation per year plus 0.25% across-the-board real salary increases plus merit and promotion increases ranging from 1% to 14%

[4] Inflation per year plus 0.50% across-the-board real salary increase

Source: The Segal Company

Section 6 - Glossary of Terms

Non-Contiguous

Photo Caption: Experience the breathtaking crystal-clear waters of Hanauma Bay.

Retirement Benefits: Hawaii is a tropical paradise that offers retirees a warm and welcoming environment, with year-round sunshine, beautiful beaches, and lush landscapes.

Alaska, known as the "Last Frontier," offers retirees unparalleled natural beauty, with stunning landscapes and a vast wilderness that includes glaciers, mountains, and wildlife. Retirees who love outdoor activities, such as fishing, hiking, and skiing, will find endless opportunities to explore the great outdoors.

Alaska	8
Hawaii	51

Total Payees

59

Glossary of Terms

Accrual Basis

The recording of the financial effects on a government of transactions and other events and circumstances that have financial consequences for the government in the periods in which those transactions, events and circumstances occur, rather than only in the periods in which cash is received or paid by the government.

Accumulated Plan Benefits

Benefits attributable under the provisions of a pension plan to employees for services rendered to the benefit information date.

Actuarial Accrued Liability

The actuarial accrued liability, as determined by a particular cost method, equals the total present value of benefits that is attributable to past service credit.

Actuarial Assumptions

Assumptions used in the actuarial valuation process as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disablement and retirement; changes in compensation and national pension benefits; rates of investments earnings and asset appreciation or depreciation: procedures used to determine the actuarial value of assets; characteristics of future entrants for open group actuarial cost methods and other relevant items.

Actuarial Determined Contribution

A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

Actuarial Gain (Loss)

A measure of the difference between actuarial and expected experience based upon a set of actuarial assumptions. Examples include higher than expected salaries increases (loss) and a higher return on fund assets than anticipated (gain).

Actuarial Present Value

The discounted 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.

Amortization

1. The portion of the cost of a limited-life or intangible asset charged as an expense during a particular period.
2. The reduction of debt by regular payments of principal and interest sufficient to retire the debt by maturity.

Annual Comprehensive Financial Report (Annual Report)

The Annual Report is the official annual report of a governmental entity. It includes the basic financial statements and their related notes prepared in conformity with GAAP. It also includes supporting schedules necessary to demonstrate compliance with finance-related legal and contractual provisions, required supplementary information, extensive introductory material and a detailed statistical section.

Cost-sharing Multiple-employer Defined Benefit Pension Plan (cost-sharing pension plan)

A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Discount Rate

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the pension plan's fiduciary net position is projected (under the requirements of GASB Statement No. 67) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Glossary of Terms

(Continued)

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 the level basis over the earnings or services of the individual between entry age and assumed exit age(s).

Generally Accepted Accounting Principles (GAAP)

Generally Accepted Accounting Principles (GAAP) are a collection of commonly followed accounting rules and standards for financial reporting. The purpose of GAAP is to ensure transparency and consistency for financial reporting.

Independent Auditor's Report

In the context of a financial audit, a statement by the auditor describing the scope of the audit and the auditing standards applied in the examination, and setting forth the auditor's opinion on the fairness of presentation of the basic financial statements in conformity with generally accepted accounting principles (GAAP).

Money-weighted Rate of Return

A method of calculating period-by-period returns on pension plan investments that adjusts for the changing amounts actually invested. For purposes of GASB Statement No. 67, money-weighted rate of return is calculated as the internal rate of return on pension plan investments, net of pension plan investment expense.

Net Pension Liability

The liability of employers and non-employer contributing entities to plan members for benefits provided through a defined benefit pension plan.

Normal Cost

The ongoing annual cost allocated to the system by a particular actuarial cost method for providing benefits (future cost). Normal cost payments are made during the working lifetime of the member.

Pension Contribution

The amount paid into a pension plan by an employer (and/or employee), pursuant to the terms of the plan, state law, actuarial calculations or some other basis for determinations.

Pension Trust Fund

A fund used to account for public employee retirement benefits. Pension trust funds use the accrual basis of accounting and have a capital maintenance focus.

Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service in conformity with the requirements of GASB Statement No. 67.

Unfunded Actuarial Accrued Liability (UAAL)

The excess of the actuarial accrued liability over the actuarial value of assets represents the unfunded actuarial accrued liability.

UAAL Amortization Payment

The UAAL amortization payment is the portion of pension contributions, which is designed to pay off (amortize) the UAAL in a systematic fashion. Equivalently, it is a series of periodic payments required to pay off a debt.

Foreign Countries & US Territories

American Samoa	1
Argentina	1
Australia	4
Barbados	1
Canada	5
Chile	3
District of Columbia	2
El Salvador	1
Finland	1
Germany	1
Iceland	1
India	1
Israel	1
Lithuania	1
Mexico	2
New Zealand	3
Puerto Rico	1
Portugal	1
Poland	1
Romania	1
Sweden	1
Spain	2
Thailand	1
United Kingdom	3

Total Payees

40

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

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