

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

**BOARD OF RETIREMENT
2223 WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701**

AUDIT COMMITTEE MEETING

June 9, 2017

1:00 p.m.

AGENDA

This agenda contains a brief general description of each item to be considered. Except as otherwise provided by law, no action shall be taken on any item not appearing in the following agenda.

A. [2016 FINANCIAL STATEMENTS AUDIT](#)

Presentation by Linda Hurley, Macias, Gini & O'Connell

Recommendations:

1. Approve OCERS' Audited Financial Statements for the Year Ended December 31, 2016.
2. Direct staff to finalize OCERS' 2016 Comprehensive Annual Financial Report (CAFR) and present it to the Board of Retirement at their regularly scheduled Board meeting on June 12, 2017.
3. Approve the Governmental Accounting Standards Board (GASB) Statement 67 Actuarial Valuation as of December 31, 2016.
4. Receive and file Macias, Gini & O'Connell LLP's (MGO) "OCERS' Report to the Audit Committee for the Year Ended December 31, 2016" and their "Independent Auditor's Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with Government Auditing Standards."

B. [GASB 68 VALUATION AND AUDIT REPORT](#)

Presentation by Brenda Shott, Asst. CEO

Recommendations:

1. Approve OCERS' audited Schedule of Allocated Pension Amounts by Employer as of and for the Year Ended December 31, 2016.
2. Approve the Governmental Accounting Standards Board (GASB) Statement 68 Actuarial Valuation as of December 31, 2016 for distribution to employers.

C. [DIRECTIVE TO REVIEW OCERS INVESTMENT FEE REPORT](#)

Presentation by Steve Delaney

Recommendation: Receive and file.

D. [REVIEW OF OCERS' INVESTMENT WIRE TRANSFER PROCESS](#)

Presentation by David James, Director of Internal Audit

Recommendation: Receive and file.

E. [NEW YORK STATE COMMON RETIREMENT FUND'S SCANDAL AND OCERS' POLICIES](#)

Presentation by David James, Director of Internal Audit

Recommendation: Receive and file.

F. [HOTLINE UPDATE](#)

Presentation by David James, Director of Internal Audit

Recommendation: Receive and file.

G. [AUDIT COMMITTEE INQUIRY ON ADMINISTRATIVE TIME IN INTERNAL AUDIT](#)

Presentation by David James, Director of Internal Audit

Recommendation: Receive and file.

H. [STATUS OF INTERNAL AUDITS AND AUDIT PROJECTS](#)

Presentation by David James, Director of Internal Audit

Recommendation: Receive and file.

I. [ACTUARIAL AUDIT RFP FINALISTS' PRESENTATIONS](#)

Presentation by Daniel Wade and Mark Olleman of Milliman

Presentation by Graham Schmidt of Cheiron

Recommendation: Take appropriate action.

***** END OF INDIVIDUAL ITEMS AGENDA *****

PUBLIC COMMENTS: The public, plan members, beneficiaries, and/or representatives may speak to any subject matter contained in the agenda *either* at the time the item is addressed *or* at this time, provided that no action may be taken on any item not appearing on this agenda unless authorized by law. Persons who want to address items on the agenda should provide written notice to the Secretary of the Committee prior to the Committee's discussion on the item by filling out the Public Comment Form located in the back of the room. When addressing the Committee, please state your name for the record prior to providing your comments. Speakers will be limited to three minutes.

COMMITTEE MEMBER COMMENTS

CHIEF EXECUTIVE OFFICER/STAFF COMMENTS

ADJOURNMENT

NOTICE OF NEXT MEETINGS

REGULAR BOARD MEETING

June 12, 2017

9:00 a.m.

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

2223 E. WELLINGTON AVENUE, SUITE 100

SANTA ANA, CA 92701

All supporting documentation is available for public review in the retirement office during regular business hours, 8:00 a.m. – 5:00 p.m., Monday through Thursday and 8:00 a.m. – 4:30 p.m. on Friday.

It is OCERS' intention to comply with the Americans with Disabilities Act ("ADA") in all respects. If, as an attendee or participant at this meeting, you will need any special assistance beyond that normally provided, OCERS will attempt to accommodate your needs in a reasonable manner. Please contact OCERS via email at adminsupport@ocers.org or by calling 714-558-6200 as soon as possible prior to the meeting to tell us about your needs and to determine if accommodation is feasible. We would appreciate at least 48 hours' notice, if possible. Please also advise us if you plan to attend meetings on a regular basis.

A



Memorandum

DATE: June 1, 2017
TO: Audit Committee Members
FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations; Tracy Bowman, Director of Finance
SUBJECT: 2016 Audited Financial Statements

Recommendations

1. Approve OCERS' audited financial statements for the year ended December 31, 2016
2. Direct staff to finalize OCERS' 2016 Comprehensive Annual Financial Report (CAFR) and present it to the Board of Retirement at their regularly scheduled Board meeting on June 12, 2017
3. Approve the Governmental Accounting Standards Board (GASB) Statement 67 Actuarial Valuation as of December 31, 2016
4. Receive and file Macias, Gini & O'Connell LLP's (MGO) "OCERS' Report to the Audit Committee for the Year Ended December 31, 2016" and their "Independent Auditor's Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*."

Background/Discussion

The attached draft of OCERS' 2016 CAFR, including the audited financial statements and related notes for the year ended December 31, 2016, are considered to be in substantially final form and include a draft of the unmodified (clean) audit opinion from MGO, OCERS' independent auditors. MGO will issue the signed audit opinion after presenting the draft financial statements to both OCERS' Audit Oversight Committee and the Board of Retirement. The audited financial statements and related notes are included in the Financial Section of OCERS' 2016 CAFR.

The attached Governmental Accounting Standards Board (GASB) Statement 67 Actuarial Valuation as of December 31, 2016 is used for reporting purposes and is separate and distinct from the funding actuarial valuation. This valuation has been audited by MGO and contains necessary information and schedules that have been incorporated into OCERS' 2016 CAFR in compliance with GASB Statement No. 67, *Financial Reporting for Pension Plans*.

As part of the normal course of an annual financial statement audit, MGO has issued a draft of their "Report to the Audit Committee" that includes the required communications of the independent auditors, comments and recommendations based on their 2016 audit of OCERS and the status of prior year comments and recommendations reported to the Audit Committee related to their 2015 audit of OCERS (which there were none). MGO has also issued a draft "Independent Auditor's Report on Internal Control over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements, Performed in Accordance with *Government Auditing Standards*."

MGO will be present at the Audit Oversight Committee Meeting on June 9, 2017. They will provide the Committee with a verbal report on their audit. A draft of the 2016 CAFR in substantially final form will be presented to the Board at its regularly scheduled Board meeting on June 12, 2017. The final signed audit reports and the CAFR will be distributed to the Board once finalized.



Memorandum

California's Government Code Section 7504 requires all state and local retirement agencies, including OCERS, to submit annual financial information to the State Controller within six months of the end of the fiscal year end. The State Controller's Office (SCO) has an automated system to allow retirement systems to provide the prescribed report containing specific financial and plan information to the SCO (this report is referred to as the State Controller's Report). In addition to the State Controller's Report, OCERS is also required to submit the annual audited financial statements and the most current funding actuarial valuation. Once the Board approves the financial statements for the year ended December 31, 2016, staff will file a timely submission of the State Controller's Report and submit OCERS' 2016 CAFR and the Actuarial Valuation (for funding purposes) as of December 31, 2015 by the deadline of June 30, 2017.

Submitted by:

A handwritten signature in blue ink, appearing to read "Tracy Bowman", written over a horizontal line.

Tracy Bowman
Director of Finance

Approved by:

A handwritten signature in blue ink, appearing to read "Brenda M Shott", written over a horizontal line.

Brenda Shott
Asst. CEO, Finance & Internal Operations



Good
VIBES
of the OC



ORANGE COUNTY
CCERS
EMPLOYEES RETIREMENT SYSTEM

2016
Comprehensive
Annual
Financial Report

for the year ended December 31, 2016

Orange County, California

Good.
WIBLES
of the OC



Comprehensive Annual Financial Report

For the Year Ended December 31, 2016

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

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

**Orange County Employees Retirement System
2223 East Wellington Avenue, Suite 100
Santa Ana, CA 92701-3161**

714.558.6200

www.ocers.org



2016
Comprehensive
Annual
Financial Report

for the year ended December 31, 2016

Table of Contents

Section I - Introductory

Letter of Transmittal	2
Members of the Board of Retirement	6
Organization of OCERS.	7
Administrative Organization Chart	8
List of Professional Consultants	9
Certificate of Achievement for Excellence in Financial Reporting	10
Public Pension Standards Award for Funding and Administration	11

Section II - Financial

Independent Auditor's Report	15
Management's Discussion and Analysis	18

Basic Financial Statements

Statement of Fiduciary Net Position	28
Statement of Changes in Fiduciary Net Position	29
Notes to the Basic Financial Statements	30

Required Supplementary Information

Schedule of Changes in Net Pension Liability of Participating Employers	64
Schedule of Investment Returns	65
Schedule of Employer Contributions	65
Notes to the Required Supplementary Information	66
Significant Factors Affecting Trends in Actuarial Information – Pension Plan	67
Schedule of Funding Progress – OPEB Plan Orange County Fire Authority.	69
Schedule of Employer Contributions – OPEB Plan Orange County Fire Authority.	69
Significant Factors Affecting Trends in Actuarial Information – OPEB Plan Orange County Fire Authority	69

Other Supplementary Information

Schedule of Contributions	73
Schedule of Administrative Expenses	74
Schedule of Investment Expenses	75
Schedule of Payments for Professional Services	76
Statement of Changes in Assets and Liabilities – OPEB Agency Fund	77

Section III - Investments

Investment Consultant's Statement.	80
Investment Returns	83
Statement of Investment Objectives and Policies	84
Asset Diversification.	85
Growth of System Net Investments at Fair Value.	86
Historical Asset Allocation.	86
History of Performance	87
Schedule of Commissions.	88
Commission Recapture Program	88
Schedule of Investment Expenses and Investment Summary.	89
Schedule of Largest Equity Holdings	90
Schedule of Largest Fixed Income Holdings.	90
List of Investment Managers	91

Section IV - Actuarial

Actuary's Certification Letter	94
History of Unfunded Actuarial Accrued Liability.	98
History of Employer Contribution Rates	101
Summary of Active Membership	105
Summary of Retired Membership.	106
Development of Actuarial and Valuation Value of Assets	107
Short-Term Solvency Test.	108
Actuarial Methods and Assumptions	109
Summary of Major Plan Provisions	117
Experience Analysis	126
Schedule of Funding Progress.	127
Orange County Fire Authority OPEB Plan Actuarial Certification	128
Orange County Fire Authority OPEB Plan Summary of Retired Members and Beneficiaries.	129
Orange County Fire Authority OPEB Plan Solvency Test	129

Section V - Statistical

Statistical Section Review.	132
Schedules of Changes in Fiduciary Net Position - Pension Trust Fund	132
Schedule of Changes in Fiduciary Net Position - Health Care Funds - County	133
Schedule of Changes in Fiduciary Net Position - Health Care Funds - OCFA	133
Schedule and Graph of Fiduciary Revenues by Source	134
Schedule and Graph of Expenses by Type.	135
Schedule and Graph of Benefit Expenses by Type.	136
Schedule and Graph of Average Monthly Pension Check	137
Schedule of Average Pension Benefit Payments by Years of Service	138
Schedule of Pension Benefit Recipients by Type of Benefit	139
Schedule of Pension Benefit Recipients by Option Selected	140
Schedule and Graph of Pension Benefit Recipients.	141
Schedule of Average Retirement Age	142
Schedule of Average Years of Service at Retirement	142
Schedule of Beneficiaries Receiving a Pension	142
Schedule of Active and Deferred Members.	142
Schedule of Participating Employers Pension Plan	143
History of Actuarial Assumption Rates	144

Section VI - Glossary

Glossary of Terms	148
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Huntington Beach SURF CITY Marathon

The Huntington Beach Surf City Marathon and Half Marathon is an oceanfront run held the first Sunday of February each year. The race offers spectacular views of Southern California surfing beaches, the famous Huntington Beach pier and Huntington Central Park. Runners from around the world participate in this beautiful winter race. Along the course, several surf bands and volunteers cheer on the runners. At the end of the race, runners can enjoy the beach, the beer garden and other festivities.





Introductory

Section I

Introductory

Letter of Transmittal



*Serving the Active and Retired
Members of:*

City of San Juan Capistrano
County of Orange
Orange County Cemetery
District
Orange County Children &
Families Commission
Orange County Department
of Education (closed to new
members)
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
UCI Medical Center and
Campus (closed to new
members)

June 2, 2017

Board of Retirement
Orange County Employees Retirement System
2223 East Wellington Avenue, Suite 100
Santa Ana, CA 92701

Dear Board Members,

I am pleased to present the Comprehensive Annual Financial Report (CAFR) of the Orange County Employees Retirement System (OCERS or System) as of and for the year ended December 31, 2016. 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, 2016. It also includes information from the current actuarial valuation as of December 31, 2015.

OCERS and its Services

Established in 1945, OCERS is a public retirement system that has provided service retirement, disability, death and survivor benefits to its members for over 70 years, administered in accordance with the County Employees Retirement Law of 1937 (CERL).

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 and managing the System's assets. In addition to the System, OCERS' participating agencies include the County of Orange, the Orange County Superior Court of California, one city, nine active special districts, two special districts that are closed to new members and one special district that terminated participation for active employees but continues to pay for liabilities related to their deferred members. In addition, there are two other outside districts and one city that are no longer active plan sponsors, but retired members and their beneficiaries, as well as deferred members, remain in the System.

OCERS' mission is to provide secure retirement and disability benefits with the highest standards of excellence. The Board of Retirement and OCERS' staff members are committed to act for the exclusive benefit of the plan and its more than 43,000 participants, manage the assets of the plan prudently, and administer benefits with impartiality. To fulfill this mandate and our mission, OCERS employs a skilled professional staff and independent consultants that operate under a robust system of governance, operational and fiduciary policies and procedures.

OCERS is very proud to continue serving the County of Orange which provides the back-drop for many long-held events and traditions. Some of these events draw attendees from around the world, while others you may never have known existed. We salute some of these events and traditions in this year's CAFR theme, "Good Vibes of the OC."

Management Responsibility for Financial Reporting

OCERS' management is responsible for the complete and fair presentation of the financial information in accordance with generally accepted accounting principles (GAAP) in the United States. 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.

Letter of Transmittal

(continued)

Major Initiatives and Significant Events

The following were major initiatives and significant events in the past year:

Pension Administration System Solution

Our Pension Administration System Solution (PASS), V3, has been successfully in operation for a year. During the first year of operation, we continued to refine the system, including defect remediation, system design changes, enhancements and regression testing of new V3 build deliveries that were scheduled to be delivered after the post “go-live” date of December 14, 2015.

Technology Update

OCERS has continued making significant progress towards the implementation of its revised business continuity and disaster recovery (BC/DR) plan. Through a competitive bid process for an implementation vendor, Side Path was selected to assist with the procurement of hardware, software and other related services, as well as perform the installation and testing of the BC/DR data center solution.

In an on-going effort to protect our members’ confidential information and safeguard our data from cyber-attacks, OCERS rolled out a computer-based security awareness training program that was required to be completed by all employees and will be an ongoing activity that staff will be participating in to ensure that data security remains a top priority. We also conducted two security assessments performed by external security firms with the aim of enhancing and improving both electronic and physical security. Assessments such as these are planned on an annual basis.

We will also be adding security enhancements to our Member Self-Service (MSS) portal, including the creation of a unique PIN number for each member which will be required whenever a member creates an MSS portal account; improving the current “Forgot Password” functionality to provide members via email a limited-time, temporary password with a link to reset the password; and automatic generation of a paper letter informing a member whenever a new MSS portal account has been created (currently prepared manually). These future enhancements are in addition to improvements already implemented during the year, including phone verification with a member for all direct deposit requests submitted to OCERS.

Key Staff Additions

After completing a competitive recruitment and selection process, OCERS appointed Gina Ratto as its new General Counsel. Ms. Ratto assumed her new position in October 2016 after previously serving as the Deputy General Counsel of CalPERS for 10 years.

Board Member Updates

On May 16, 2016, Frank Eley stepped down as an elected active member, where he served on the Board of Retirement for more than 17 years, after his retirement from the County of Orange. As a retiree, Mr. Eley became eligible for the elected retired member seat vacated by Tom Beckett, who decided not to run for re-election after his term ended on December 31, 2016. Mr. Eley ran for this seat unopposed and began serving a new 3-year term beginning January 1, 2017. Mr. Russell Baldwin, who served on the Board of Retirement from January 1, 2006 until December 31, 2012, ran unopposed to fill Mr. Eley’s former active member seat and began serving a new 3-year term beginning January 1, 2017.

Accounting Systems and Reports

OCERS’ management is responsible for establishing a system of internal controls to safeguard assets and for the presentation of the accompanying basic financial statements. Oversight is provided by OCERS’ Audit Committee, supported by internal auditing staff. Macias Gini & O Connell LLP (MGO) audited the accompanying basic financial statements and related disclosures. The financial audit provides reasonable assurance that OCERS’ financial statements are presented in conformity with GAAP and are free from material misstatement. Internal controls are considered in assessing whether OCERS’ operating policies and procedures are being adhered to and are sufficient to safeguard OCERS’ assets. OCERS recognizes even sound internal controls have inherent limitations. 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.

The CAFR 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.

Letter of Transmittal

(continued)

Investment Activities

In accordance with state constitutional mandates, the OCERS' Board has adopted a strategic asset allocation policy designed to ensure diversification among asset classes and achieve OCERS' long-term investment objectives of greater than twenty years to safeguard and grow the retirement benefits required to pay current and future payees. In 2016, OCERS' Board selected a new investment consultant, Meketa Investment Group, and a strategic portfolio and risk advisor, Pension Consulting Alliance, who along with investment staff and OCERS' actuary, conducted an asset liability study. Additionally, the Board adopted a formal Investment Beliefs Statement to help guide decisions that impact OCERS' investment structure, as well as adopted a more simplified asset allocation policy in January 2017, taking into consideration a risk framework with an objective to lower investment management fees. The Board also made a decision to exit a number of hedge funds in light of high fees and low returns.

For the year ended December 31, 2016, OCERS' investment portfolio returned 8.52%, net of fees. Our annual net return at 20 years and 25 years was approximately 7.00% and 7.60%, respectively. As the historical average years of service for a new OCERS' retiree approximates 21 years for a general member and 24 years for a safety member, these returns are within range of the System's 7.25% long-term assumed earnings rate over the same 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 employees' contributions. 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 2014 for plan years ending in 2011 through 2013. The Board adopted changes in several assumptions that were incorporated into the 2014 actuarial valuation, but left the assumed rate of return at 7.25%. The next triennial experience study is scheduled to be completed in 2017 for the plan years ending 2014 through 2016, with the goal of taking into consideration other factors, in addition to reviewing the actual experience from the previous three years, that could impact funding goals and future contributions.

As of the most current actuarial valuation for the year ended December 31, 2015, OCERS' funding status was 71.72% with an Unfunded Actuarial Accrued Liability (UAAL) of \$4.82 billion. Average employer and employee contribution rates for the year ended December 31, 2015, were 39.05% and 12.77%, 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 (IT costs), to twenty-one hundredths of one percent (0.21%) of OCERS' actuarial accrued liability. OCERS' 2016 administrative expense of \$16.9 million was .09% of OCERS' actuarial accrued liability.

Certificate of Achievement

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 CAFR for the year ended December 31, 2015. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual 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 CAFR 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.

Letter of Transmittal

(continued)

OCERS was also the recipient of the Public Pension Coordinating Council (PPCC) Award in recognition of compliance with professional standards for plan design and administration for the year ended December 31, 2015. This is awarded to a retirement system who 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

I would like to take this opportunity to thank the members of the System for their continued confidence in OCERS during the past year. Also, I would like to express my thanks to the Board of Retirement for its dedicated effort in supporting the System throughout this past year. Finally, I 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,

A handwritten signature in black ink that reads "Steve Delaney". The signature is written in a cursive style with a large, sweeping initial "S".

Steve Delaney
Chief Executive Officer

Members of the Board of Retirement

As of December 31, 2016



Roger Hilton
Chair Person

Elected by Safety Members



David Ball
Vice Chair Person

*Appointed by
the Board of Supervisors*



Tom Beckett

Elected by Retired Members



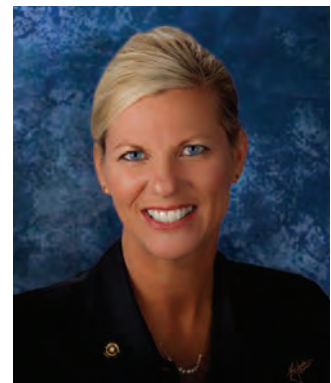
Frank E. Eley

*Elected by General Members
(Retired May 2016)*



Thomas E. Flanigan

*Appointed by
the Board of Supervisors*



Shari L. Freidenrich

*Ex-Officio Member
Treasurer-Tax Collector
County of Orange*



Eric W. Gilbert

*Alternate elected
by Safety Members*



Wayne Lindholm

*Appointed by
the Board of Supervisors*



Charles E. Packard

*Appointed by
the Board of Supervisors*



Chris Prevatt

Elected by General 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 Department

This department consists of the Chief Executive Officer (CEO) who implements and executes policies promulgated by the Board of Retirement. Two Assistant CEOs, an Internal Auditor, a Chief Investment Officer and a Chief Legal Officer assist the CEO in the daily operations of the System.

Investment Department

This department 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 monitoring investment performance objectives, adherence to investment guidelines, conducting due diligence visits to investment managers' sites, and interviewing prospective investment managers. This department 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 Schedules of Commissions and Investment Expenses.

External Operations Department

This department is comprised of the following divisions: Member Services and Communications.

The Member Services Division 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 transmittals, membership counseling, and retirement seminars. The Disability section of Member Services is responsible for reviewing claims and medical records; interviewing applicants and witnesses; preparing written reports of findings and recommendations; and making presentations to the Board of Retirement regarding the disposition of cases.

The Communications Division is responsible for developing and coordinating information for members and plan sponsors through publications, newsletters, seminars and publishing content to the website.

Internal Operations Department

This department is comprised of the following divisions: Finance, Information Technology, and Administrative Services.

The Finance Division is responsible for all of the financial records and reports of OCERS. This includes the preparation of the Comprehensive Annual Financial Report, monthly and quarterly financial statements and the annual operating budget. The Finance Division 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 Division is responsible for OCERS' network systems, personal computers, website and databases, as well as providing programming and technical support to our Benefits Administration System. In addition, this division is responsible for overseeing cyber security, business continuity/disaster recovery and administering all audio/visual services.

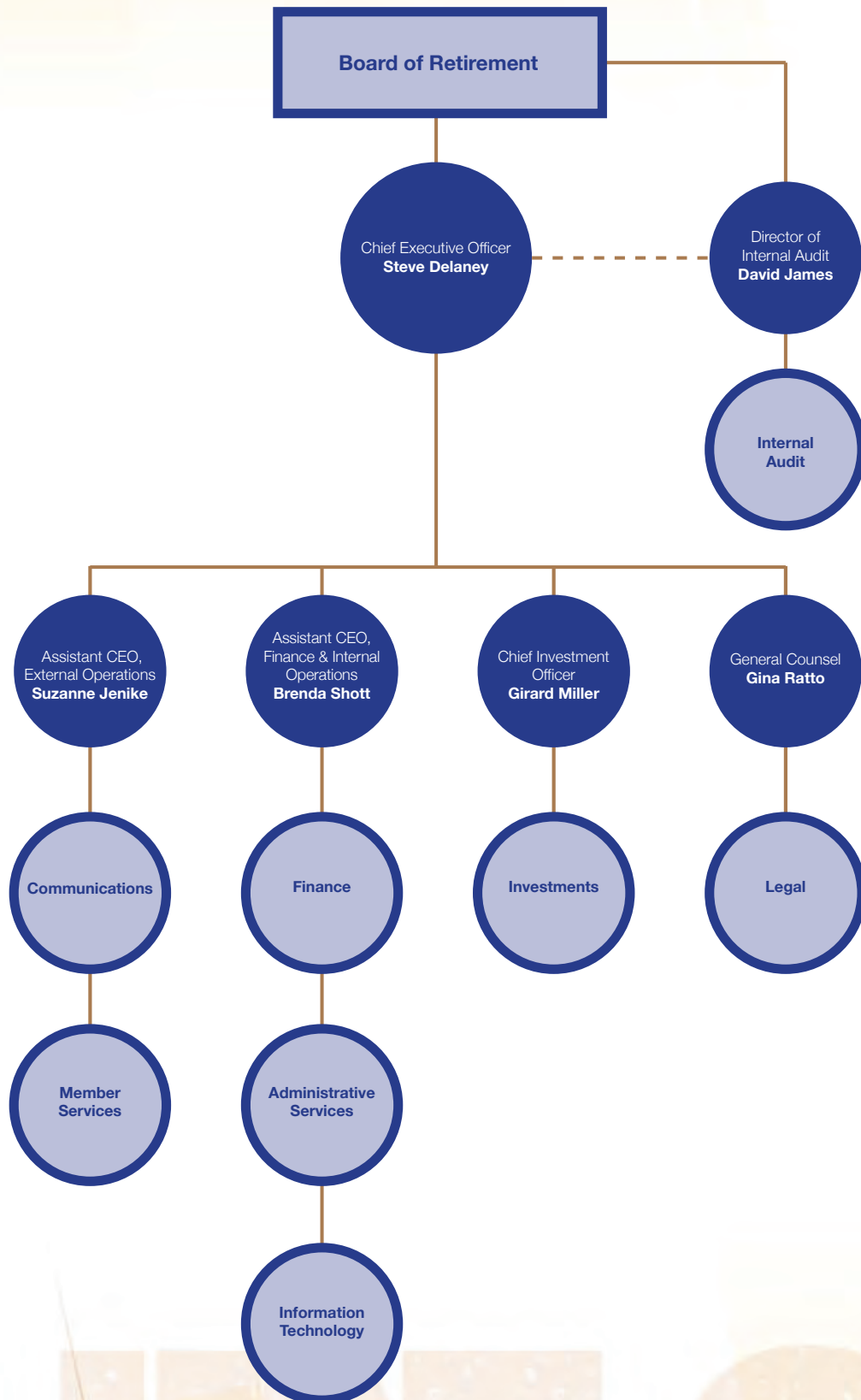
The Administrative Services Division is responsible for providing contract administration, risk management, purchasing, headquarters building administration, human resources and labor relations functions of OCERS.

Legal Department

This department 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.

Administrative Organization Chart

As of December 31, 2016



List of Professional Consultants

As of December 31, 2016

Actuary

The Segal Company

Investment Consultant

Meketa Investment Group

Hedge Fund Consultant

Aksia, LLC

Operational Due Diligence Service Providers

Aksia, LLC

Laven Partners US LLC

Real Estate Consultant

R. V. Kuhns & Associates, Inc.

Risk Reporting & Portfolio Review Services

Pension Consulting Alliance

Independent Auditor

Macias Gini & O'Connell LLP

Investment Counsel

Foley and Lardner, LLP

Fiduciary Counsel

Reed Smith, LLP

Tax Counsel

Hanson Bridgett, LLP

Custodian

State Street Bank and Trust Company

Note: List of Investment Managers is located on page 91 of the Investment Section of this report.

Certificate of Achievement for Excellence in Financial Reporting



Public Pension Standards Award for Funding and Administration



Public Pension Coordinating Council

Public Pension Standards Award For Funding and Administration 2016

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

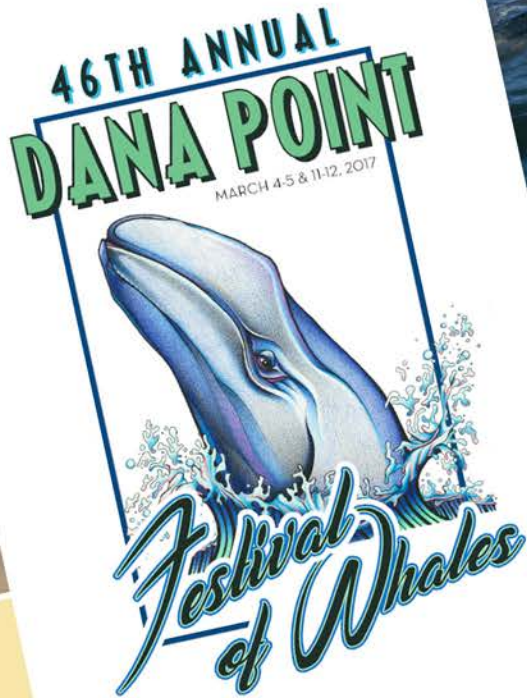
National Association of State Retirement Administrators (NASRA)
National Conference on Public Employee Retirement Systems (NCPERS)
National Council on Teacher Retirement (NCTR)

A handwritten signature in cursive script, reading 'Alan H. Winkle', is positioned above the printed name and title.

Alan H. Winkle
Program Administrator

Dana Point FESTIVAL of Whales

The Dana Point Festival of Whales celebrates the incredible 5000 miles migration of the California Gray Whale from Alaska to Mexico. The migration occurs from December to March and the festival is held in early March. During this peak season, 40-50 whales will pass by Dana Point daily. The Dana Point Headland's cliffs near the harbor are a landmark for their migration path. In addition to whale watching, the festival includes arts and crafts, a sand sculpting competition, classic cars display, a parade and other fun events.





Financial

Section II

Financial



ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Independent Auditor's Report



Certified
Public
Accountants

Independent Auditor's Report

To the Board of Retirement of the
Orange County Employees Retirement System
Santa Ana, California

Report on the Financial Statements

We have audited the accompanying financial statements of the Orange County Employees Retirement System (the System), California, as of and for the year ended December 31, 2016, and the related notes to the financial statements, which collectively comprise the System's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes 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 Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Orange County Employees Retirement System as of December 31, 2016, and the changes in its fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Independent Auditor's Report

(continued)

Emphasis of Matters

As discussed in Note 2 to the basic financial statements, the System implemented the provisions of Governmental Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*, for the year ended December 31, 2016.

As discussed in Note 9 to the basic financial statements, based on the actuarial valuation of the pension plan as of December 31, 2015, rolled forward to December 31, 2016, the total pension liability of participating employers exceeded the pension plan's fiduciary net position by \$5.2 billion. The actuarial valuation is very sensitive to the underlying assumptions, including a discount rate of 7.25 percent, which represents the long-term expected rate of return.

As discussed in Note 10 to the basic financial statements, based on the most recent actuarial valuation of the Orange County Fire Authority (the Authority) health care plan as of July 1, 2016, the Authority's independent actuary determined that the actuarial accrued liability exceeded the actuarial value of its assets by \$227.4 million.

Our opinion is not modified with respect to these matters.

Other Matters

Prior-Year Comparative Information

The financial statements include partial prior-year comparative information. Such information does not include all of the information required to constitute a presentation in conformity with accounting principles generally accepted in the United States of America. Accordingly, such information should be read in conjunction with the System's financial statements for the year ended December 31, 2015, from which such partial information was derived.

We have previously audited the System's 2015 financial statements, and we expressed an unmodified audit opinion on the financial statements in our report dated June 10, 2016. In our opinion, the partial comparative information presented herein as of and for the year ended December 31, 2015, 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, Schedule of Funding Progress – OPEB Plan Orange County Fire Authority and the Schedule of Employer Contributions – OPEB Plan Orange County Fire Authority, as listed in the table of contents, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board 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.

Independent Auditor's Report

(continued)

Other Information

Our audit was conducted for the purpose of forming an opinion on the System's basic financial statements. The other supplementary information, introductory, investment, actuarial, and statistical sections are presented for purposes of additional analysis and are not a required part of the basic financial statements. The other supplementary 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. Such 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 other supplemental information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investment, actuarial, and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June XX, 2017, on our consideration of the 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 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 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.

Newport Beach, California
June XX, 2017

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, 2016. The narrative overview and analysis is presented in conjunction with the Chief Executive Officer's Letter of Transmittal, included in Section I – Introductory to this Comprehensive Annual 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 post-employment benefit (OPEB) trust funds for retiree medical plans and an agency fund.

Financial Highlights

- The net position restricted for pension and other post-employment benefits as of December 31, 2016 totaled \$13.1 billion, an increase of \$1.2 billion or 9.9% from the prior year. This was primarily due to positive returns on investments and a net positive cash flow from contributions less deductions.
- Total additions to fiduciary net position increased 130.1% from \$0.8 billion in 2015 to \$1.9 billion in 2016.
 - Net investment income increased significantly from a net investment loss of \$11.6 million in 2015 to a net investment income of \$1.1 billion in 2016. The net year-to-date rate of return on investments on a fair value basis was approximately 8.52% in 2016 versus a net return of -0.11% in 2015.
 - Contributions received from employers and employees totaled \$870.3 million in 2016, an increase of 1.2% compared to 2015 contributions received of \$859.8 million.
- Total deductions from fiduciary net position increased \$47.5 million from \$722.1 million in 2015 to \$769.6 million in 2016.
 - Member pension benefit payments increased by \$40.3 million or 6.1% in 2016 from \$663.6 million to \$703.9 million.
 - The number of retired members and beneficiaries receiving a benefit payment increased 3.5% from 15,810 payees at the end of 2015 to 16,369 payees as of December 31, 2016.
 - The average annual benefit paid to retired members and beneficiaries during 2016 was \$43,005, an increase of 2.5% over the average annual benefit payment of \$41,972 in 2015.
- The net pension liability of participating employers as calculated in the December 31, 2016 Governmental Accounting Standards Board (GASB) Statement No. 67 Actuarial Valuation used for financial reporting purposes is \$5.2 billion which as a percentage of covered payroll is 323.91%. The plan fiduciary net position of the pension trust fund of \$12.8 billion as a percentage of the total pension liability of \$18.0 billion is 71.16%.
- Based upon the most recent actuarial funding valuation dated as of December 31, 2015, 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 71.72% versus 67.73% if market gains and losses were recognized immediately.

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 Governmental Accounting Standards Board (GASB). These pronouncements require OCERS to make certain disclosures and to report using the full accrual method of accounting.

Management's Discussion and Analysis

(continued)

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 and Other Post-Employment Benefits," representing funds available to pay future benefits to plan participants. The Statement of Fiduciary Net Position includes prior year-end balances for comparative purposes. Increases and decreases in Net Position Restricted for Pension and Other Post-Employment Benefits, 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 post-employment health care plan trusts (retiree medical plans) that are reported as other post-employment benefit trust funds in the Statement of Fiduciary Net Position as separate health care funds. OCERS serves as trustee for these trusts and assets are commingled with pension trust assets for investment purposes and are used exclusively to pay health allowances.

The Orange County Transportation Authority has revocable trust assets held by OCERS in an investment capacity and are not commingled with those of the pension plan and health care plan trusts. The assets and offsetting liabilities are reported in the Statement of Fiduciary Net Position as an agency fund.

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 and Other Post-Employment Benefits. The trend of additions versus deductions to the Plan indicates the strength of OCERS' financial position over time. For comparative purposes, prior year-end balances are also provided.

To distinguish the activities of the health care plan trusts from the pension plan, the health care plan trusts are also reported separately in the Statement of Changes in Fiduciary Net Position as health care funds.

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 and OCFA's retiree medical plan (the County maintains the financial reporting responsibility of its retiree medical plan, so it is not included in OCERS' RSI schedules) reported in the Basic Financial Statements. The pension plan includes a schedule of changes in net pension liability, a schedule of money-weighted investment returns, a schedule of employer contributions and other required supplementary information as required by GASB Statement No. 67. The information contained in both the pension and retiree medical plan schedules is based on separate actuarial valuations prepared for each benefit plan. The valuation reports include additional actuarial information that contributes to the understanding of the changes in the net pension liability of participating employers in the pension plan and the actuarial funding progress of the retiree medical plan as presented in the schedules. The actuarial information is based upon assumptions made regarding future events at the time the valuations were 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.

Other Supplementary Information

The Other Supplementary Information includes schedules pertaining to contributions by plan sponsors and members, OCERS' administrative expenses, investment expenses, professional services and a statement of changes for the agency fund.

Management's Discussion and Analysis

(continued)

Financial Analysis

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

Table 1 : Fiduciary Net Position

As of December 31, 2016 and 2015
(Dollars in Thousands)

	12/31/2016	12/31/2015	Increase / (Decrease)	Percentage Change
Assets				
Cash and Cash Equivalents	\$ 466,328	\$ 367,681	\$ 98,647	26.8%
Securities Lending Collateral	168,896	108,296	60,600	56.0%
Receivables	180,475	90,998	89,477	98.3%
Investments at Fair Value	12,891,389	11,781,914	1,109,475	9.4%
Capital Assets, Net	22,620	24,935	(2,315)	-9.3%
Total Assets	13,729,708	12,373,824	1,355,884	11.0%
Liabilities				
Obligations Under Securities Lending Program	168,896	108,296	60,600	56.0%
Securities Purchased	161,150	51,531	109,619	212.7%
Other	321,811	317,903	3,908	1.2%
Total Liabilities	651,857	477,730	174,127	36.4%
Net Position Restricted for Pension and Other Post-Employment Benefits	\$ 13,077,851	\$ 11,896,094	\$ 1,181,757	9.9%

As of December 31, 2016, OCERS has a net position of \$13.1 billion restricted for pension and other post-employment benefits. Net position increased \$1.2 billion, an increase of 9.9% over 2015. The increase in net position includes an increase in total assets of \$1.4 billion and an increase in total liabilities of \$174.1 million.

The increase in total assets is primarily attributed to an increase in fair value of investments, with additional increases in cash and short-term investments, the security lending program and receivables at year end. The increase in total assets is offset by a decrease in capital assets. Investments at fair value increased \$1.1 billion primarily due to greater returns in 2016. Investments experienced strong returns in domestic equity securities, diversified credit, and real return, of 13.1%, 11.4% and 12.1%, respectively. All investment categories experienced positive returns in 2016. Cash and short-term equivalents increased \$98.6 million due to timing of contributions and other receipts near year-end. Securities lending collateral increased \$60.6 million due to a post-election rally and low energy prices within the corporate bond portfolio which led to an increase in lending at year-end in the securities lending program. Receivables increased \$89.5 million from the prior year due to the timing of investments for unsettled trades, and other receivables related to year-end investment redemptions. Capital assets decreased \$2.3 million from 2015 to 2016. The decrease is depreciation expense primarily related to the Pension Administration System Solution (PASS) Project, V3, which is fully capitalized and depreciable in 2016. For additional information regarding capital assets, please see the accompanying notes to the basic financial statements, Note 2.

The increase in total liabilities of \$174.1 million is primarily a result of the timing of unsettled security purchases of \$109.6 million, as well as an increase in the obligations under the securities lending program which increased by \$60.6 million and is directly related to the increase in securities lending collateral as previously discussed. All other liabilities increased by \$3.9 million which include unearned contributions, foreign currency forward contracts, retiree payroll payables and other liabilities.

Management's Discussion and Analysis

(continued)

Table 2 : Changes in Fiduciary Net Position

For the Years Ended December 31, 2016 and 2015

(Dollars in Thousands)

	12/31/2016	12/31/2015	Increase / (Decrease)	Percentage Change
Additions				
Employer Pension Contributions	\$ 567,196	\$ 571,298	\$ (4,102)	-0.7%
Employer Health Care Contributions	44,825	39,181	5,644	14.4%
Employee Pension Contributions	258,297	249,271	9,026	3.6%
Net Investment Income/(Loss)	1,081,014	(11,649)	1,092,663	9,379.9%
Total Additions	<u>1,951,332</u>	<u>848,101</u>	<u>1,103,231</u>	<u>130.1%</u>
Deductions				
Participant Benefits - Pension	703,949	663,582	40,367	6.1%
Participant Benefits - Health Care	34,685	33,555	1,130	3.4%
Death Benefits	384	524	(140)	-26.7%
Member Withdrawals and Refunds	13,643	11,857	1,786	15.1%
Administrative Expenses - Pension	16,870	12,521	4,349	34.7%
Administrative Expenses - Health Care	44	44	-	0.0%
Total Deductions	<u>769,575</u>	<u>722,083</u>	<u>47,492</u>	<u>6.6%</u>
Increase in Net Position Restricted for Pension and Other Post-Employment Benefits	1,181,757	126,018	1,055,739	837.8%
Net Position Restricted for Pension and Other Post-Employment Benefits				
Beginning of the Year	<u>11,896,094</u>	<u>11,770,076</u>		
End of the Year	<u>\$ 13,077,851</u>	<u>\$ 11,896,094</u>		

Management's Discussion and Analysis

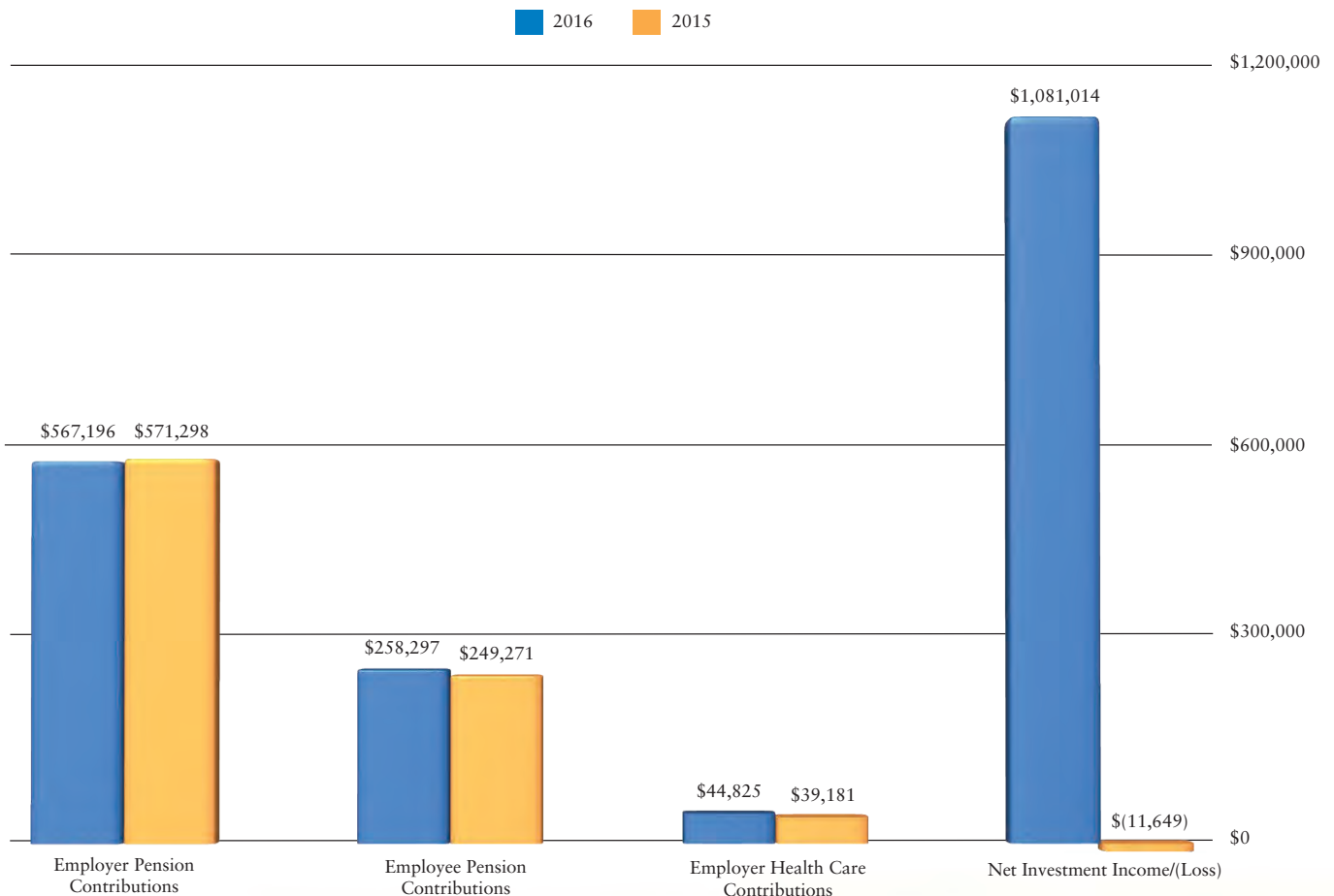
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Additions to Fiduciary Net Position

The primary funding sources of pension benefits are the collection of participating employer and member contributions and earnings on investments, net of investment expenses. Additions to fiduciary net position increased 130.1% in 2016. Total additions for the year ended December 31, 2016 were \$1.9 billion compared to \$848.1 million for the same period in 2015. The increase is comprised of an increase in total contributions of \$10.6 million and an increase in investment income of \$1.1 billion. The increase in contributions is mainly attributed to an increase in employee contributions due to higher salaries. The increase in investment income is attributed to higher appreciation in the fair value of investments and greater returns on the underlying investments. Overall market performance as of December 31, 2016 has improved significantly over December 31, 2015, as all of the investment categories experienced positive returns, versus approximately 50% of the investment categories in 2015 experienced negative returns. Overall net investment returns for the year ended December 31, 2016 were 8.52% compared to the prior year's return of -0.11%.

Additions to Fiduciary Net Position

(Dollars in Thousands)



Management's Discussion and Analysis

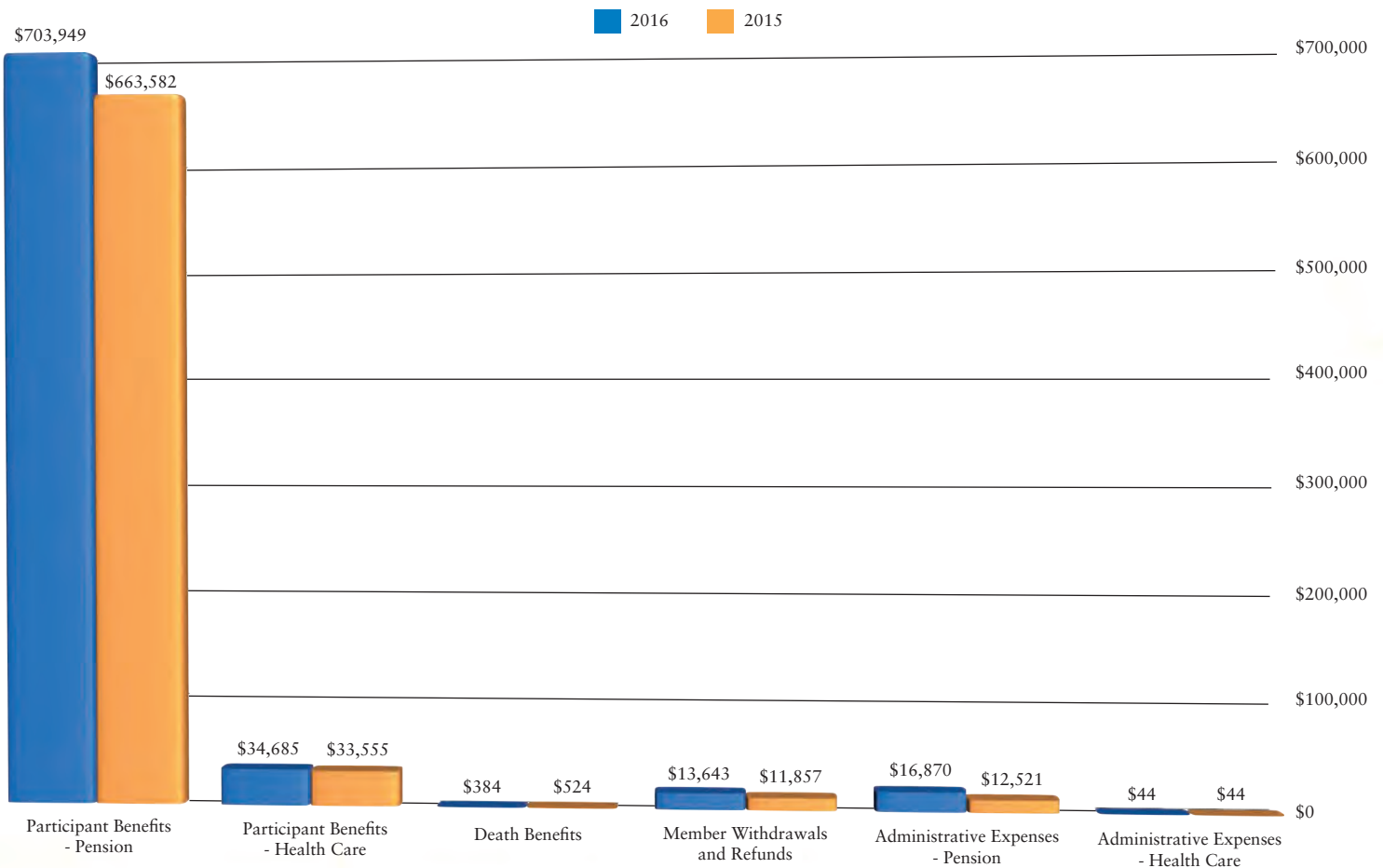
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Deductions from Fiduciary Net Position

The costs associated with the System 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 \$47.5 million or 6.6% 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 and an increase in the average benefit received. Participant benefit payments have increased by \$41.5 million. Total benefit recipients increased by 559, from 15,810 to 16,369. The average annual pension benefit increased from \$41,972 to \$43,005. Additionally, administrative expenses have increased \$4.3 million which can be attributed to an increase in depreciation expense of \$2.2 million due to the completion of the V3 project, increases in professional services related to V3 post implementation consulting of approximately \$1.0 million, and increases in legal and litigation costs and personnel costs of approximately \$1.0 million.

Deductions to Fiduciary Net Position

(Dollars in Thousands)



Management's Discussion and Analysis

(continued)

OCERS Membership

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

Table 3 : Membership Data

As of December 31, 2016 and 2015

	12/31/2016	12/31/2015	Increase/ (Decrease)	Percentage Change
Active Members	21,746	21,525	221	1.0%
Retired Members	16,369	15,810	559	3.5%
Deferred Members	5,370	5,092*	278	5.5%
Total Membership	43,485	42,427	1,058	2.5%

* Includes one member excluded from the December 31, 2015 actuarial valuation due to timing differences in status.

Total OCERS' membership increased during 2016 with a net increase of 1,058 members. The number of active members increased by 221 or 1.0% and the number of retirees increased by 559 or 3.5% suggesting that plan sponsors are hiring employees at a higher rate than members leaving their employment for retirement or other opportunities.

Actuarial Valuations

In order to determine whether Net Position Restricted for Pension Benefits will be sufficient to meet future obligations, a calculation of the actuarial funded status is required. 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 (members) and employers (plan sponsors) 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, 2015 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. For the year ending December 31, 2016, Segal prepared a Governmental Accounting Standards Board (GASB) Statement 67 Actuarial Valuation as of December 31, 2016, used for financial reporting purposes.

In order 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 in which members will retire. The actuary must also utilize assumptions with regards to how the assets will perform over time. A key assumption in this regard is the expected rate of return which has remained at 7.25% since the December 31, 2012 valuation. 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 September 23, 2014, for the three-year experience period ending December 31, 2013. As a result, the following assumptions were changed as of the December 31, 2014 valuation: inflation was lowered from 3.25% to 3.00%; active member payroll increases were lowered from 3.75% to 3.50%; and projected salary increases for general members were lowered from a range of 4.75% to 13.75% to a range of 4.25% to 13.50% and for safety members, the range was changed from 4.75% to 17.75% to 5.00% to 17.50%. In addition, mortality rates were adjusted for after service retirement to reflect shorter life expectancies for general members and longer life expectancies for safety members and longer life expectancies for both general and safety members for after disability retirement.

The GASB 67 valuation provides the calculation of the employers' pension liability. In order to accommodate the annual reporting requirements of our plan sponsors in a timely manner, the valuation was prepared using the December 31, 2015 valuation as the basis for calculating the total pension liability (TPL) and rolled forward to December 31, 2016. Based on this actuarial valuation, the TPL was \$18.0 billion compared to a fiduciary net position of \$12.8 billion, resulting in the employers' net pension liability (NPL) of \$5.2 billion and a fiduciary net position as a percentage of the TPL of 71.2%. The NPL as a percentage of covered payroll was 323.91%.

In the actuarial funding valuation for the pension plan as of December 31, 2015, the funding ratio of the valuation value of assets to actuarial accrued liabilities was 71.72%. 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 67.73% in 2015.

Management's Discussion and Analysis

(continued)

Investment and Economic Summary

The United States economy continued to strengthen throughout 2016. Labor market conditions continued to strengthen with solid gains in payroll employment; the consumer price index increased by a percentage point but remains below the targeted objective of 2 percent; financial vulnerabilities in the U.S. financial system have continued to be moderate as U.S. banks are well capitalized and have sizable liquidity buffers; and the Federal Open Market Committee (FOMC) raised the target for the federal funds rate by $\frac{1}{4}$ percentage point. The United States unemployment rate fell to 4.7% at the end of 2016, the lowest year-end rate since 2007, and wage growth began to pick up when compared to prior years. Consumer spending expanded at a moderate pace, supported by solid income gains. In December 2016, the FOMC raised the target range for the federal funds rate from a range of .25%-.50% to a range of .50%-.75%, the second rate increase in 8 years. The FOMC expects economic conditions will evolve in a manner that will warrant continued gradual increases in the federal funds rate in 2017 and 2018.

In 2016, a couple of major events, which had an effect on the uncertainty of the financial markets, included the United States presidential election and the exit of the United Kingdom from the European Union. Domestic financial conditions have supported economic growth, treasury yields and mortgage rates moved up, stock prices have risen, and the financial sector outperformed the broader equity market. Bond yields reversed their downward trend and increased following the election, in part on expectations of a more expansionary U.S. fiscal policy. The U.S. dollar was strong in foreign markets. Foreign financial market conditions, both advanced and emerging markets, improved despite global political uncertainties.

OCERS' net investment return for 2016 was 8.52% after investment management fees. As of December 31, 2016 the three-year and five-year returns after investment management fees were 4.32% and 7.10%, respectively. Regardless of fluctuations and uncertainty in the financial markets, OCERS continues to preserve a sound financial position to meet the obligations of the Plan participants and their beneficiaries. During 2016, OCERS developed a transition plan to reduce the number and cost of hedge funds in light of reduced expectations for these higher-fee funds to contribute meaningfully to the investment portfolio. The current asset allocation was reviewed with the goal of simplifying the investment portfolio and lowering investment management fees to better position the portfolio for the future, with a new asset allocation policy being put in place in January 2017 to achieve these goals.

Request for Financial Information

This Comprehensive Annual 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
2223 East Wellington Avenue, Suite 100
Santa Ana, CA 92701

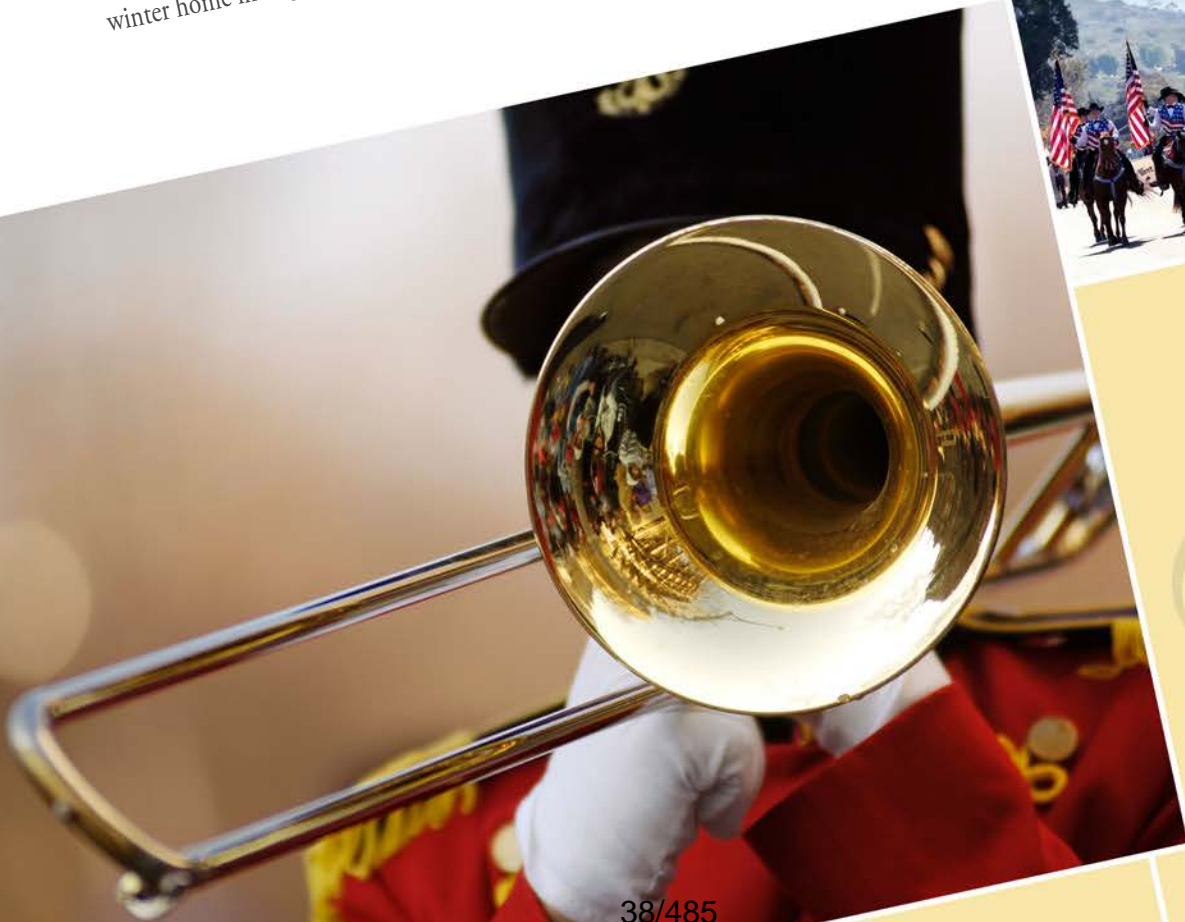
San Juan Capistrano SWALLOW'S Day Parade

The Swallows Day Parade is one of the nation's largest non-motorized parades. The parade takes place in downtown San Juan Capistrano to celebrate the return of the swallows to the San Juan Capistrano Mission on St. Joseph's Day. The Parade and Mercado Street Fair is a full day of family fun, celebrating the Old West and the return of the swallows from their winter home in Argentina.

San Juan Capistrano



Fiesta Association





Financial

Section II

Financial

Basic Financial Statements

Statement of Fiduciary Net Position

As of December 31, 2016

(with summarized comparative amounts as of December 31, 2015)

(Dollars in Thousands)

	Pension Trust Fund	Health Care Fund-County	Health Care Fund-OCFA	OPEB 115 Agency Fund	Total Fund	Comparative Totals 2015
Assets						
Cash and Short-Term Investments						
Cash and Cash Equivalents	\$ 456,545	\$ 8,198	\$ 1,297	\$ 288	\$ 466,328	\$ 367,681
Securities Lending Collateral	165,455	2,971	470	-	168,896	108,296
Total Cash and Short-Term Investments	622,000	11,169	1,767	288	635,224	475,977
Receivables						
Investment Income	15,880	285	45	-	16,210	15,835
Securities Sales	85,263	1,531	242	-	87,036	49,554
Contributions	19,206	-	-	-	19,206	17,730
Foreign Currency Forward Contracts	822	15	2	-	839	6,170
Other Receivables	56,019	1,006	159	-	57,184	1,709
Total Receivables	177,190	2,837	448	-	180,475	90,998
Investments at Fair Value						
Domestic Equity Securities	2,271,307	40,783	6,453	6,479	2,325,022	2,002,135
International Equity Securities	1,329,226	23,867	3,776	2,495	1,359,364	1,128,864
Global Equity Securities	411,279	7,385	1,168	-	419,832	576,945
Domestic Fixed Income	1,669,709	29,981	4,743	5,432	1,709,865	1,469,570
Real Estate	1,096,693	19,692	3,116	-	1,119,501	1,131,770
Diversified Credit	1,647,073	29,575	4,679	-	1,681,327	1,225,464
Emerging Markets Equity	762,196	13,686	2,165	-	778,047	718,540
Emerging Markets Debt	381,567	6,851	1,084	-	389,502	331,118
Real Return	924,423	16,599	2,626	-	943,648	891,015
Absolute Return	1,411,239	25,340	4,009	-	1,440,588	1,675,015
Private Equity	709,929	12,747	2,017	-	724,693	631,478
Total Investments at Fair Value	12,614,641	226,506	35,836	14,406	12,891,389	11,781,914
Capital Assets, Net	22,620	-	-	-	22,620	24,935
Total Assets	13,436,451	240,512	38,051	14,694	13,729,708	12,373,824
Liabilities						
Obligations Under Securities Lending Program	165,455	2,971	470	-	168,896	108,296
Securities Purchased	157,867	2,835	448	-	161,150	51,531
Unearned Contributions	222,524	-	-	-	222,524	227,166
Foreign Currency Forward Contracts	896	16	2	-	914	-
Retiree Payroll Payable	59,661	2,511	234	-	62,406	59,015
Other	20,840	374	59	-	21,273	17,729
Due to Employers	-	-	-	14,694	14,694	13,993
Total Liabilities	627,243	8,707	1,213	14,694	651,857	477,730
Net Position Restricted for Pension and Other Post-Employment Benefits	\$ 12,809,208	\$ 231,805	\$ 36,838	\$ -	\$ 13,077,851	\$ 11,896,094

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

Statement of Changes in Fiduciary Net Position

For the Year Ended December 31, 2016
(with summarized comparative amounts for the Year Ended December 31, 2015)
(Dollars in Thousands)

	Pension Trust Fund	Health Care Fund - County	Health Care Fund-OCFA	Total Fund	Comparative Totals 2015
Additions					
Contributions					
Employer	\$ 567,196	\$ 42,411	\$ 2,414	\$ 612,021	\$ 610,479
Employee	<u>258,297</u>	<u>-</u>	<u>-</u>	<u>258,297</u>	<u>249,271</u>
Total Contributions	825,493	42,411	2,414	870,318	859,750
Investment Income/(Loss)					
Net Appreciation/(Depreciation) in Fair Value of Investments	921,529	14,413	2,448	938,390	(133,255)
Interest	115,001	2,066	329	117,396	54,805
Dividends	40,104	721	115	40,940	50,535
Real Estate Income	26,898	483	77	27,458	24,074
Alternative Investments	36,041	648	103	36,792	45,725
Other Investment Income	1,277	23	4	1,304	1,049
Securities Lending Income					
Gross Earnings	1,857	33	5	1,895	1,342
Less: Borrower Rebates and Bank Charges	<u>(654)</u>	<u>(12)</u>	<u>(2)</u>	<u>(668)</u>	<u>(291)</u>
Net Securities Lending Income	<u>1,203</u>	<u>21</u>	<u>3</u>	<u>1,227</u>	<u>1,051</u>
Total Investment Income	1,142,053	18,375	3,079	1,163,507	43,984
Investment Fees and Expenses	<u>(80,810)</u>	<u>(1,452)</u>	<u>(231)</u>	<u>(82,493)</u>	<u>(55,633)</u>
Net Investment Income/(Loss)	<u>1,061,243</u>	<u>16,923</u>	<u>2,848</u>	<u>1,081,014</u>	<u>(11,649)</u>
Total Additions	<u>1,886,736</u>	<u>59,334</u>	<u>5,262</u>	<u>1,951,332</u>	<u>848,101</u>
Deductions					
Participant Benefits	703,949	30,818	3,867	738,634	697,137
Death Benefits	384	-	-	384	524
Member Withdrawals and Refunds	13,643	-	-	13,643	11,857
Administrative Expenses	<u>16,870</u>	<u>22</u>	<u>22</u>	<u>16,914</u>	<u>12,565</u>
Total Deductions	<u>734,846</u>	<u>30,840</u>	<u>3,889</u>	<u>769,575</u>	<u>722,083</u>
Net Increase	1,151,890	28,494	1,373	1,181,757	126,018
Net Position Restricted For Pension and Other Post-Employment Benefits, Beginning of Year	<u>11,657,318</u>	<u>203,311</u>	<u>35,465</u>	<u>11,896,094</u>	<u>11,770,076</u>
Ending Net Position Restricted For Pension and Other Post-Employment Benefits	<u>\$ 12,809,208</u>	<u>\$ 231,805</u>	<u>\$ 36,838</u>	<u>\$ 13,077,851</u>	<u>\$ 11,896,094</u>

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 multi-employer defined benefit pension plan for the County of Orange, Orange County Superior Court of California, City of San Juan Capistrano, and twelve special districts: Orange County Cemetery District, Orange County Children and Families Commission, Orange County Department of Education, 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, Transportation Corridor Agencies and the University of California, Irvine Medical Center and Campus. The Orange County Department of Education and the University of California, Irvine Medical Center and Campus are closed to new member participation. Capistrano Beach, Cypress Recreation & Parks District, Orange County Mosquito and Vector Control and City of Rancho Santa Margarita are no longer active plan sponsors, 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 1 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 after September 21, 1979 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' plan sponsors, 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 table below 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 www.ocers.org/member_active/spd.htm.

The following table is a summary of OCERS' general and safety membership as of December 31, 2016, 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 Deferred Members Benefits):

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

OCERS Membership (General Members)

As of December 31, 2016

	Rate Group	Benefit Plan	Tier	Active Vested	Active Non-Vested	Retired Members & Beneficiaries	Deferred Members	Total
	1	A	I	2	-	382	1	385
	1	B	II	784	81	365	302	1,532
	1	U	II-PEPRA	1	773	-	142	916
Sub-Total				787	854	747	445	2,833
	2	A	I	-	-	3,344	18	3,362
	2	B	II	1	1	1,940	799	2,741
	2	I	I	53	-	1,125	-	1,178
	2	J	II	10,408	401	4,326	2,257	17,392
	2	P	II	96	110	2	79	287
	2	S	II	2	9	-	3	14
	2	T	II-PEPRA	23	2,828	2	453	3,306
	2	U	II-PEPRA	1	141	-	20	162
Sub-Total				10,584	3,490	10,739	3,629	28,442
	3	A	I	-	-	93	1	94
	3	B	II	16	38	64	38	156
	3	G	I	1	-	29	-	30
	3	H	II	407	-	253	55	715
	3	U	II-PEPRA	-	116	-	10	126
Sub-Total				424	154	439	104	1,121
Sub-Total	4	H	II	-	-	1	-	1
Sub-Total				-	-	1	-	1
	5	A	I	13	-	388	4	405
	5	B	II	1,020	208	897	534	2,659
	5	U	II-PEPRA	-	131	-	30	161
Sub-Total				1,033	339	1,285	568	3,225
	9	A	I	-	-	4	-	4
	9	B	II	-	-	10	12	22
	9	N	II	44	3	28	40	115
	9	U	II-PEPRA	-	21	1	4	26
Sub-Total				44	24	43	56	167
	10	A	I	-	-	8	-	8
	10	B	II	-	-	36	11	47
	10	I	I	-	-	17	-	17
	10	J	II	157	2	100	81	340
	10	N	II	4	39	-	6	49
	10	U	II-PEPRA	1	99	-	33	133
Sub-Total				162	140	161	131	594
	11	A	I	-	-	4	-	4
	11	B	II	-	-	3	-	3
	11	N	II	18	-	2	3	23
	11	U	II-PEPRA	-	4	-	-	4
Sub-Total				18	4	9	3	34
	12	A	I	-	-	2	-	2
	12	B	II	-	-	3	2	5
	12	H	II	14	-	5	2	21
	12	U	II-PEPRA	-	1	-	-	1
Sub-Total				14	1	10	4	29
Total General Members				13,066	5,006	13,434	4,940	36,446

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

OCERS Membership (Safety Members)

As of December 31, 2016

	Rate Group	Benefit Plan	Tier	Active Vested	Active Non-Vested	Retired Members & Beneficiaries	Deferred Members	Total
	6	C	I	-	-	89	-	89
	6	D	II	-	-	46	35	81
	6	E	I	1	-	44	-	45
	6	F	II	758	20	158	174	1,110
	6	V	II-PEPRA	-	27	-	2	29
Sub-Total				759	47	337	211	1,354
	7	C	I	-	-	503	-	503
	7	D	II	-	-	242	51	293
	7	E	I	-	-	283	-	283
	7	F	II	1,310	-	923	87	2,320
	7	R	II	154	223	2	20	399
	7	V	II-PEPRA	1	219	-	12	232
Sub-Total				1,456	442	1,953	170	4,030
	8	C	I	-	-	27	-	27
	8	D	II	-	-	72	6	78
	8	E	I	-	-	17	-	17
	8	F	II	625	172	529	31	1,357
	8	R	II	1	51	-	2	54
	8	V	II-PEPRA	-	112	-	10	122
Sub-Total				626	335	645	49	1,655
Total Safety				2,850	824	2,935	430	7,039
Grand Total				<u>15,916</u>	<u>5,830</u>	<u>16,369</u>	<u>5,370</u>	<u>43,485</u>

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 Public Employees Pension Reform Act (PEPRA) plans and 5 years of service and age 50 for Safety PEPRA, for all plans except those identified as PEPRA compliant), 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 (see Section II, Notes to the Required Supplementary Information, for any changes in benefit terms). Member rate groups and benefit plans as of December 31, 2016 are as follows:

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

Rate Groups and Benefit Plans

As of December 31, 2016

Rate Group	Plan Type	Benefit Plan	Benefit Formula per Year of Service	Sponsoring Agency
1	General	A	2.0% @ 57	County of Orange; 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 participants)
		B	1.67% @ 57.5	
		U	2.5% @ 67 PEPRA	
2	General	A	2.0% @ 57	County of Orange; City of San Juan Capistrano; LAFCO; OCERS; Orange County Superior Court of California; & OC Children and Families Commission
		B	1.67% @ 57.5	
		I	2.7% @ 55	
		J	2.7% @ 55	
		O	1.62% @ 65	
		P	1.62% @ 65	
		S	2.0% @ 57	
		T	1.62% @ 65 PEPRA	
		U	2.5% @ 67 PEPRA	
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 active participant)
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	
		Q	3.0% @ 55	
		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	
		Q	3.0% @ 55	
		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, 2016

Rate Group	Plan Type	Benefit Plan	Benefit Formula per Year of Service	Sponsoring Agency
9	General	A	2.0% @ 57	Transportation Corridor Agencies
		B	1.67% @ 57.5	
		M	2.0% @ 55	
		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	
		M	2.0% @ 55	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
11	General	A	2.0% @ 57	OC Cemetery District
		B	1.67% @ 57.5	
		M	2.0% @ 55	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
12	General	A	2.0% @ 57	OC Public Law Library
		B	1.67% @ 57.5	
		G	2.5% @ 55	
		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 plan sponsor, 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 plan sponsor, 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 ^{46/485} of or in the course of the member's employment.

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

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 allowance.

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.

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 prior calendar year. The cost-of-living adjustment is limited to a maximum increase or decrease of three percent per year as established by the Board of Retirement. The 2016 cost-of-living adjustment ranged from 1% to 3% based on the date benefit recipients began receiving benefits.

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, 2016 only those members that retired on or before April 1, 1980 are eligible to receive the STAR COLA benefit.

Post-Employment Health Care Plans

OCERS serves as trustee for the County of Orange (County) and Orange County Fire Authority (OCFA) post-employment health care plan trusts established under Internal Revenue Code section 401(h), which are reported as other post-employment benefit trust funds in OCERS annual 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.

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 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 Statement No. 43, *Financial Reporting for Post-employment Benefit Plans Other than Pension Plans*. 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>.

In order to be eligible to receive the County of Orange Retiree Medical Grant (Grant) upon retirement, the employee must have completed at least ten years of continuous County or participating special districts service (although exceptions for disability retirements exist), be enrolled in a County sponsored health plan and/or Medicare, qualify as a retiree as defined by the pension plan and be able to receive a monthly benefit payment from OCERS. To qualify as a retiree as defined by the Plan, the employee upon retirement must be at least 50 years of age with a minimum of 10 years of service or have at least 20 years of service for a safety member of OCERS or at least 30 years of service for a general member of OCERS.

Employees represented by the American Federation of State, County and Municipal Employees (AFSCME) who were employed on or after September 30, 2005 are not eligible for the Grant. Employees represented by the Association of Orange County Deputy Sheriffs (AOCDS) who were hired on or after October 12, 2007 are not eligible for the Grant or lump sum payment. Law enforcement management employees who were hired on or after June 19, 2009 are not eligible for the Grant.

Notes to the Basic Financial Statements

NOTE 1 : Plan Descriptions (continued)

The monthly Grant amount is determined by a formula that multiplies a base number by the number of years of qualifying County employment up to a maximum of 25 years. The base number for calendar year 2016 is \$21.45 per year of County service, and the maximum monthly Grant is \$536.25. The amount of the Grant is netted against the monthly health plan premium and/or reimburses Medicare premiums paid by the retiree for retiree and dependent coverage with the retiree obligated to pay the remaining balance. Any Grant in excess of the monthly health plan and/or Medicare premium payable is forfeited.

The Grant is reduced by 50% once the retiree becomes Medicare A and B eligible. Retirees who were age 65 and/or Medicare A and B eligible on the effective date are not subject to the Medicare reduction. The Grant is also reduced by 7.5% for each year of age prior to age 60 and increased by 7.5% for each year of age after age 60 up to age 70 for employees retiring after the effective date. The effective date varies by labor agreement. Safety employees and disability retirements are exempt from the age adjustment. The base number for the Grant is adjusted annually based on a formula defined in the Plan document with a maximum increase/decrease of 3%. Surviving dependents of a deceased employee or retiree eligible for the Grant are entitled to receive 50% of the Grant that the employee/retiree was eligible to receive.

AFSCME employees are not subject to the Medicare reduction or age adjustment. In addition, the base number for the Grant is adjusted annually with a maximum increase/decrease of 5%. The base number for calendar year 2016 is \$24.79 per year of County service, and the maximum monthly Grant is \$619.75.

As trustee of OCFA's 401(h) OPEB trust fund, the sole source of funding for OCFA's post-employment health care plan, OCERS has taken financial reporting responsibility for this plan. All OCFA retirees and full-time employees hired prior to January 1, 2007, are eligible to participate in the OCFA health care plan. Eligible employees who are credited with at least one year of service are eligible to receive plan benefits upon retirement. Participants must be covered under a qualified health plan, Medicare or a recognized health insurance plan. In 2016, retired OCFA members received \$24.33 per year of creditable service, with a maximum monthly benefit of \$608.25 based upon 25 or more years of creditable service.

Post-Employment Health Care Plan Membership - OCFA

	July 1, 2016
Active Participants	602
Retired Participants and Surviving Spouses	654
Terminated Participants	<u>3</u>
Total Plan Participants*	<u>1,259</u>

* Membership count obtained from OCFA financial statements.

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 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.

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 pursuant to an agreement established in accordance with Internal Revenue Code section 115 (115 Plan). The OCTA 115 Plan provides post-employment health care benefits to retired members with at least ten years of OCTA service. 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.

An Agency Fund is used to account for OCTA's 115 Plan assets held by OCERS in an investment capacity with the revocable trust assets reported being offset by a liability for the resources held on behalf of OCTA. 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>.

Notes to the Basic Financial Statements

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, 2016. The acquisition of investments is authorized by state statute and OCERS' Investment Policy Statement (refer to Note 3 : Investments for further information). 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, 2016 is detailed in Section III - 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 domestic, international and global equity securities; domestic fixed income; real estate; diversified credit; emerging markets equity and debt; real return strategies; absolute return strategies; and private equity. Investments are reported at fair value, in accordance with Governmental Accounting Standards Board (GASB) Statement No. 72 *Fair Value Measurement and Application* (GASB 72) guidelines, 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, 2016 the OCIP had a weighted average maturity of 328 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 Comprehensive Annual Financial Report.

Equities

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.

Debt Securities

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 Estate

OCERS holds real estate assets directly and in commingled real estate funds structured as either limited partnerships or trust funds. Real estate investments owned directly are appraised annually by independent third-party appraisers in accordance with the Uniform Standards of Professional Appraisal Practice. 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.

Notes to the Basic Financial Statements

NOTE 2 : Summary of Significant Accounting Policies (continued)

OCERS engages real estate management firms to assist in the day-to-day operations of the real estate in its portfolio that is directly held by OCERS. At December 31, 2016, the estimated fair value of OCERS' real estate held directly was \$19.2 million. The total real estate portfolio was \$1.1 billion.

OCERS' Investment Committee has approved a maximum fifty percent (50%) leverage limit for the total real estate portfolio at the time of financing. Additionally, leverage targets are established for each investment style based on the risk/return profile of the underlying investment. Established leverage limits by investment style are as follows:

- Core Real Estate: limited to 50% of the individual asset market value at the time of financing with leverage limits at the portfolio level of 40%.
- Non-Core Real Estate: accessed through commingled funds that have pre-specified leverage limits in offering documents but will be limited to 75% of the market value of the commingled funds, at the time of financing.

Diversified Credit

Diversified 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.

Diversified 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. Diversified credit included in Level 3 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.

Alternative Investments

OCERS invests in a variety of alternative strategies including private equity, real return and absolute return. The fair value of OCERS' 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 that are reported at NAV are based on audited financial statements.

Included in the real return strategy are dedicated allocations to inflation linked debt, commodities, timber, energy and agriculture resources. Fair value for inflation linked debt securities and commodities are determined by quoted market prices. Fair value for timber, energy and agriculture are determined based on independent appraisals and/or estimates made in good faith by the general partner or management.

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; and sixty years for buildings.

Notes to the Basic Financial Statements

NOTE 2 : Summary of Significant Accounting Policies (continued)

Capital Assets

As of December 31, 2016
(Dollars in Thousands)

Building and Improvements	\$ 5,098
Computer Software-V3 Pension System	21,853
Furniture and Equipment	1,341
Construction in Progress	<u>873</u>
Total Capital Assets (at cost)	29,165
Less: Accumulated Depreciation and Amortization	<u>(6,545)</u>
Total Capital Assets, Net of Depreciation and Amortization	<u>\$ 22,620</u>

GASB Statement No. 51, *Accounting and Financial Reporting for Intangible Assets*, requires OCERS to identify and capitalize costs incurred for the development of internally generated computer software, which is considered an intangible asset. According to GASB Statement No. 51, there are three stages in the development and installation of internally generated computer software: (1) Preliminary Project Stage, (2) Application and Development Stage, and (3) Post-Implementation/Operation Stage. All outlays related to the Application and Development Stage must be capitalized.

OCERS began implementing and developing a new internally generated computer software, Pension Administration Software System (V3), in 2010. In 2016, V3 was in the Post-Implementation/Operation Stage. All outlays were expensed and amortization of the asset began over an estimated useful life of ten years. Intangible assets are included as Capital Assets in the Statement of Fiduciary Net Position.

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, 2015, from which the summarized information was derived.

Effect of New Governmental Accounting Standards Board (GASB) Pronouncements

In February 2015, GASB issued Statement No. 72, *Fair Value Measurement and Application* (GASB 72). This statement addresses accounting and financial reporting issues related to fair value measurements. The definition of fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. This statement provides guidance for determining a fair value measurement for financial reporting purposes. This statement also provides guidance for applying fair value to certain investments and disclosures related to all fair value measurements and is effective for reporting periods beginning after June 15, 2015. OCERS implemented GASB 72 for the year ended December 31, 2016 and the financial statements and the related disclosures reflect the changes as required by GASB 72. Refer to Note 3 : Investments for further information.

Notes to the Basic 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. Agency 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.

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, 2016, 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. 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. 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. Standard & Poor's 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 those securities that are not rated and NA represents those securities 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, 2016, the Standard & Poor's credit ratings of the OCERS' fixed income portfolio were as follows:

Credit Ratings

As of December 31, 2016
(Dollars in Thousands)

Rating	Pooled	International	U.S. Treasuries	Corporates	Agencies	Mortgages	Municipals	Asset-Backed	Swaps	Total
AAA	\$ -	\$ 5,501	\$ -	\$ 926	\$ 13,952	\$ 536	\$ -	\$ 11,109	\$ -	\$ 32,024
AA	-	11,912	-	4,033	131,706	16,835	12,615	3,290	-	180,391
A	-	12,225	-	28,459	-	1,926	2,521	1,098	-	46,229
BBB	-	4,010	-	146,042	-	1,264	5,553	720	-	157,589
BB	-	1,652	-	153,609	-	3,770	-	3,391	-	162,422
B	-	5,542	-	102,729	-	1,098	-	3,955	-	113,324
CCC	-	-	-	23,129	-	6,107	-	7,345	-	36,581
CC	-	-	-	144	-	1,022	-	-	-	1,166
D	-	-	-	10,927	-	3,910	-	4,334	-	19,171
NR	671,718	12,851	-	6,825	-	21,995	1,080	6,017	3,158	723,644
NA	-	-	158,888	-	6,801	-	-	-	-	165,689
Total	\$ 671,718	\$ 53,693	\$ 158,888	\$ 476,823	\$ 152,459	\$ 58,463	\$ 21,769	\$ 41,259	\$ 3,158	\$ 1,638,230

This schedule reflects credit ratings for OCERS' fixed income portfolio, which includes \$53.7 million of international fixed income securities and excludes \$71.6 million of non-fixed income securities that are included in the domestic fixed income category on the Statement of Fiduciary Net Position.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

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 the Bloomberg Barclays Capital Universal Index. As of December 31, 2016, the duration was 5.69 years for the Bloomberg Barclays Capital Universal Index and 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, 2016:

Interest Rate Risk Schedule

As of December 31, 2016

(Dollars in Thousands)

Category	Amount	Duration (in Years)	Percent
Pooled	\$ 671,718	4.86	42%
International	50,535	3.53	3%
U.S. Treasuries	158,888	4.22	10%
Corporates	473,184	5.89	29%
Agencies	152,456	3.92	9%
Mortgages	54,542	2.13	3%
Municipals	21,769	6.98	1%
Asset-Backed	28,055	1.04	2%
No Effective Duration:			
International	3,158	N/A	0%
Corporates	3,639	N/A	0%
Agencies	3	N/A	0%
Mortgages	3,921	N/A	0%
Asset-Backed	13,204	N/A	1%
Swaps	3,158	N/A	0%
Total	\$ 1,638,230	4.76	100%

This schedule reflects interest risk for OCERS' fixed income portfolio, which includes \$53.7 million of international fixed income securities and excludes \$71.6 million of non-fixed income securities that are included in the domestic fixed income category on the Statement of Fiduciary Net Position.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

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, 2016:

Foreign Currency Risk Schedule

As of December 31, 2016
(Dollars in Thousands)

Currency in U.S. Dollar	Cash	Equities	Fixed Income	Options	Forwards	Swaps	Total
Australian Dollar	\$ 1,076	\$ 27,635	\$ 4,930	\$ -	\$ (286)	\$ (30)	\$ 33,325
Brazilian Real	136	2,030	941	-	93	-	3,200
Canadian Dollar	13	17,854	1,797	-	(6)	-	19,658
Danish Krone	93	12,760	-	-	(46)	-	12,807
Euro Currency	(104)	222,539	10,389	-	760	60	233,644
Hong Kong Dollar	17	29,411	-	-	-	34	29,462
Iceland Krona	59	-	1,078	-	-	-	1,137
Indian Rupee	-	1,298	-	-	-	-	1,298
Indonesian Rupiah	-	566	-	-	-	-	566
Japanese Yen	(426)	141,323	5,295	-	(272)	(37)	145,883
Mexican Peso	7	298	4,078	-	(42)	(3)	4,338
New Israeli Sheqel	-	3,383	-	-	(18)	-	3,365
New Taiwan Dollar	-	-	-	-	15	-	15
New Zealand Dollar	-	396	11,912	-	(124)	-	12,184
Norwegian Krone	8	6,775	1,824	-	(77)	-	8,530
Pound Sterling	181	117,879	3,202	(2)	81	(104)	121,237
Russian Ruble	-	-	-	-	(39)	-	(39)
Singapore Dollar	54	6,290	-	-	(33)	-	6,311
South African Rand	-	2,310	-	-	-	-	2,310
South Korean Won	-	8,281	-	-	1	-	8,282
Swedish Krona	3,863	14,113	-	-	(38)	77	18,015
Swiss Franc	11	56,043	-	-	61	(68)	56,047
Thailand Baht	-	1,080	-	-	-	-	1,080
Yuan Renminbi	-	-	-	-	(105)	-	(105)
Amount Exposed to Foreign Currency Risk	\$ 4,988	\$ 672,264	\$ 45,446	\$ (2)	\$ (75)	\$ (71)	\$ 722,550

The foreign currency amounts above are included within the cash and cash equivalents, international equity, global equity, real return, and domestic fixed income allocations on the Statement of Fiduciary Net Position as of December 31, 2016. Swaps are included in the domestic fixed income investment allocation.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

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, 2016, 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, 2016, 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, 2016.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Derivative Instruments

As of December 31, 2016
(Amounts in Thousands)

Derivative Instruments	Changes in Fair Value ⁽⁴⁾		Fair Value at December 31, 2016		Notional ⁽³⁾
	Classification	Amount ⁽¹⁾	Classification	Amount ⁽²⁾	
Commodity Futures Long	Net Appreciation / (Depreciation) in Fair Value of Investments	\$ 2,530	Cash	\$ -	5,677
Commodity Futures Short	Net Appreciation / (Depreciation) in Fair Value of Investments	(86)	Cash	-	(1)
Credit Default Swaps Bought	Net Appreciation / (Depreciation) in Fair Value of Investments	(100)	Domestic Fixed Income	45	\$ 800
Credit Default Swaps Written	Net Appreciation / (Depreciation) in Fair Value of Investments	780	Domestic Fixed Income	(16)	27,431
Fixed Income Futures Long	Net Appreciation / (Depreciation) in Fair Value of Investments	1,418	Cash / Domestic Fixed Income	-	\$ 122,787
Fixed Income Futures Short	Net Appreciation / (Depreciation) in Fair Value of Investments	(1,094)	Domestic Fixed Income	-	(143,304)
Fixed Income Options Bought	Net Appreciation / (Depreciation) in Fair Value of Investments	109	Domestic Fixed Income	1,014	125,100
Fixed Income Options Written	Net Appreciation / (Depreciation) in Fair Value of Investments	(45)	Domestic Fixed Income	(1,215)	(162,500)
Foreign Currency Futures Short	Net Appreciation / (Depreciation) in Fair Value of Investments	7,520	International Equity Securities	-	(143,693)
Foreign Currency Options Bought	Net Appreciation / (Depreciation) in Fair Value of Investments	254	Domestic Fixed Income	496	5,342
Foreign Currency Options Written	Net Appreciation / (Depreciation) in Fair Value of Investments	809	Domestic Fixed Income	(4)	(9,102)
Futures Options Written	Net Appreciation / (Depreciation) in Fair Value of Investments	144	Domestic Fixed Income	(70)	(170)
FX Forwards	Net Appreciation / (Depreciation) in Fair Value of Investments	4,665	Domestic Fixed Income / International Equity Securities / Global Equities	(75)	264,307
Index Futures Long	Net Appreciation / (Depreciation) in Fair Value of Investments	36,535	International Equity Securities / Cash	-	1,621

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Derivative Instruments

(Continued)

Derivative Instruments	Changes in Fair Value ⁽⁴⁾		Fair Value at December 31, 2016		Notional ⁽³⁾
	Classification	Amount ⁽¹⁾	Classification	Amount ⁽²⁾	
Index Futures Short	Net Appreciation / (Depreciation) in Fair Value of Investments	(1,765)	International Equity Securities	- \$	(32)
Pay Fixed Interest Rate Swaps	Net Appreciation / (Depreciation) in Fair Value of Investments	(355)	Domestic Fixed Income	2,846	289,211
Receive Fixed Interest Rate Swaps	Net Appreciation / (Depreciation) in Fair Value of Investments	2,626	Domestic Fixed Income	252	63,861
Rights	Net Appreciation / (Depreciation) in Fair Value of Investments	(213)	Domestic Fixed Income / International Equity Securities / Global Equities	-	-
Total Return Swaps Bond	Net Appreciation / (Depreciation) in Fair Value of Investments	(576)	International Equity Securities	(3) \$	19,378
Total Return Swaps Equity	Net Appreciation / (Depreciation) in Fair Value of Investments	<u>14</u>	International Equity Securities	<u>34</u>	(1,949)
Grand Totals		<u>\$ 53,170</u>		<u>\$ 3,304</u>	

⁽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

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, 2016. 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, 2016.

Custodial Credit Risk – Derivative Instruments

As of December 31, 2016, 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.

Notes to the Basic Financial Statements

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, 2016 is as follows:

Counterparty Credit Risk Schedule for Derivative Instruments

As of December 31, 2016
(Dollars in Thousands)

Counterparty Name	S&P Rating	Foreign Currency Forward Contracts	Swaps	Total Fair Value
Australia and New Zealand Banking Group	AA-	\$ 54	\$ -	\$ 54
Bank of America CME	Baa1	-	207	207
Bank of America ICE	Baa1	-	262	262
Bank of America LCH	Baa1	-	67	67
Bank of America, N.A.	A+	242	-	242
Barclays Capital	A-	-	4	4
BNP Paribas SA	A	33	-	33
Citibank N.A.	A+	1,785	-	1,785
Credit Agricole CIB	A	16	-	16
Credit Suisse FOB CME	A	-	2,683	2,683
Credit Suisse FOB ICE	A	-	147	147
Credit Suisse FOB LCH	A	-	1,106	1,106
Credit Suisse International	A	5	-	5
Goldman Sachs Bank USA	BBB+	36	-	36
Goldman Sachs International	A+	-	6	6
HSBC Bank USA	AA-	45	-	45
JPMorgan Chase Bank	A+	101	-	101
JPMorgan Chase Bank N.A.	A+	64	-	64
JPMorgan Securities Inc	A-	-	3	3
Morgan Stanley	BBB+	-	53	53
Morgan Stanley and Co. International PLC	BBB+	40	-	40
Morgan Stanley Bank, N.A.	A+	45	-	45
Morgan Stanley Co Incorporated	BBB+	-	112	112
Standard Chartered Bank	A	572	-	572
Standard Chartered Bank, London	A	29	-	29
Toronto Dominion Bank	AA-	27	-	27
UBS AG	A+	14	-	14
Total Non-Exchange Traded Derivatives in Asset Position		\$ 3,108	\$ 4,650	\$ 7,758

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Interest Rate Risk – Derivatives

At December 31, 2016, OCERS is exposed to interest rate risk on its investments in various swap arrangements based on daily interest rates for LIBOR (London Interbank Offered Rate), UKRPI (UK Retail Price Index), Australian reference rate, Brazilian reference rate, European reference rates and Mexican swap rate. The following table illustrates the maturity periods of these investments.

Interest Rate Risk - Schedules for Derivative Instruments

As of December 31, 2016
(Dollars in Thousands)

Investment Type	Fair Value	Investment Maturities (in years)			
		Less Than 1	1-5	6-10	More than 10
Credit Default Swaps Bought	\$ 45	\$ -	\$ 45	\$ -	\$ -
Credit Default Swaps Written	(16)	10	367	-	(393)
Pay Fixed Interest Rate Swaps	2,846	(381)	(320)	1,817	1,730
Receive Fixed Interest Rate Swaps	252	-	385	60	(193)
Total Return Swaps Bond	(3)	(3)	-	-	-
Total Return Swaps Equity	34	34	-	-	-
Total	\$ 3,158	\$ (340)	\$ 477	\$ 1,877	\$ 1,144

Derivative Instruments Highly Sensitive to Interest Rate Changes

As of December 31, 2016
(Dollars in Thousands)

Investment Type	Receive Rate	Payable Rate	Fair Value	Notional
Pay Fixed Interest Rate Swaps	Variable 0-month HICP	Fixed 0.66%-0.99%	\$ 15	\$ 13,079
Pay Fixed Interest Rate Swaps	Variable 3-month LIBOR	Fixed 1.25%-2.50%	2,949	264,910
Pay Fixed Interest Rate Swaps	Variable 6-month BBSW	Fixed 3.75%	(107)	1,665
Pay Fixed Interest Rate Swaps	Variable 6-month EURIB	Fixed 0.50%	49	2,531
Pay Fixed Interest Rate Swaps	Variable 6-month LIBOR	Fixed 0.30%-2.00%	(66)	4,600
Pay Fixed Interest Rate Swaps	Variable 12-month HICP	Fixed 0.74%	6	2,426
Total Pay Fixed Interest Rate Swaps			\$ 2,846	
Receive Fixed Interest Rate Swaps	Fixed 3.14%	Variable 0-month UKRPI	\$ (41)	1,174
Receive Fixed Interest Rate Swaps	Fixed 6.75%	Variable 1-month TIE	(3)	83
Receive Fixed Interest Rate Swaps	Fixed 1.75%-2.45%	Variable 3-month LIBOR	255	58,600
Receive Fixed Interest Rate Swaps	Fixed 3.25%	Variable 6-month BBSW	76	3,041
Receive Fixed Interest Rate Swaps	Fixed 3.30%-3.40%	Variable 12-month RPI	(25)	704
Receive Fixed Interest Rate Swaps	Fixed 3.30%	Variable 12-month UKRPI	(10)	259
Total Receive Fixed Interest Rate Swaps			\$ 252	
Total Interest Rate Swaps			\$ 3,098	

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Foreign Currency Risk – Derivatives

At December 31, 2016, 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, 2016
(Dollars in Thousands)

Currency Name	Options	Currency Forward Contracts		Swaps	Total Exposure
		Net Receivables	Net Payables		
Australian Dollar	\$ -	\$ (298)	\$ 12	\$ (30)	\$ (316)
Brazilian Real	-	141	(49)	-	92
Canadian Dollar	-	(5)	-	-	(5)
Danish Krone	-	(58)	13	-	(45)
Euro Currency	-	230	528	60	818
Hong Kong Dollar	-	-	-	34	34
Japanese Yen	-	(1,565)	1,293	(37)	(309)
Mexican Peso	-	(47)	5	(3)	(45)
New Israeli Sheqel	-	(18)	-	-	(18)
New Taiwan Dollar	-	(6)	21	-	15
New Zealand Dollar	-	(116)	(8)	-	(124)
Norwegian Krone	-	(129)	52	-	(77)
Pound Sterling	(2)	(59)	140	(104)	(25)
Russian Ruble	-	-	(39)	-	(39)
Singapore Dollar	-	(76)	43	-	(33)
South Korean Won	-	(52)	53	-	1
Swedish Krona	-	-	(38)	77	39
Swiss Franc	-	-	61	(68)	(7)
Yuan Renminbi	-	(87)	(17)	-	(104)
Total Foreign Currency	\$ (2)	\$ (2,145)	\$ 2,070	\$ (71)	\$ (148)
U.S. Dollar	223	-	-	3,229	3,452
Total	\$ 221	\$ (2,145)	\$ 2,070	\$ 3,158	\$ 3,304

Rate of Return

For the year ended December 31, 2016, the annual money-weighted rate of return on the assets of the plan, net of investment expense, was 8.71%. 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.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Securities Lending

OCERS is authorized by investment policy and state law to lend its investment securities including domestic and international equities, fixed income and real return 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 market value of not less than 102%, 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. In December 2010 the collective investment fund was divided into separate investment pools: 1) a liquidity pool and 2) a duration pool. As of December 31, 2016, the liquidity pool had an average life-final maturity of 91 days and a weighted average maturity (WAM) of 31 days. The duration pool had an average life-final maturity of 3,150 days and a WAM of 23 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 2016, 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, 2016 was \$182.5 million and \$187.6 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, 2016
(Dollars in Thousands)

Security Lent for Cash Collateral	Fair Value of OCERS' Securities Lent	Cash Collateral Received	Non-Cash Collateral Received	Total Collateral Received
Domestic Fixed Income	\$ 94,130	\$ 89,838	\$ 6,163	\$ 96,001
Domestic Equities	34,130	31,746	3,306	35,052
Global Equities	12,466	12,855	-	12,855
International Equities	33,647	27,071	8,269	35,340
Real Return	8,081	7,386	952	8,338
Total	\$ 182,454	\$ 168,896	\$ 18,690	\$ 187,586

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.

The following table represents the fair value measurements as of December 31, 2016.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Investments, Derivative Instruments and Securities Lending Collateral Measured at Fair Value

As of December 31, 2016
(Dollars in Thousands)

	12/31/2016	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				
Debt Securities:				
U.S. Fixed Income	\$ 1,645,286	\$ -	\$ 1,645,286	\$ -
International Fixed Income	53,693	-	53,693	-
Equity Investments:				
U.S. Equity	2,332,548	155,035	2,177,513	-
International Equity	1,238,996	550,244	688,752	-
Global Equity	419,832	289,004	130,828	-
Emerging Markets Equity	593,672	-	593,672	-
Real Estate	19,183	-	-	19,183
Other Investments:				
Absolute Return	874,405	-	874,405	-
Diversified Credit	53,354	-	-	53,354
Private Equity	56	56	-	-
Real Return	556,506	348,351	-	208,155
Total Other Investments	1,484,321	348,407	874,405	261,509
Total Investments at Fair Value Level	7,787,531	\$ 1,342,690	\$ 6,164,149	\$ 280,692
Investments Measured at the Net Asset Value (NAV)				
Debt Investments:				
Commingled Emerging Markets Debt	389,502			
Equity Investments:				
Commingled International Equity Securities	120,349			
Commingled Emerging Markets Equity	184,375			
Total Equity Investments Measured at the NAV	304,724			
Absolute Return:				
Event Driven	235,691			
Multi-Strategy (Hedge)	138,956			
Relative Value	49,884			
Tactical Trading	141,652			
Total Absolute Return Measured at the NAV	566,183			
Diversified Credit:				
Mortgage	134,037			
Multi-strategy (DC)	744,784			
Non-U.S. Direct Lending	481,152			
U.S. Direct Lending	268,000			
Total Diversified Credit Measured at the NAV	1,627,973			
Private Equity	724,637			
Real Estate	1,100,318			
Real Return:				
Agriculture	56,362			
Energy	330,780			
Total Real Return at the NAV	387,142			
Total Investments Measured at the NAV	5,100,479			
Investments - Derivative Instruments				
Swaps	3,158	\$ -	\$ 3,158	-
Options	221	(70)	291	-
Total Investment - Derivative Instruments	3,379	\$ (70)	\$ 3,449	\$ -
Total Investments Measured at Fair Value	\$ 12,891,389			
Securities Lending Collateral				
Debt Securities	\$ 89,838	\$ -	\$ 89,838	\$ -
Equity Investments	79,058	79,058	-	-
Total Securities Lending Collateral	\$ 168,896	\$ 79,058	\$ 89,838	\$ -

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Debt securities include actively traded debt instruments such as those securities issued by the United States government, federal agencies, municipal obligations and corporate issuers. Debt 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.

Equity investments include domestic, international and global securities. 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. 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 estate investments at fair value include real estate assets held directly. Real estate investments owned directly are appraised annually by independent third-party appraisers in accordance with the Uniform Standards of Professional Appraisal Practice. Independent appraisals use professional judgment, which is an unobservable input, to determine the fair value of the asset; therefore these real estate investments are classified as Level 3.

Other investments includes a variety of alternative investment strategies including absolute return, diversified credit, private equity and real return. These investments are included in the fair value hierarchy since OCERS is separately invested in the underlying investment. Other investments classified in Level 1 of the fair value hierarchy are valued using quoted prices in active markets for those securities. Level 2 classified other investments include primarily 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 investments classified as Level 3 include diversified credit and real return investments in energy and timber resources. These investments are not actively traded, are less liquid and subject to redemption restrictions. Determining the fair value requires valuation techniques, such as expert judgment, which are unobservable. The general partner of funds in diversified credit and energy estimate the fair value of these investments in good faith using the best information available which may incorporate the general partner's own assumptions. Timber resources are based on independent appraisals and/or the good faith estimates of management.

Derivative instruments included in Level 1 of the fair value hierarchy are valued using a market approach for prices quoted in active markets for securities. 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.

Securities Lending represents cash collateral received for securities lent. The equity securities lent include domestic equities, international and global equities, and other alternative investments in Level 1 of the fair value hierarchy, valued using a market approach for prices quoted in active markets for securities. Level 2 securities lent are domestic fixed income securities which include U.S. government, federal agencies, and municipal obligations along with corporate issuers.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

Investments Measured at NAV, Unfunded Commitments and Redemption Terms

As of December 31, 2016
(Dollars in Thousands)

The System used 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)	Redemption Notice Period
Investments Measured at the Net Asset Value (NAV)				
Debt Investments:				
Commingled Emerging Markets Debt	\$ 389,502	\$ 68,424	Monthly, N/A	3 Days Prior to Month-end
Equity Investments:				
Commingled International Equity Securities	120,349	-	Monthly	15 Days
Commingled Emerging Markets Equity	184,375	-	Monthly	30 Days
Total Equity Investments Measured at the NAV	<u>304,724</u>	<u>-</u>		
Absolute Return:				
Event Driven	235,691	-	Monthly, Quarterly	15-90 Days
Multi-Strategy (Hedge)	138,956	-	Quarterly, Semi-Annually	60-75 Days
Relative Value	49,884	-	Quarterly	60-180 Days
Tactical Trading	141,652	-	Monthly, Quarterly	30-180 Days
Total Absolute Return Measured at the NAV	<u>566,183</u>	<u>-</u>		
Diversified Credit:				
Mortgage	134,037	-	Quarterly	60 Days
Multi-Strategy (DC)	744,784	72,457	Monthly, Quarterly	60-95 Days
Non-U.S. Direct Lending	481,152	342,155	Annually, N/A	90 Days, N/A
U.S. Direct Lending	268,000	165,335	N/A	N/A
Total Diversified Credit Measured at the NAV	<u>1,627,973</u>	<u>579,947</u>		
Private Equity	724,637	571,938	N/A	N/A
Real Estate	1,100,318	326,080	Quarterly	5-90 Days
Real Return:				
Agriculture	56,362	33,151	Quarterly	60 Days
Energy	330,780	284,059	N/A	N/A
Total Real Return at the NAV	<u>387,142</u>	<u>317,210</u>		
Total Investments Measured at the NAV	<u>\$ 5,100,479</u>	<u>\$ 1,863,599</u>		

Emerging market debt includes investments in three alternative funds that invest primarily in debt in emerging markets both domestic and foreign. The fair value of these investments has been determined using NAV per share of the investments. Investments representing approximately 71% of the value of the investments cannot be redeemed due to restrictions that do not allow for redemption.

Notes to the Basic Financial Statements

NOTE 3 : Investments (continued)

International equities consist of one institutional fund that invests primarily in equity securities of non-U.S. small capitalization companies. The fair value of this fund has been determined using NAV per share of the investments.

Emerging market equities includes one fund that invests in global emerging markets. The fund is divided into units, all without par value. The fair value of each unit is based on NAV per share.

Absolute return: Event driven consists of investments in six funds whose investments focus on identifying and analyzing securities that can benefit from the occurrence of an extraordinary corporate transaction or event, such as mergers and restructurings. The fair value of these investments has been determined using NAV per share of the investments. Less than 3% of the value of these investments cannot be redeemed due to restrictions related to the winding down of the fund.

Absolute return: Multi-strategy includes investments in three funds, one fund representing approximately 2% of the value is in the process of liquidating. These investment funds represent a variety of other absolute return strategies. The fair value of these investments has been determined using NAV per share.

Absolute return: Relative value consists of two funds; these funds seek returns by capitalizing on the mispricing of related securities or financial instruments. The fair value of these investments has been determined using NAV per share.

Absolute return: Tactical trading includes two funds. The investing strategy involves taking long or short positions in a range of markets, from equities and fixed income to commodities and currencies. The fair value of these investments has been determined using NAV per share.

Diversified Credit: Mortgage represents one fund that invests in distressed senior credit opportunities that is expected to produce attractive levels of current income and future appreciation. The fair value of this investment has been determined using NAV per share.

Diversified Credit: Multi-strategy includes investments in five funds, one fund representing approximately 16% of the value has redemption restrictions at the sole discretion of the general partner. These investment funds seek to minimize risk and volatility by constructing a portfolio of investments across a range of strategies.

Diversified Credit: Non-U.S. direct lending includes seven investment funds. Only one fund, approximately 35% of the value, allows redemption. The other funds are closed-end funds with structured investment periods, plus extension options. These funds invest opportunistically in Non-U.S. credit investments which offer downside protection, such as senior secured loans to non-investment grade companies.

Diversified Credit: U.S. direct lending consists of six funds. These funds seek to generate current income while preserving capital by investing in senior secured loans and other debt and equity securities of primarily U.S. companies. These investments are considered illiquid. Redemption restrictions are in place over the life of the partnerships. During the life of the partnerships, distributions are received as underlying partnership investments are realized.

Private equity includes primarily investments in limited partnerships. 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.

Real estate investments include 15 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. Approximately 15% of the investments are closed-end funds with structured investment periods, and are considered illiquid investments. All other funds have no redemption restrictions other than the restrictions noted above.

Real return: Agriculture includes one fund that invests in a diversified portfolio of row, 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 return: Energy consists of eight limited partnerships that invest primarily in oil and gas related investments including energy-related 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. Two of the partnerships, representing 16% of the total, are considered going concerns. If these partnerships fail, the fair value may be different from the NAV per share of the System's ownership interest in partners' capital.

Notes to the Basic Financial Statements

NOTE 4 : Funding Policy - Pension Plan

Employer and employee/member pension plan contribution requirements are determined as a percentage of plan sponsor 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' plan sponsors for the year ended December 31, 2016 was \$1.6 billion. Employer contribution rates are determined using the entry age normal 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 report as of December 31, 2013 established the contribution rates for the first six months of calendar year 2016 (second half of fiscal year 2015-2016), and the actuarial valuation report as of December 31, 2014 established the contribution rates for the last six months of calendar year 2016 (first half of fiscal year 2016-2017). For the year ended December 31, 2016, employer contribution rates ranged from 11.79% of payroll to 62.66% depending upon the benefit plan type. Employer pension contributions were \$567.2 million for the year ended December 31, 2016 of which approximately \$386 million and \$68.4 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 \$258.3 million in employee pension contributions for the year ended December 31, 2016. Average employee contribution rates for the year ended December 31, 2016 ranged between 8.73% and 16.50%.

NOTE 5 : Funding Policy - Health Care Plans

County of Orange Plan: Information pertaining to the funding policy of the County of Orange Retiree Medical Plan is included in the County's publicly available financial report and 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/>.

Orange County Fire Authority Plan: Current, active employees received pay increases pursuant to collective bargaining agreements in order to contribute 4% of pay to the OCFA for post-employment (retirement) coverage. OCERS classifies plan contributions as being employer made due to the collective bargaining arrangement. The OCFA periodically remits plan contributions to the OCERS' administered trust in amounts authorized by the OCFA Board of Directors. Contributions totaled \$2.4 million for the year ended December 31, 2016.

Notes to the Basic Financial Statements

NOTE 6 : Plan Reserves

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. 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.

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 2016, none 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) UAAL Reserve represents the payment by OCSD of 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 the amount of funds remaining in the OCSD reserve account.

Actuarial Deferred Return

The actuarial deferred return 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.

Notes to the Basic Financial Statements

NOTE 6 : Plan Reserves (continued)

Total Fund Reserves

As of December 31, 2016
(Dollars in Thousands)

Valuation Reserves	
Pension Reserve	\$ 8,121,613
Employee Contribution Reserve	2,893,408
Employer Contribution Reserve	2,085,832
Annuity Reserve	1,263,105
Contra Account	(1,260,994)
Non-Valuation Reserves	
County Investment Reserve	117,723
OCSD UAAL Deferred Reserve	34,067
Total Pension Fund Reserves (smoothed market actuarial value)	13,254,754
Actuarial Deferred Return	(445,546)
Net Position Restricted for Pensions including Non-Valuation Reserves	12,809,208
Health Care Reserve	268,643
Net Position-Total Fund	\$ 13,077,851

NOTE 7 : 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 2016 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, 2016.

Administrative Expense Compared to Actuarial Accrued Liability

For the Year Ended December 31, 2016
(Dollars in Thousands)

Projected Actuarial Accrued Liability (AAL) as of 12/31/16	\$ 17,967,005
Maximum Allowed for Administrative Expense (AAL * 0.21%)	37,731
Actual Administrative Expense ¹	16,038
Excess of Allowed Over Actual Expense	\$ 21,693
Actual Administrative Expense as a Percentage of Projected Actuarial Accrued Liability as of 12/31/16	0.09%
¹ Administrative Expense Reconciliation	
Administrative Expense per Statement of Changes in Fiduciary Net Position	\$ 16,870
Less Administrative Expense Not Considered per CERL Section 31596.1	(832)
Administrative Expense Allowable Under CERL Section 31580.2	\$ 16,038

68/485

Notes to the Basic Financial Statements

NOTE 8 : Contingencies

At December 31, 2016, 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.

NOTE 9 : Pension Disclosures

The net pension liability was measured as of December 31, 2016. 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, 2015. The components of the net pension liability as of December 31, 2016 are as follows:

Net Pension Liability

For the Year Ended December 31, 2016
(Dollars in Thousands)

Total Pension Liability	\$ 18,000,425
Less: Plan Fiduciary Net Position	<u>(12,809,208)</u>
Net Pension Liability	<u>\$ 5,191,217</u>

Plan Fiduciary Net Position as a Percentage of the Total Pension Liability 71.16%

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' 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 and employed generally accepted actuarial methods and assumptions to measure the total pension liability of plan sponsors. 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 at December 31, 2016 was determined by rolling forward the total pension liability from the actuarial valuation as of December 31, 2015. The actuarial assumptions used were based on the results of an experience study for the period from January 1, 2011 through December 31, 2013. Following are the key methods and assumptions used for the total pension liability as of December 31, 2016:

Actuarial Information	
Valuation Date	December 31, 2015
Actuarial Experience Study	Three-Year Period Ending December 31, 2013
Actuarial Cost Method	Entry age normal
Actuarial Assumptions	
Investment Rate of Return	7.25% net of pension plan investment expense, including inflation
Inflation Rate	3.00%
Projected Salary Increases	General: 4.25% to 13.50% and Safety: 5.00% to 17.50% Vary by service, including inflation
Cost of Living Adjustments	3.00% of retirement income

Notes to the Basic Financial Statements

NOTE 9 : Pension Disclosures (continued)

The actuarial assumptions used in the December 31, 2015 actuarial valuation were based on the triennial experience study and economic assumptions study completed in 2014 for the three-year experience period ending December 31, 2013.

Mortality Assumptions

The mortality assumptions used in the total pension liability at December 31, 2016 were based on the results of the actuarial experience study for the period January 1, 2011 through December 31, 2013 using the Society of Actuaries RP-2000 Combined Healthy Mortality Table projected with the Scale BB to 2020. The mortality assumption for all groups is then customized to account for OCERS' plan membership experience. For healthy general members, no adjustments are made. For healthy safety members, the ages are set back two years. For general members that are disabled, the ages are set forward six years for males and three years for females. For safety members that are disabled, no adjustments are made. Beneficiaries are assumed to have the same mortality as a general member of the opposite sex who is receiving a service (non-disability) retirement.

Long-Term Expected Real Rate of Return

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rate 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 rate of return by the target asset allocation percentage and by adding expected inflation and deducting expected investment expenses. The target allocation and projected arithmetic real rate of return for each major asset class, after deducting inflation, but before investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Long-Term Expected Real Rate of Return

For the Year Ended December 31, 2016

Asset Class	Investment Classification	Target Allocation	Weighted Average Long-Term Expected Real Rate of Return (Arithmetic)
Large Cap U.S. Equity	Domestic Equity Securities	14.90%	5.92%
Small/Mid Cap U.S. Equity	Domestic Equity Securities	2.73%	6.49%
Developed International Equity	International Equity Securities	10.88%	6.90%
Emerging International Equity	Global Equity Securities	6.49%	8.34%
Core Bonds	Domestic Fixed Income	10.00%	0.73%
Global Bonds	International Fixed Income	2.00%	0.30%
Emerging Markets Debt	Emerging Markets Debt	3.00%	4.00%
Real Estate	Real Estate	10.00%	4.96%
Diversified Credit (U.S. Credit)	Diversified Credit	8.00%	4.97%
Diversified Credit (Non-U.S. Credit)	Diversified Credit	2.00%	6.76%
Hedge Funds	Absolute Return	7.00%	4.13%
GTAA	Absolute Return	7.00%	4.22%
Real Return	Real Return	10.00%	5.86%
Private Equity	Private Equity	6.00%	9.60%
Total		100.00%	

Notes to the Basic Financial Statements

NOTE 9 : Pension Disclosures (continued)

Discount Rate

The discount rate used to measure the total pension liability was 7.25% for the year ended December 31, 2016. 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 pension plan's fiduciary net position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2016.

The following table represents the net pension liability of participating employers calculated using the discount rate of 7.25%, as well as what the net pension liability would be if it were calculated using a discount rate that is 1.00% lower or 1.00% higher than the current rate:

Sensitivity of Net Pension Liability to Changes in the Discount Rate

(Dollars in Thousands)

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Net Pension Liability as of December 31, 2016	\$ 7,669,195	\$ 5,191,217	\$ 3,151,809

Notes to the Basic Financial Statements

NOTE 10 : Health Care Plan Disclosures

The Schedule of Funding Progress presented in the Required Supplementary Information shows the trend information regarding the OCFA Health Care Plan's actuarial value of assets, liabilities and funding status on a multi-year basis.

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future. Actuarially determined amounts are subject to continual revision as results are compared to past expectations and new estimates are made about the future. Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of each valuation on the pattern of sharing of costs between the employer and plan members to that point. Actuarial calculations reflect a long-term perspective.

Orange County Fire Authority Health Care Plan

(Dollars in Thousands)

Actuarial Valuation Date July 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
2016	\$ 35,858	\$ 263,303	\$ 227,445	13.62%	\$ 61,161	371.88%

The following summarizes the actuarial assumptions and methods used in the most recent actuarial valuation of July 1, 2016 and the July 1, 2014 valuation which was used to determine 2016 contributions.

	Actuarial Information	
	2014	2016
	Valuation Date	July 1, 2014
Actuarial Cost Method	Entry age normal	Entry age normal
Amortization Method	Level-dollar basis	Level-dollar basis
Remaining Amortization Period	22 years closed (declining)	20 years closed (declining)
Asset Valuation Method	Market value	Market value
	Actuarial Assumptions	
	2014	2016
	Investment Rate of Return	7.25%, net of pension plan investment expense, including inflation
Inflation Rate	3.25%	3.25%
Projected Salary Increases	N/A, amortization method is based on level-dollar payment	N/A, amortization method is based on level-dollar payment
Medical Cost Trend Rate	7.75% trending down to 5% over 7 years	7.00% trending down to 5% over 5 years



ORANGE COUNTY
CCERS
EMPLOYEES RETIREMENT SYSTEM

Garden Grove **STRAWBERRY** Festival

The Garden Grove Strawberry Festival was started in 1958. It is a charitable event which benefits local organizations. The festival has grown over the years to include a parade, carnival rides, sporting events, Miss Garden Grove and celebrities along with all the strawberries and treats. Some of the more recent celebrity participants include Hilary Duff, Shirley Jones, Jerry Mathers and Mickey Rooney.





Financial

Section II

Financial
*Required Supplementary
Information*

Schedule of Changes in Net Pension Liability of Participating Employers

For the Years Ended December 31, 2013 through 2016¹
(Amounts in Thousands)

	2016	2015	2014	2013
Total Pension Liability				
Service Cost	\$ 427,473	\$ 439,454	\$ 438,600	\$ 444,838
Interest	1,241,080	1,197,308	1,153,352	1,109,002
Change of Benefit Terms	-	-	-	-
Differences Between Expected and Actual Experience	(323,566)	(205,463)	(327,402)	(295,483)
Changes of Assumptions	-	-	(127,729)	-
Benefit Payments, Including Refunds of Employee Contributions	(717,976)	(675,963)	(630,678)	(586,284)
Other	(509) ³	-	-	-
Net Change in Total Pension Liability	\$ 626,502	\$ 755,336	\$ 506,143	\$ 672,073
Total Pension Liability - Beginning	17,373,923	16,618,587	16,112,444	15,440,371
Total Pension Liability - Ending (a)	\$ 18,000,425	\$ 17,373,923	\$ 16,618,587	\$ 16,112,444
Plan Fiduciary Net Position				
Contributions - Employer ²	\$ 567,196	\$ 571,298	\$ 625,520	\$ 427,095
Contributions - Employee	258,297	249,271	232,656	209,301
Net Investment Income/(Loss)	1,061,243	(10,873)	499,195	1,152,647
Benefit Payments, Including Refunds of Employee Contributions	(717,976)	(675,963)	(630,678)	(586,284)
Administrative Expense	(16,870)	(12,521)	(11,905)	(11,705)
Net Change in Plan Fiduciary Net Position	\$ 1,151,890	\$ 121,212	\$ 714,788	\$ 1,191,054
Plan Fiduciary Net Position - Beginning	11,657,318	11,536,106	10,821,318	9,630,264
Plan Fiduciary Net Position - Ending (b)	\$ 12,809,208	\$ 11,657,318	\$ 11,536,106	\$ 10,821,318
Net Pension Liability (a) - (b) = (c)	\$ 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)	71.16%	67.10%	69.42%	67.16%
Covered Payroll (d)	\$ 1,602,675	\$ 1,521,036	\$ 1,513,206	\$ 1,494,745
Plan Net Pension Liability as a Percentage of Covered Payroll (c)/(d)	323.91%	375.84%	335.88%	353.98%

¹ Data for years prior to 2013 is not available. Information will be presented over ten years as it becomes available prospectively.

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

³ 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 last 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 \$509,000 given to the Orange County Public Law Library to reflect that their future service enhancement did not increase the UAAL.

Schedule of Investment Returns

For the Years Ended December 31, 2014 Through 2016¹

Years Ended December 31	Annual Money Weighted Rate of Return, Net of Investment Expense
2014	4.64%
2015	- 0.51%
2016	8.71%

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, 2007 through 2016
(Dollars in Thousands)

Years Ended December 31	Actuarially Determined Contributions ^{1,2}	Actual Contributions ^{1,2}	Contribution Deficiency / (Excess) ³	Covered Payroll	Contributions as a % of Covered Payroll
2007	\$ 326,736	\$ 326,736	\$ -	\$ 1,410,559	23.16%
2008	359,673	360,365 ³	(692)	1,526,113	23.61%
2009	337,496	338,387 ³	(891)	1,598,888	21.16%
2010	372,437	372,437	-	1,511,569	24.64%
2011	387,585	387,585	-	1,498,914	25.86%
2012	406,521	406,521	-	1,497,475	27.15%
2013	426,020	427,095 ³	(1,075)	1,494,745	28.57%
2014	476,320	625,520 ³	(149,200)	1,513,206	41.34%
2015	502,886	571,298 ³	(68,412)	1,521,036	37.56%
2016	521,447	567,196 ³	(45,749)	1,602,675	35.40%

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:

2009	\$ 34,900
2010	11,000
2011	11,000
2012	5,500
2013	5,000
2014	5,000

² Reduced by discount for prepaid contributions

³ Includes additional contributions made by Plan Sponsors towards the reduction of their UAAL.

Notes to the Required Supplementary Information

Actuarial Valuation Methods and Assumptions

The actuarially 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, 2016:

Valuation Date	Actuarially determined contribution rates for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 are calculated based on the December 31, 2013 valuation. Actuarially determined contribution rates for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 are calculated based on the December 31, 2014 valuation.
Actuarial Cost Method	Entry Age Actuarial Cost Method
Amortization Method	Level percent of payroll for total unfunded actuarial accrued liability
Remaining Amortization Period	
December 31, 2013 Valuation	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, 2013 Valuation	
Investment Rate of Return	7.25% net of pension plan investment expense, including inflation
Inflation Rate	3.25%
Real Across-the-Board Salary Increase	0.50%
Projected Salary Increases	General: 4.75% to 13.75% and Safety: 4.75% to 17.75%, vary by service, including inflation
Cost of Living Adjustments	3.00% of retirement income
Other Assumptions	Same as those used in the December 31, 2013 funding actuarial valuation
December 31, 2014 Valuation	
Investment Rate of Return	7.25% net of pension plan investment expense, including inflation
Inflation Rate	3.00%
Real Across-the-Board Salary Increase	0.50%
Projected Salary Increases	General: 4.25% to 13.55% and Safety: 5.00% to 17.50%, vary by service, including inflation
Cost of Living Adjustments	3.00% of retirement income
Other Assumptions	Same as those used in the December 31, 2014 funding actuarial valuation

Significant Factors Affecting Trends in Actuarial Information – Pension Plan

Changes in Benefit Terms

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.

2015

- Effective January 1, 2015, new OCTA employees will be enrolled in Plan U (2.5% at 67 PEPRA - General).

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).

2011

- Effective April 20, 2012, certain employees previously employed at the City of Santa Ana became employees of OCFA General and OCFA Safety and are eligible for benefits under Plan N (2% at 55) and Plan F (3% at 50), respectively.
- Effective July 1, 2012, new General employees hired by the City of San Juan Capistrano will be covered under General Plan S (2% at 57).

2010

- LAFCO adopted an optional 1.62% of final average salary at age 65 for members hired on or after July 1, 2010.
- County Managers unit adopted an optional 1.62% of final average salary at age 65 for members hired on or after August 17, 2010.
- Sanitation District adopted a 1.64% of final average salary at age 57 for members within Supervisors and Professional unit hired on or after October 1, 2010.
- OCFA adopted a 3.00% of final average salary at age 55 for Safety members within the Executive Management unit hired on or after July 1, 2011 and for all Safety members hired on or after July 1, 2012.
- OCFA adopted a 2.00% of final average salary at age 55 for General members hired on or after July 1, 2011.

2009

- County and the Courts adopted optional 1.62% at 65 formula for General Member Employees entering OCERS after May 7, 2010.
- County Law Enforcement Members adopted 3% at 55 formula for Safety Members entering OCERS on or after April 9, 2010.

2007

- OC Mosquito and Vector Control District terminated their participation in OCERS effective January 4, 2007.
- Retirement formula for the Orange County Cemetery District changed to 2% at 55 effective December 7, 2007.

Significant Factors Affecting Trends in Actuarial Information – Pension Plan

(continued)

Changes in Assumptions and Methods

- 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.
- 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%.
- 2011
- Changes in mortality, disability, termination, retirement, salary scale, and annual pay-off assumptions in the December 31, 2010 triennial experience study increased the pension plan UAAL by \$364 million.
- 2009
- Adjustments to correct the under-reporting of certain premium pay items in prior years' pensionable salary data resulted in a \$228 million increase in UAAL.
- 2008
- Individual salary increase assumptions are changed from age based to service based.
 - Annual leave payoff assumptions were increased for General members.

Schedule of Funding Progress - OPEB Plan Orange County Fire Authority

(Dollars in Thousands)

Actuarial Valuation Date July 1	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll	UAAL as a Percentage of Covered Payroll
2012	\$ 28,910	\$ 156,623	\$ 127,713	18.46%	\$ 75,432	169.31%
2014	36,945	179,056	142,111	20.63%	66,021	215.25%
2016	35,858	263,303	227,445	13.62%	61,161	371.88%

Schedule of Employer Contributions - OPEB Plan Orange County Fire Authority

(Dollars in Thousands)

Fiscal Year Ended June 30	Annual Required Contributions	Actual Contributions	Percentage Contributed
2012	\$ 13,520	\$ 4,558	33.71%
2014	14,560	4,693	32.23%
2016	13,550	4,460	32.92%

Significant Factors Affecting Trends in Actuarial Information – OPEB Plan Orange County Fire Authority

2016 Changes in OPEB Plan Provisions and Actuarial Assumptions

- The July 1, 2016 OPEB Valuation: OCFA highlights include the following:
 - The valuation reflects a lower discount rate of 4.10% which is a blended discount rate as OCFA is currently partially funding the annual required contribution. The blended rate reflects a short-term rate of approximately 4% and a long-term expected rate of return of invested assets of 7.25%.
 - The inflation rate is 3.25% based on recommendations from the actuary.
 - The valuation reflects several assumption changes including an update to the retirement and mortality tables to reflect more recent experience studies, updates to the initial medical trends and the inclusion of a liability for implicit rate subsidy for general employees.

2014 Changes in OPEB Plan Provisions and Actuarial Assumptions

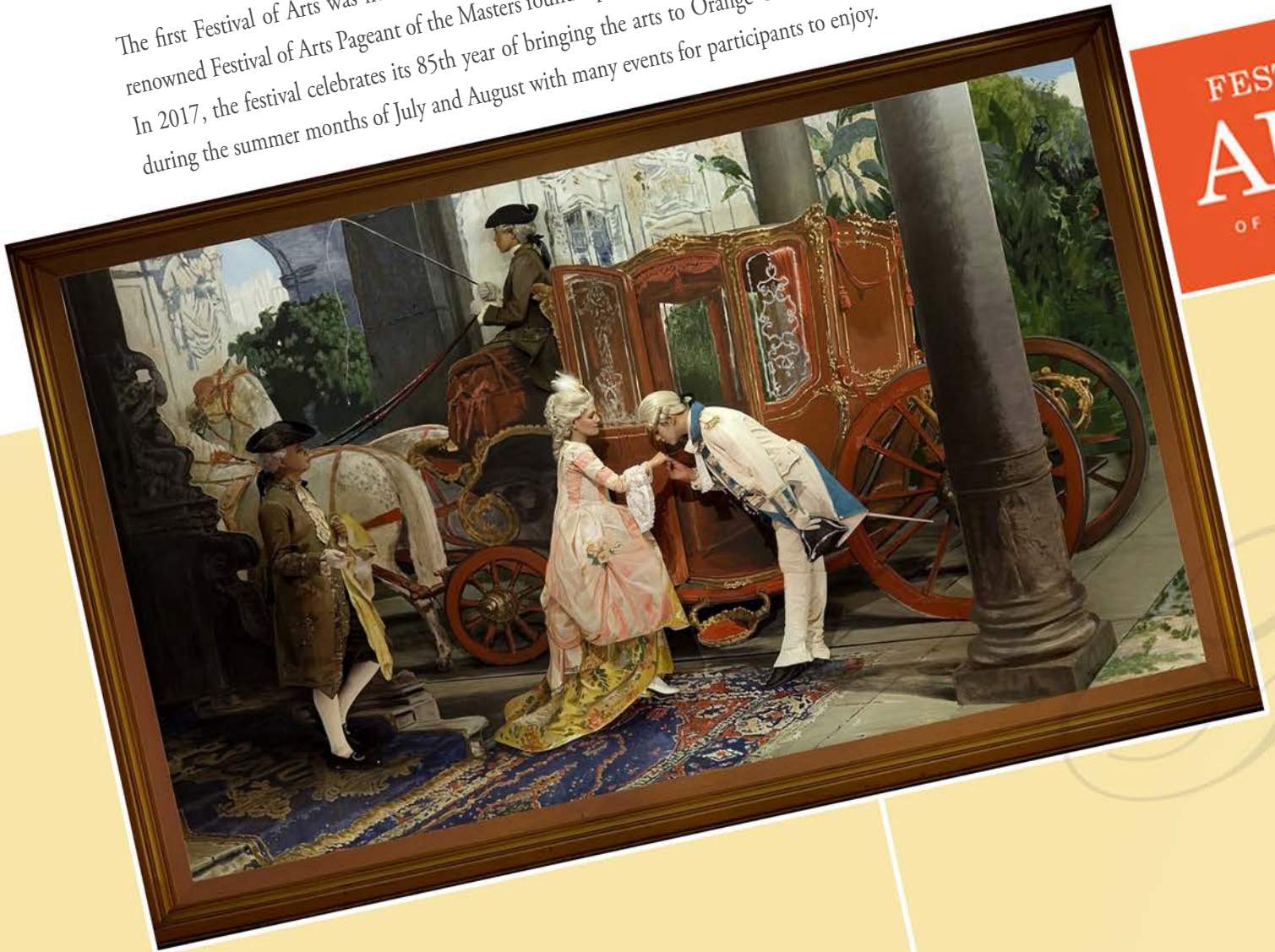
- The July 1, 2014 OPEB Valuation: OCFA highlights include the following:
 - The 5.00% discount rate reflects a blended discount rate as OCFA is currently partially funding the annual required contribution (ARC). The blended rate reflects a short-term rate of approximately 4.25% and a long-term expected rate of return of invested assets of 7.25%.
 - The inflation rate is 3.25% based on recommendations from the actuary.
 - The valuation reflects several assumption changes including an update to the mortality and turnover tables, as well as changes to the spouse participation assumption to reflect actual experience.

2012 Changes in OPEB Plan Provisions and Actuarial Assumptions

- The July 1, 2012 OPEB Valuation: OCFA highlights include the following:
 - The 5.50% discount rate reflects a blended discount rate as OCFA is currently partially funding the ARC. The blended rate reflects a short-term rate of approximately 4.00% and a long-term expected rate of return of invested assets of 7.75%.
 - The inflation rate is 3.50% based on recommendations from the actuary.
 - The valuation reflects several assumption changes including an update to the mortality and turnover tables, as well as changes to the spouse participation assumption to reflect actual experience.

Festival of **ARTS** *Pageant of the Masters*

The first Festival of Arts was held in downtown Laguna Beach for seven days in August 1932. The renowned Festival of Arts Pageant of the Masters found a permanent home in Laguna Canyon in 1942. In 2017, the festival celebrates its 85th year of bringing the arts to Orange County. The festival runs during the summer months of July and August with many events for participants to enjoy.



FESTIVAL
ARTS
OF LAGUNA BEACH



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UNA BEACH



Financial

Section II

Financial

*Other Supplementary
Information*

83/485



ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Schedule of Contributions

For the Year Ended December 31, 2016
(Dollars in Thousands)

Pension Trust Fund Contributions	Employee	Employer
County of Orange	\$ 204,697	\$ 406,442
Orange County Fire Authority	18,309	70,161 ¹
Orange County Sanitation District	7,328	48,880 ¹
Orange County Superior Court of California	15,933	31,521
Orange County Transportation Authority	9,069	24,584
City of San Juan Capistrano	809	2,264
OCERS	896	1,975
Orange County Public Law Library	168	1,816 ¹
Transportation Corridor Agencies	724	1,799
UCI Medical Center and Campus	2	1,315 ²
Orange County Children & Families Commission	102	310
Orange County In-Home Supportive Services Public Authority	99	190
Orange County Cemetery District	122	160
Orange County LAFCO	39	132
Contributions Before Prepaid Discount	258,297	591,549
Prepaid Employer Contribution Discount	-	(24,353)
Total Pension Trust Fund Contributions	258,297	567,196
 Health Care Fund - County Contributions	 -	 42,411
 Health Care Fund - OCFA Contributions	 -	 2,414
Total Contributions	\$ 258,297	\$ 612,021

¹ Unfunded actuarial accrued liability payments were made in 2016 of \$5.1 million, \$39.1 million and \$1.5 million for the Orange County Fire Authority, the Sanitation District and the Public Law Library, respectively.

² Unfunded actuarial accrued 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.

Schedule of Administrative Expenses

For the Year Ended December 31, 2016
(Dollars in Thousands)

Pension Fund Administrative Expenses

Expenses Subject to the Statutory Limit

Personnel Services

Employee Salaries and Benefits	\$ 9,408
Board Members' Allowance	15
Total Personnel Services	<u>9,423</u>

Office Operating Expenses

Professional Services	2,314
Depreciation/Amortization	2,314
Operating Expenses	1,327
Rent/Leased Real Property	<u>660</u>
Total Office Operating Expenses	<u>6,615</u>
Total Expenses Subject to the Statutory Limit	<u>16,038</u>

Expenses Not Subject to the Statutory Limit

Actuarial Fees	394
Information Technology Consulting	357
Equipment/Software	<u>81</u>
Total Expenses Not Subject to the Statutory Limit	<u>832</u>
Total Pension Fund Administrative Expenses	<u>16,870</u>

Health Care Fund - County Administrative Expenses 22

Health Care Fund - OCFA Administrative Expenses 22

Total Administrative Expenses \$ 16,914

Schedule of Investment Expenses

For the Year Ended December 31, 2016
(Dollars in Thousands)

Investment Management Fees *	
Absolute Return	\$ 13,126
Diversified Credit	11,074
Real Estate	10,885
Real Return	7,269
Emerging Markets Equity	5,451
International Equity Securities	4,705
Private Equity	3,935
Domestic Fixed Income	3,817
Global Equity Securities	1,046
Domestic Equity Securities	829
Emerging Markets Debt	660
Total Investment Management Fees	<u>62,797</u>
Foreign Income Tax/Other	<u>15,891</u>
Other Investment Expenses	
Consulting/Research Fees	1,517
Investment Department Expenses	1,465
Legal Services	493
Custodian Services	300
Investment Service Providers	30
Total Other Investment Expenses	<u>3,805</u>
Security Lending Activity	
Security Lending Fees	366
Rebate Fees	302
Total Security Lending Activity	<u>668</u>
Total Investment Expenses	<u>\$ 83,161</u>

* Does not include undisclosed fees deducted at source.

Schedule of Payments for Professional Services

For the Year Ended December 31, 2016
(Dollars in Thousands)

Type of Services *

Professional Expenses Subject to the Statutory Limit

Legal Counsel	\$ 678
Information Technology Services	514
Other Consulting/Services	467
Medical/Disability Services	295
Other Legal Services	124
Audit Services	120
Administrative Services	60
Finance Services	56
Total Professional Expenses Subject to the Statutory Limit	<u>2,314</u>

Professional Expenses Not Subject to the Statutory Limit

Investment Consulting/Research Fees	1,517
Investment Legal Services	493
Actuarial Services	394
Information Technology Consultants	357
Custodian Services	300
Investment Service Providers	30
Total Professional Expenses Not Subject to the Statutory Limit	<u>3,091</u>
Total Payments for Professional Expenses	<u>\$ 5,405</u>

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

Statement of Changes in Assets and Liabilities - OPEB Agency Fund

For the Year Ended December 31, 2016
(Dollars in Thousands)

	Beginning Balance December 31, 2015	Additions	Deductions	Ending Balance December 31, 2016
Assets				
Cash and Cash Equivalents	\$ 192	\$ 925	\$ (829)	\$ 288
Domestic Equity Securities	6,990	1,005	(1,516)	6,479
International Equity Securities	2,469	450	(424)	2,495
Domestic Fixed Income	<u>4,342</u>	<u>1,268</u>	<u>(178)</u>	<u>5,432</u>
Total Assets	<u>\$ 13,993</u>	<u>\$ 3,648</u>	<u>\$ (2,947)</u>	<u>\$ 14,694</u>
Liabilities				
Due to Employers	<u>\$ 13,993</u>	<u>\$ 3,648</u>	<u>\$ (2,947)</u>	<u>\$ 14,694</u>
Total Liabilities	<u>\$ 13,993</u>	<u>\$ 3,648</u>	<u>\$ (2,947)</u>	<u>\$ 14,694</u>

Dana Point **TALL SHIPS** Festival

The Dana Point Tall Ships Festival celebrates California's rich maritime history. The event takes place each year the second weekend in September in the Dana Point Harbor. Event participants may tour ships, listen and watch historical reenactments, enjoy pirate adventures and mermaid encounters. The festival also includes the parade of sails, unique vendors and a craft beer garden.





Photos courtesy of the Ocean Institute / Cliff Wassmann

 **OCEAN INSTITUTE**
EXPERIENCE IS THE TEACHER



Investments

Section III

Investments

Investment Consultant's Statement



MEKETA INVESTMENT GROUP

BOSTON MA
CHICAGO IL
MIAMI FL
PORTLAND OR
SAN DIEGO CA
LONDON UK

To: Board Members, Orange County Employees Retirement System
From: Stephen McCourt, Laura Wirick, Holly Heiserman
Meketa Investment Group
Date: April 6, 2017
Re: Investment Consultant's Statement for CAFR

This letter reviews the investment performance of the Orange County Employees Retirement System (OCERS) for the year ending December 31, 2016.

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 decision with the goals of the overall system. This alignment is a fundamental part of the Investment Committee's monthly 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 in concert with PCA, OCERS' risk consultant, 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.

2016 YEAR IN REVIEW

Emerging markets were strong in the first quarter of 2016, with the JPM Emerging Markets Bond Index Global Diversified (debt) and the MSCI Emerging Markets Index (equity) returning 11.0% and 5.7%, respectively. Domestic fixed income also showed strength, while domestic equity markets had more muted returns. The International Monetary Fund reduced their 2016 global growth forecast by 0.2%, to 3.2%, and lowered its 2017 forecast by 0.1%, to 3.5%. In the U.S., weak manufacturing and the impact of the dollar's strength on exports was expected to be balanced by the improving labor and housing markets. In Europe and Japan, growth was forecasted to be lower than in the U.S., as unemployment remained high in Europe and consumption remained weak in Japan.

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Investment Consultant's Statement

(continued)

Memorandum
April 6, 2017
Page 2 of 3

In the second quarter, commodities made a strong rebound, with the Bloomberg Commodity Index returning 12.8%. Equity sectors exposed to energy prices, such as utilities, materials, and energy posted strong returns as well. Developed markets languished for the second quarter in a row, with the MSCI EAFE Index returning -1.5%, after a first quarter return of -3.0%. Increased uncertainty related to the "Brexit" vote, where the United Kingdom voted via referendum to break away from the European Union, led to another reduction in projections for global growth; the IMF reduced their 2016 global growth forecast by 0.1%, to 3.1%, and lowered its 2017 forecast by the same amount, to 3.4%.

Expectations for continued low interest rates helped emerging markets, resulting in a third quarter of strength; the MSCI Emerging Markets returned 9.0%, bringing year to date performance for the index to 16.0%. Commodity prices corrected after the second quarter run up, with the Bloomberg Commodity Index losing 3.9%. Growth projections for emerging economies increased slightly for 2016 (4.2% versus 4.1%) and remained the same for 2017 (4.6%). Low commodity prices, a slowdown in China, and low demand from developed economies remained as headwinds.

In the fourth quarter, domestic equity markets outperformed, particularly after the U.S. presidential election in November; the Russell 2000 Index (small cap) and S&P 500 Index (large cap) returned 8.8% and 3.8%, respectively. In a move that was largely anticipated by the markets, the U.S. Federal Reserve made their only rate increase in 2016 (0.50% to 0.75%) in December. After the presidential election, expectations for the pace of tightening increased, given the pro-growth policies of the new administration. Emerging markets corrected, with the MSCI Emerging Market losing 4.2% in the fourth quarter, though year to date, the index was still up 11.2%.

2017 OUTLOOK

Looking forward to 2017, fiscal stimulus in the U.S. is likely, and should have a global impact. The balance of fiscal and monetary policy is expected to be a key issue. For global investors, several issues are of primary concern. First, there is increased populist and antitrade sentiment globally; recent votes in the U.S. and U.K. demonstrate growing frustrations with government officials, the widening gap between the rich and the poor, and the perception that jobs are being lost abroad. In 2017, several key elections loom on the horizon in Europe, with the potential for more populist candidates to be elected.

Second, there is uncertainty related to the U.S. economy and policies. During campaigning, Donald Trump proposed a variety of policies with varied potential impacts on economic growth. Since the election, investors have focused on the pro-growth policies including lower taxes, more infrastructure spending, and less regulation, and have focused less on policies that could potentially hurt growth, like a protectionist trade stance and tougher immigration policies. This has led to a stronger U.S. dollar and higher inflation expectations. Looking ahead, the distinction between campaign rhetoric and policy will be a key consideration. Timing is also important, as the impact of fiscal policy will likely not be felt until 2018, or later, with the Fed needing to make policy decisions in the interim.

Investment Consultant's Statement

(continued)

Memorandum

April 6, 2017

Page 3 of 3

Third, global investors could be impacted by declining growth in China, along with uncertain fiscal and monetary policies. As growth in China continues to slow and rates in the U.S. are expected to increase, China has experienced capital outflows. These outflows have led to downward pressure on the currency and a negative feedback loop as investors anticipate further declines. China has used some of its currency reserves to support the yuan, but cannot do this indefinitely. They recently tightened regulations on outward flows in an effort to support the currency.

Fourth, there is continued economic sluggishness in Europe, and risks related to the U.K.'s exit from the European Union. The decision of the U.K. to leave the EU further weighs on the fragile recovery in Europe. The U.K.'s negotiation of trade deals will be a key issue with a wide range of potential outcomes. Uncertainty related to the outcome of negotiations should weigh on foreign investment and consumption. Any additional moves to leave the EU, or the Eurozone, could be disruptive to markets and growth.

Finally, global investors should continue to be impacted by divergent growth in emerging economies. Growth in emerging market economies will likely remain uneven, with some economies particularly feeling the impact of continued dollar strength and potential U.S. protectionist policies. Higher rates and renewed economic strength in the U.S. due to new policies could also attract capital away from emerging markets.

OCERS 2016 PERFORMANCE

OCERS' portfolio returned 8.5% in 2016, slightly underperforming the Policy Index of 8.9%, but outperforming the System's 7.25% required actuarial rate of return. Domestic Equity had the strongest absolute performance of all asset classes, returning 13.1%, and outperforming the Russell 3000 benchmark return of 12.7%, while the GTAA asset class had the weakest 2016 performance of 1.2%, underperforming the GTAA Custom Index¹, which returned 2.6% over the same period. OCERS' 2016 annual performance of 8.5% compared favorably to peers², which had a median return of 7.9% over the same period, placing OCERS in the 30th percentile.

Over the trailing three- and five-year periods, the OCERS portfolio returned 4.3% and 7.1% on average annually, underperforming the Policy Index returns of 5.2% and 7.7%, respectively. For the trailing three years, OCERS was in the 59th percentile compared to peers, and over the trailing five years, OCERS was in the 84th percentile compared to peers.

A new asset allocation was adopted by the Investment Committee at the beginning of 2017. The goals of the new asset allocation include simplifying the portfolio, lowering investment management fees, and focusing on material drivers of risk and return going forward.

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

SM/LW/HH/km

¹ GTAA Custom Index consists of equal parts HFRI Global Macro Index, MSCI All Country World Index, and the Barclays Multiverse Index.

² InvestorForce Public Defined Benefit Plans with over \$1 billion in assets under management.

Investment Returns

The table below details the annualized rates of return for the different asset categories over various time periods ended December 31, 2016. 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
Domestic Equity (%)	13.08	8.21	14.33
Russell 3000 Index (%)	12.74	8.43	14.67
Global Equity (%)	6.90	1.44	9.57
MSCI World Index (%)	7.51	3.80	10.41
International Equity (%)	2.17	-0.04	7.99
MSCI EAFE Index (%)	1.00	-1.60	6.53
Emerging Markets Equity (%)	7.81	-1.53	1.71
MSCI EME Index (%)	11.19	-2.55	1.28
Domestic Fixed (%)	8.75	3.43	3.84
Bloomberg Barclays Capital Universal Index (%)	3.91	3.28	2.78
Emerging Markets Debt (%)	7.99	-2.10	N/A
Emerging Markets Debt Target Index ⁽¹⁾ (%)	10.12	-0.54	N/A
Diversified Credit (%)	11.35	6.01	12.44
Diversified Credit Target Index ⁽²⁾ (%)	13.64	4.27	6.36
Absolute Return (%)	1.81	1.72	2.75
Absolute Return Target Index ⁽³⁾ (%)	6.09	5.56	5.51
Real Return (%)	12.14	0.34	0.99
Real Return Target Index ⁽⁴⁾ (%)	10.33	6.25	6.41
Short-Term Investments (%)	0.49	0.34	0.40
Cash Overlay (%)	7.40	3.11	6.63
91-day Treasury Bill (%)	0.33	0.14	0.12
Real Estate (%)	9.72	13.73	12.97
Real Estate Target Index ⁽⁵⁾ (%)	8.08	10.90	11.76
Private Equity (%)	8.42	13.59	11.29
Cambridge Private Equity Lagged	8.66	10.76	13.14
Total Fund (%)	8.52	4.32	7.10
Composite Policy Benchmark ⁽⁶⁾ (%)	8.94	5.23	7.70

⁽¹⁾ Emerging Market Debt Target Index = 65% JPMorgan GBI-EM Global Diversified Un-hedged + 35% JPMorgan EM Bond Index

⁽²⁾ Diversified Credit Target Index = 50% Merrill Lynch HY Constrained + 50% CS Levered Loan

⁽³⁾ Absolute Return Target Index = 3-month Treasury Bill + 5% through 6/30/12; LIBOR + 5% through 6/30/16; and 16 2/3% HFRI Macro Index + 16 2/3% MSCI ACWI Index + 16 2/3% Bloomberg Barclays Multiverse Index + 50% HFRI Fund of Fund Index thereafter

⁽⁴⁾ Real Return Target Index = 60% Bloomberg Barclays US TIPS Index + 40% (CPI + 5%) through 6/30/12, CPI + 5% through 6/30/14, CPI + 3% through 6/30/16; and 10% NCREIF Farmland Index + 25% S&P GSCI Index + 15% NCREIF Timberland Index + 50% Cambridge Private Equity Energy Lagged thereafter

⁽⁵⁾ Real Estate Target Index = 90% NCREIF Total Index + 10% FTSE EPRA/NAREIT Global Real Estate Index through 6/30/12 and 90% NCREIF ODCE Index + 10% FTSE EPRA/NAREIT Developed Real Estate Ex-US Index thereafter

⁽⁶⁾ Policy Benchmark = 13.0% Russell 1000 Index + 2% Russell 2000 Index + 7.0% MSCI EAFE Index + 5.0% MSCI World Index + 6.0% MSCI Emerging Markets Equity Index + 2% MSCI EAFE Small Cap Equity Index + 10.0% Bloomberg Barclays US Universal Index + 7.0% ML HY Constrained + 7.0% CS Leveraged Loan + 7% HFRI Fund of Fund Index + 2 1/3% HFRI Macro Index + 2 1/3% MSCI ACWI Index + 2 1/3% Bloomberg Barclays Multiverse Index + 4% Cambridge Private Equity Energy Lagged + 2% S&P GSCI Index + 1.2% NCREIF Timberland Index + 0.8% NCREIF Farmland Index + 9.0% NCREIF ODCE Index + 1.0% FTSE EPRA/NAREIT Developed Ex-US REITs Index + 6% Cambridge Private Equity Lagged + 1.95% JPMorgan GBI-EM Global Diversified Un-hedged + 1.05% JPMorgan EM Bond Index

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 Plan Sponsors' 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 Board 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

The overall objective is to invest the assets of the system solely for the benefit of plan participants and beneficiaries while attempting to minimize 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 balanced index mutual fund 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 establishes ranges around the targeted levels which assets 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 strategic 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, staff shall direct cash flows to or from the various managers so that actual characteristics are consistent with the plan.

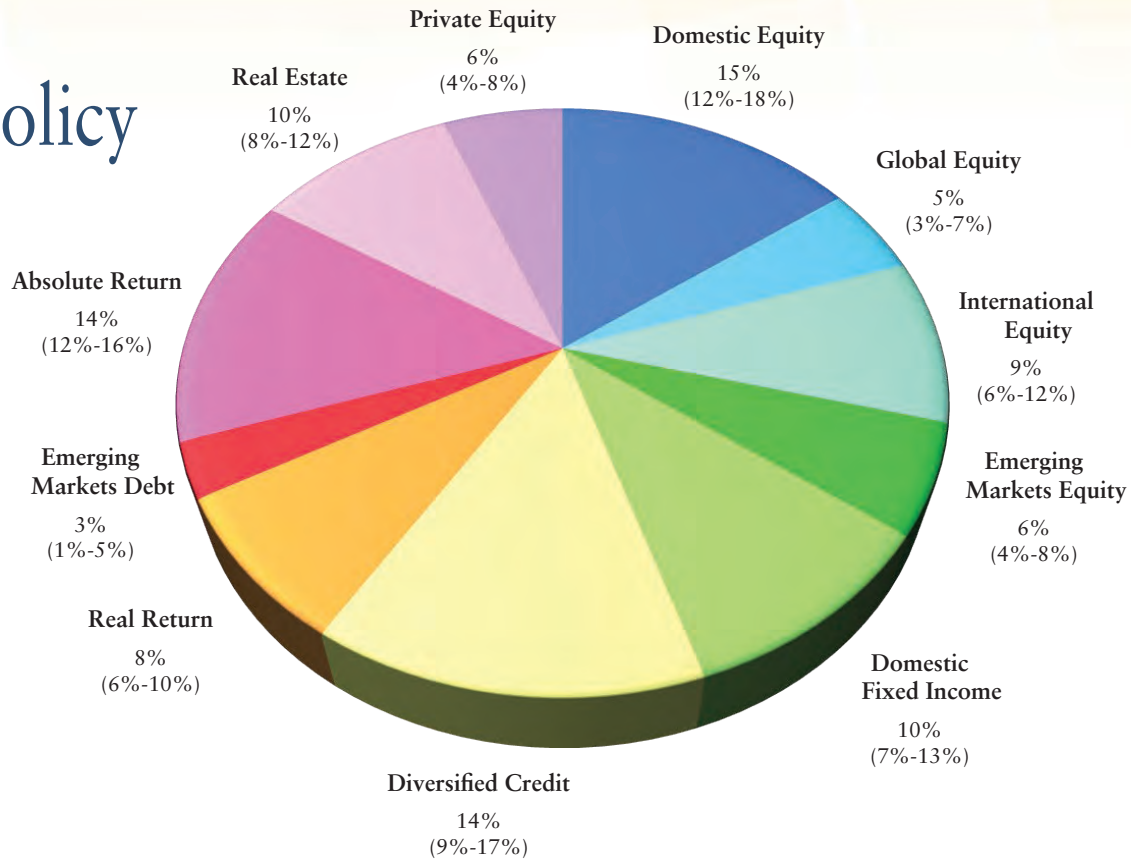
Use of Proxies

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 Board of Retirement. 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.

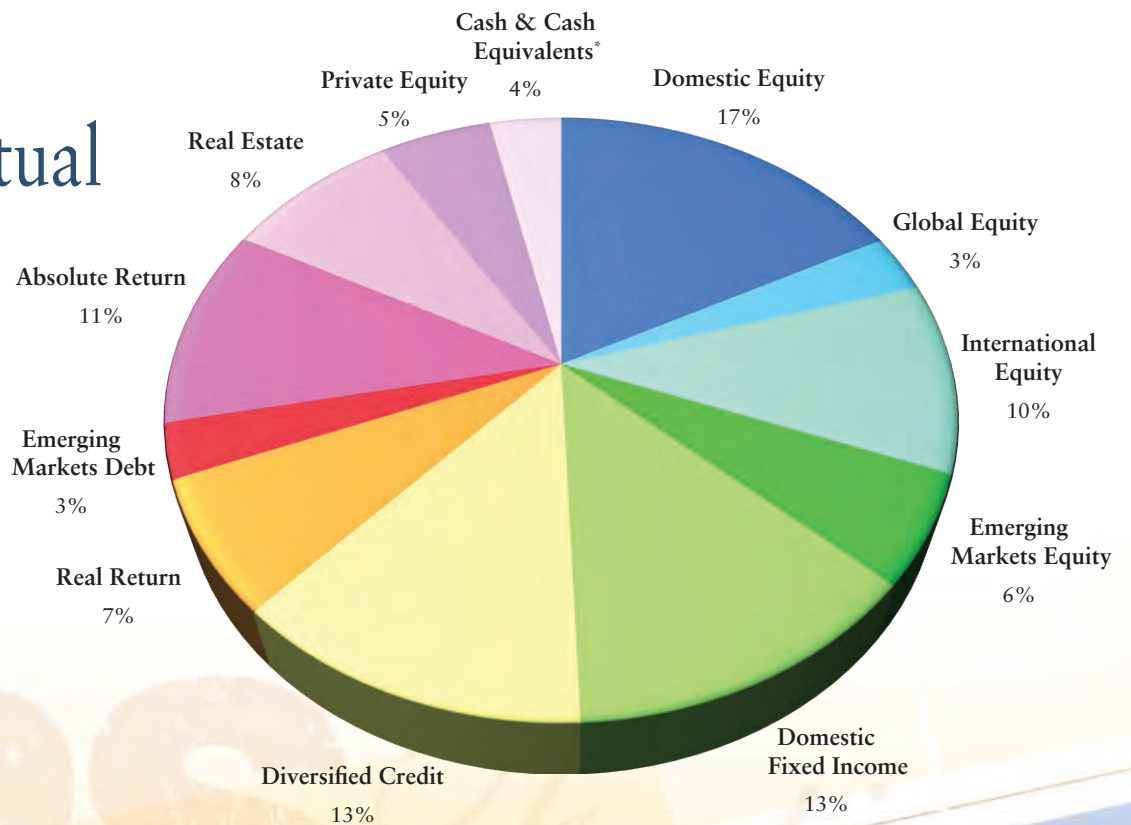
Asset Diversification

December 31, 2016

Policy



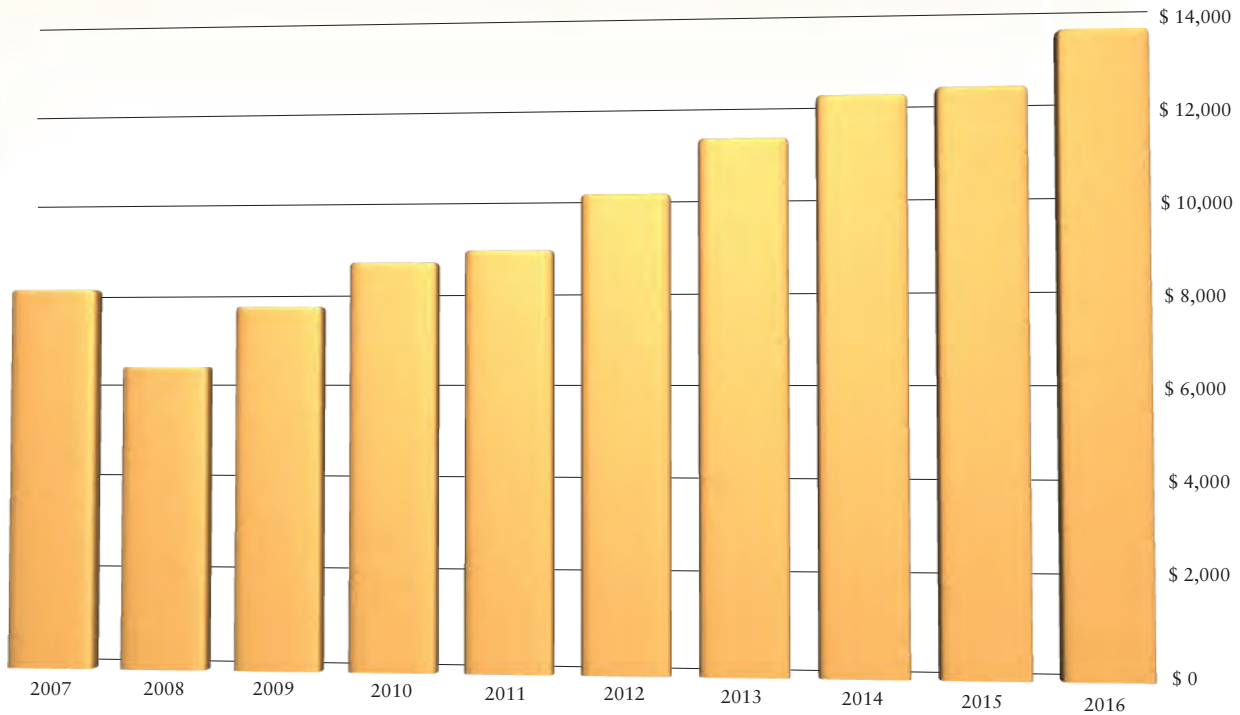
Actual



* Fund level cash is invested in an overlay strategy.

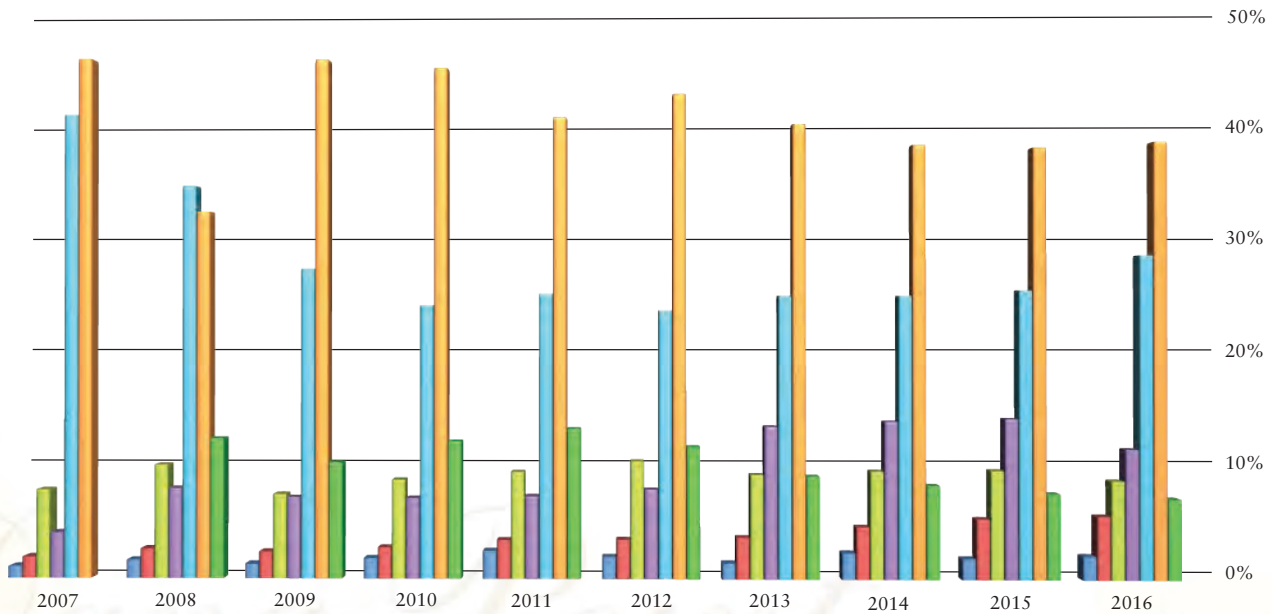
Growth of System Net Investments at Fair Value

for Ten Years Ended December 31, 2016
(in Millions of Dollars)



Historical Asset Allocation

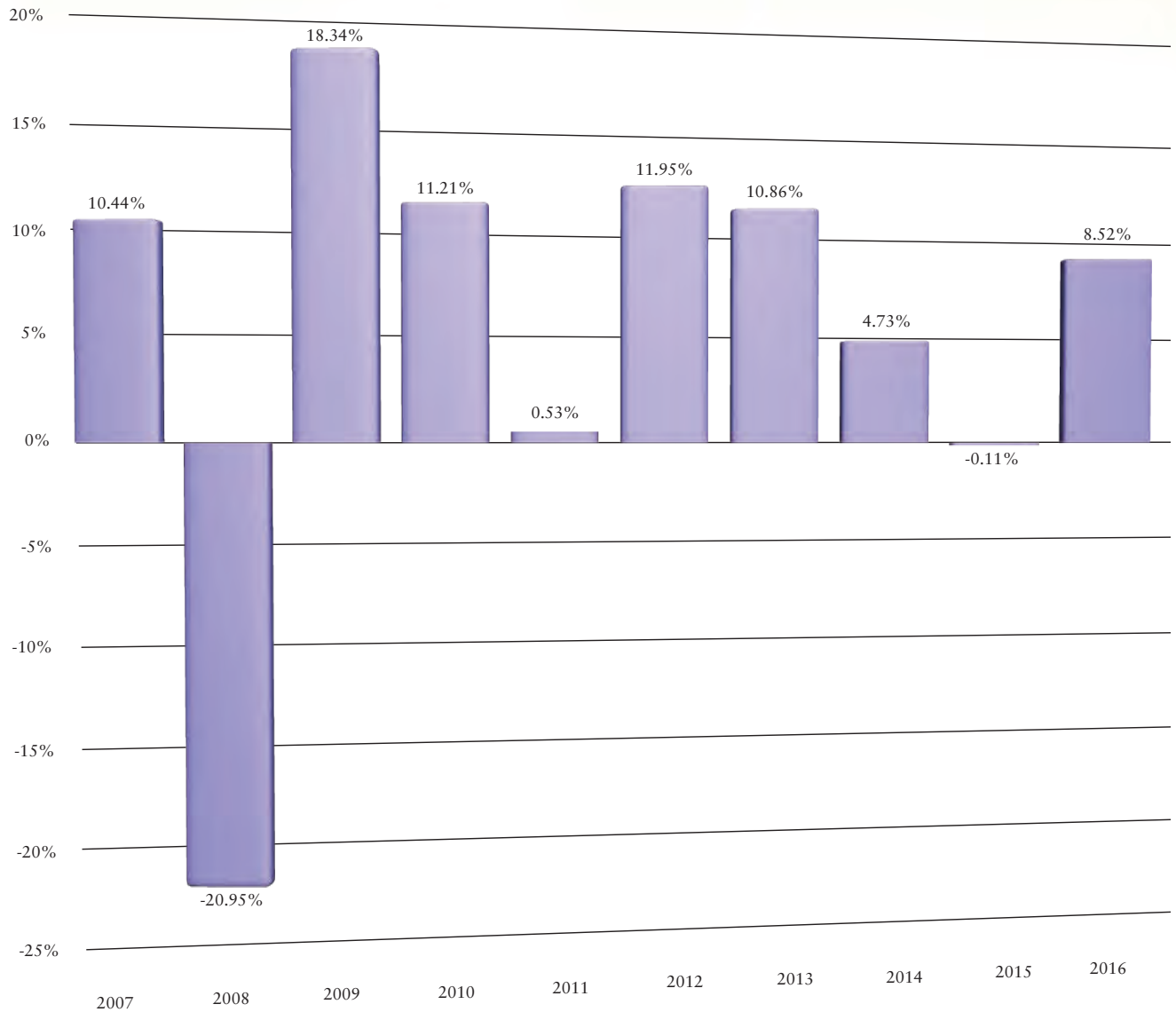
December 2007 - December 2016
(Actual)



- Cash & Cash Equivalents
- Real Estate
- Fixed Income
- Real Return
- Private Equity
- Absolute Return
- Equities

History of Performance

December 2007 - December 2016
(Actual)



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

As of December 31, 2016
(Amounts in Thousands)

Broker Name	Number of Shares Traded	Commission per Share (in cents)	Total Commission
Bloomberg Tradebook, LLC	739	1.99	\$ 15
Citigroup Global Markets, Inc.	4,528	0.68	31
Credit Lyonnais Securities (Asia)	606	0.15	1
Credit Suisse Securities	3,219	0.85	27
Deutsche Bank	6,994	0.29	20
Goldman Sachs	13,827	0.36	49
Hong Kong and Shanghai Banking Corp	1,284	0.52	7
Instinet	7,922	0.22	17
Investment Technology Group	2,468	0.81	20
J.P. Morgan Securities	2,086	0.95	20
Jefferies	1,047	1.15	12
Liquidnet	949	0.23	2
MacQuarie	1,822	0.35	6
Merrill Lynch & Company, Inc.	16,762	0.39	65
Morgan Stanley & Company, Inc.	10,966	0.31	34
National Financial Services Corp	831	1.77	15
Pershing	1,222	0.60	7
RBC	701	1.50	10
Sanford C. Bernstein And Co., LLC	4,409	0.52	23
Societe Generale	1,078	0.53	6
UBS	2,872	0.99	28
Other*	5,094	1.57	80
Total	91,426	0.54	\$ 495

* Other includes 72 additional firms that comprise approximately 16% of total commissions and approximately 6% of the total number of shares traded. The average commission per share is 1.57 cents.

Commission Recapture Program

OCERS implemented a direct brokerage program where investment managers are encouraged to 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, Convergenx Execution Solutions LLC, and State Street Bank.

Schedule of Investment Expenses and Investment Summary

For the Year Ended December 31, 2016
(Dollars in Thousands)

Type of Investment Expenses	Assets Under Management at Fair Value	Percentage	Fees
Investment Management Fees *			
Absolute Return	\$ 1,440,588	11%	\$ 13,126
Diversified Credit	1,681,327	13%	11,074
Real Estate	1,119,501	9%	10,885
Real Return	943,648	7%	7,269
Emerging Markets Equity	778,047	6%	5,451
International Equity Securities	1,356,869	11%	4,705
Private Equity	724,693	6%	3,935
Domestic Fixed Income	1,704,433	13%	3,817
Global Equity Securities	419,832	3%	1,046
Domestic Equity Securities	2,318,543	18%	829
Emerging Markets Debt	389,502	3%	660
Total Investment Management Fees	\$ 12,876,983	100%	62,797
Foreign Income Tax/Other			15,891
Other Investment Expenses			
Consulting/Research Fees			1,517
Investment Department Expenses			1,465
Legal Services			493
Custodian Services			300
Investment Service Providers			30
Total Other Investment Expenses			3,805
Securities Lending Activity			
Securities Lending Fees			366
Rebate Fees			302
Total Securities Lending Activity			668
Total Investment Expenses			\$ 83,161

* The table above does not include undisclosed fees deducted at source or the fair value of OPEB 115 Agency Funds held by OCERS in an investment capacity.

Schedule of Largest Equity Holdings

(by Fair Value) ^{1,2}

As of December 31, 2016
(Amounts in Thousands)

Common Stock	Shares	Fair Value
Roche Holding AG	42	\$ 9,548
BNP Paribas	138	8,836
Bayer AG	67	7,024
ASML Holding NV	60	6,805
Alphabet Inc. CL A	9	6,748
Royal Dutch Shell PLC	224	6,510
Nestle SA Reg	83	5,959
Keyence Corp.	8	5,412
Citigroup Inc.	91	5,404
Softbank Group Corp.	81	5,386

Schedule of Largest Fixed Income Holdings

(by Fair Value) ¹

As of December 31, 2016
(Amounts in Thousands)

Asset	CPN/ Maturity	Fair Value
BWU00D7M4 IRS USD R V 03MLIBOR	1.0% / 12-16-2017	\$ 57,000
BWU00DB23 IRS USD R V 03MLIBOR	1.0% / 12-16-2020	54,700
SWU00D7N2 IRS USD R F 2.00000	2.0% / 12-16-2020	51,612
BWU00DRI1 IRS USD R V 03MLIBOR	1.0% / 09-28-2017	38,100
BWU00INA1 IRS USD R V 03MLIBOR	1.0% / 12-21-2026	23,790
BWU00CSO9 IRS USD R V 03MLIBOR	0.0% / 12-14-2017	22,900
FNMA TBA 30 YR 3.5	3.5% / 01-18-2047	21,011
FNMA TBA 30 YR 3.5	3.5% / 02-13-2047	20,672
FNMA TBA 30 YR 3	3.0% / 02-13-2047	20,235
BWU00IN86 IRS USD R V 03MLIBOR	1.0% / 12-21-2023	13,100

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, 2016

Absolute Return

Alphadyne Asset Management
Archer Capital Management
Blue Mountain Capital Management
Bridgewater Associates, Inc.
Caspian Capital Advisors
D.E Shaw Group
Fore Research & Management
Gotham Asset Management
Grantham, Mayo, Van Otterloo & Co., LLC
Highfields Capital
Ionic Capital Management
Och-Ziff Capital Management Group
Perry Capital
Pharo Global Advisors
Pacific Investment Management Company
Standard Life Investments
Venor Capital Management

Cash Overlay

Parametric

Diversified Credit

Alcentra Ltd.
Beach Point Capital Management
BlackRock Institutional Trust Company
BlueBay Asset Management
Brigade Capital Management
Cross Ocean Partners
CQS Capital Management
Crescent Capital Group
Hayfin Capital Management
Monroe Capital
NXT Capital
OCP Asia
Park Square Capital
Pacific Investment Management Company
Tennenbaum Capital Partners, LLC
Tricadia Capital Management

Domestic Equity

BlackRock Institutional Trust Company
Eagle Asset Management

Domestic Fixed Income

BlackRock Institutional Trust Company
Dodge & Cox
Loomis, Sayles & Company
Pacific Investment Management Company

Emerging Markets Debt

OCP Asia
BlueBay Asset Management
Pictet Asset Management

Emerging Markets Equity

Acadian Asset Management
City of London Investment Management
William Blair & Co.

Global Equity

Franklin Templeton Investments
Grantham, Mayo, Van Otterloo & Co., LLC
J.P. Morgan Asset Management

International Equity

AQR Capital Management, LLC
BlackRock Institutional Trust Company
Capital Group
Fidelity Institutional Asset Management
Mondrian Investment Partners, Ltd.
Parametric

Private Equity

Abbott Capital
Adams Street Partners
HarbourVest Partners, LLC
Mesirow Financial Private Equity
Pantheon Ventures

Real Estate

AEW Capital Management
Angelo Gordon & Co.
ASB Capital Management
CB Richard Ellis Investors
Fidelity Investments
J.P. Morgan Asset Management
Jamestown
Kayne Anderson Capital Advisors
Morgan Stanley
Oaktree Capital Management
True North Management Group
Waterton Associates
Westbrook Partners

Real Return

AQR Capital Management, LLC
BlackRock Institutional Trust Company
BTG Pactual
EIG Global Energy Partners
EnerVest, Ltd
Hancock Agricultural Investment Group
Hancock Timber Resource Group
Kayne Anderson Capital Advisors
Pacific Investment Management Company
UBS Farmland Investors LLC

La Habra CORN Festival

The Corn Festival has been a signature event in the city of La Habra for almost 70 years. The festival is held in August and is located at El Centro/Lions Park, the festival covers an entire weekend and includes a parade, numerous rides and attractions, food, game and craft booths, a market place, live music, and a car opportunity draw contest. Miss La Habra and her court preside over the festival too!





Actuarial

Section IV

Actuarial

Actuary's Certification Letter



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May 12, 2017

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

Re: Certification for Pension Plan

Dear Members of the Board:

Segal Consulting (Segal) prepared the December 31, 2015 annual actuarial valuation of the Orange County Employees Retirement System (OCERS). We certify that the valuation was performed in accordance with generally accepted actuarial principles and practices and OCERS' funding policy that was last reviewed with the Board in 2013. 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, 2016 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, 2015 ACTUARIAL VALUATION FOR FUNDING PURPOSES

Actuarial valuations are performed on an annual basis with the last valuation completed as of December 31, 2015. 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, 2015 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.

Benefits, Compensation and HR Consulting. Member of The Segal Group. Offices throughout the United States and Canada

Actuary's Certification Letter

(Continued)

Board of Retirement
Orange County Employees Retirement System
May 12, 2017
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, 2015 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 5 years. The progress being made toward the realization of the financing objectives through December 31, 2015 is illustrated in the History of Unfunded Actuarial Accrued Liability and the Schedule of Funding Progress.

Segal prepared all of the supporting schedules in the actuarial section of the System's Comprehensive Annual Financial Report (CAFR) based on the results of the December 31, 2015 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 CAFR is provided below. OCERS' staff prepared the remaining trend data schedules in the statistical section.

Actuarial Section (Based on December 31, 2015 Funding Valuation)

1. History of Unfunded Actuarial Accrued Liability
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. Short-Term Solvency Test

Actuary's Certification Letter

(Continued)

Board of Retirement
Orange County Employees Retirement System
May 12, 2017
Page 3

7. Actuarial Methods and Assumptions
8. Summary of Major Plan Provisions
9. Experience Analysis
10. Schedule of Funding Progress

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 experience study and the economic assumptions study as of December 31, 2013. All of the assumptions recommended in those studies, including the alternative 3.00% inflation assumption discussed during subsequent presentations, 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, 2016 and any changes in assumptions that result will be reflected in the December 31, 2017 valuation.

In the December 31, 2015 valuation, the ratio of the valuation value of assets to actuarial accrued liabilities increased from 69.8% to 71.7%. The aggregate employer rate (average of the County and all special districts rates combined) has changed from 36.14% of payroll to 37.25% of payroll. The 36.14% rate was calculated after adjusting for the additional UAAL contributions made by O.C. Sanitation District (OCSD) during 2015 and the phase-in adjustment for Safety Rate Groups. The aggregate employee's rate has remained unchanged at 12.21% of payroll.

In the December 31, 2015 valuation, the actuarial value of assets excluded \$680 million in unrecognized investment losses, which represented 5.9% of the market value of assets. If these deferred investment losses were recognized immediately in the actuarial value of assets, the funded percentage would decrease from 71.7% to 67.7% and the aggregate employer contribution rate, expressed as a percent of payroll would increase from 37.25% to about 40.2%. Both of the 37.25% and 40.2% rates are before reflecting the last one-third of the phase-in adjustment for Safety Rate Groups.

To the best of our knowledge, the December 31, 2015 funding valuation report is complete and accurate and in our opinion presents the Plan's current funding information.

DECEMBER 31, 2016 GASB STATEMENT 67 ACTUARIAL VALUATION FOR FINANCIAL REPORTING PURPOSES

Segal prepared the December 31, 2016 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

Actuary's Certification Letter

(Continued)

Board of Retirement
Orange County Employees Retirement System
May 12, 2017
Page 4

parameters set by ASOPs and our understanding of generally accepted accounting principles (GAAP) applicable in the United States of America as promulgated by the 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, 2016 and 2015 have been determined by rolling forward the Total Pension Liabilities (TPLs) for the statutory Retirement Plan benefits as of December 31, 2015 and December 31, 2014, respectively.

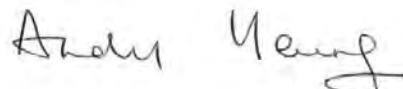
Note number 9 to the Basic Financial Statements and the Required Supplementary Information included in the Financial Section of the CAFR were prepared by the System based on the results of the GASB Statement No. 67 actuarial valuation as of December 31, 2016 prepared by Segal.

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

Sincerely,



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



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

AW/bqb
Enclosures

History of Unfunded Actuarial Accrued Liability

(Dollars in Thousands)

Valuation Date	Actuarial Accrued Liability	Valuation Value of Assets	Unfunded Actuarial Accrued Liability	Ratio of Assets to Actuarial Accrued Liability	Annual Active Member Compensation	Ratio of Unfunded Actuarial Accrued Liability to Active Compensation
12/31/06	\$ 8,765,045	\$ 6,466,085	\$ 2,298,960	73.77%	\$ 1,322,952	173.78%
12/31/07	9,838,686 ⁽¹⁾	7,288,900	2,549,786 ⁽¹⁾	74.08% ⁽¹⁾	1,457,159	174.98% ⁽¹⁾
12/31/08	10,860,715	7,748,380	3,112,335	71.34%	1,569,764	198.27%
12/31/09	11,858,578	8,154,687	3,703,891	68.77%	1,618,491	228.85%
12/31/10	12,425,873	8,672,592	3,753,281	69.79%	1,579,239	237.66%
12/31/11	13,522,978	9,064,355	4,458,623	67.03%	1,619,474	275.31%
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%

¹ Revised due to the Board's adoption of revised retirement rates for General plans with improved benefit formulas.

Notes:

- The 12/31/15 valuation included the following benefit change:

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.

- 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 will be 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).

History of Unfunded Actuarial Accrued Liability

(continued)

- The 12/31/11 valuation included the following changes:

Assumption Changes:

Changes in mortality, disability, termination, retirement, salary scale, and additional cashout assumptions in the December 31, 2010 triennial experience study increased the UAAL by \$364 million.

Benefit Changes:

City of San Juan Capistrano adopted a 2.0% of final average salary at age 57 for members hired on or after July 1, 2012.

Certain employees previously employed at the City of Santa Ana became employees of OCFA General and OCFA Safety eligible for benefits under 2.0% of final average salary at age 55 and 3.0% of final average salary at age 50, respectively.

- The 12/31/10 valuation included the following benefit changes:

LAFCO adopted an optional 1.62% of final average salary at age 65 for members hired on or after July 1, 2010.

County Managers unit adopted an optional 1.62% of final average salary at age 65 for members hired on or after August 17, 2010.

Sanitation District adopted a 1.64% of final average salary at age 57 for members within Supervisors and Professional unit hired on or after October 1, 2010.

OCFA adopted a 3.00% of final average salary at age 55 for Safety members within the Executive Management unit hired on or after July 1, 2011 and for all Safety members hired on or after July 1, 2012.

OCFA adopted a 2.00% of final average salary at age 55 for General members hired on or after July 1, 2011.

- The 12/31/09 valuation included the following benefit changes:

General County OCEA and Superior Court adopted an optional 1.62% of final average salary at age 65 for members hired on or after May 7, 2010.

Law Enforcement adopted a 3.0% of final average salary at age 55 for members hired on or after April 9, 2010.

- The 12/31/08 valuation included the following assumption changes:

Changes in service retirement rates for General members with improved benefit formulas increased the UAAL by \$116 million.

- The 12/31/07 valuation included the following changes:

Assumption Changes:

Changes in mortality, disability, termination, retirement, salary scale, and annual payoff assumptions in the December 31, 2007 triennial experience study increased the UAAL by \$237 million.

Benefit Changes:

There is a new Rate Group #11, for Cemetery District, that adopted a 2% of final average salary at age 55 for future service only effective December 7, 2007. Vector Control District terminated its participation at OCERS as of January 4, 2007.

- The 12/31/06 valuation included the following benefit changes:

There is a new Rate Group #10, for General members of Orange County Fire Authority (OCFA) (previously with members in Rate Group #2). City of Rancho Santa Margarita (RSM), Rate Group #4, withdrew from OCERS effective November 26, 2006.

History of Unfunded Actuarial Accrued Liability

(continued)

- Each year's assets exclude an amount as shown in the following table of the County's unamortized 1994 funding of its portion of the Unfunded Actuarial Accrued Liability, which funding for 1995 was being amortized over a 14 year period beginning July 1, 1994 and for 1996 and later was being amortized over a 28-year period beginning July 1, 1996. Beginning July 1, 2003, the County can utilize this amount at its discretion to fund any portion of the employer contribution.
- Each year since December 31, 2006 the assets also exclude prepaid employer contributions.

Valuation Date	Amount Excluded from Assets	
	County Investment Account	Prepaid Employer Contributions
12/31/06	\$ 168,224,000	\$ 70,941,000
12/31/07	174,348,000	108,301,000
12/31/08	126,683,000	24,345,000
12/31/09	108,324,000	20,027,000
12/31/10	108,531,000	29,545,000
12/31/11	97,767,000	162,873,000
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

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)	General (1.64% @ 57, OCSD)	General (2.0% @ 55, TCA)
12/31/06 ^{(1),(2)}	NC 9.19% UAAL 5.31 Total 14.50%	N/A	NC 11.36% UAAL 10.84 Total 22.20%	N/A	NC 11.25% UAAL 4.77 Total 16.02%	NC 10.55% UAAL 10.79 Total 21.34%	N/A	NC 12.03% UAAL 6.01 Total 18.04%
12/31/07	NC 8.92% UAAL 5.25 Total 14.17%	N/A	NC 11.24% UAAL 10.59 Total 21.83%	N/A	NC 11.26% UAAL 3.76 Total 15.02%	NC 10.54% UAAL 11.41 Total 21.95%	N/A	NC 12.60% UAAL 6.13 Total 18.73%
12/31/08	NC 8.99% UAAL 7.06 Total 16.05%	N/A	NC 11.79% UAAL 13.00 Total 24.79%	N/A	NC 11.32% UAAL 5.94 Total 17.26%	NC 11.19% UAAL 13.01 Total 24.20%	N/A	NC 13.02% UAAL 5.72 Total 18.74%
12/31/09 ⁽³⁾	NC 8.69% UAAL 10.43 Total 19.12%	NC 3.69% UAAL 15.50 Total 19.19%	NC 11.61% UAAL 15.50 Total 27.11%	N/A	NC 11.11% UAAL 9.28 Total 20.39%	NC 10.93% UAAL 14.75 Total 25.68%	NC 10.14% UAAL 14.75 Total 24.89%	NC 12.59% UAAL 7.05 Total 19.64%
12/31/10 ⁽⁴⁾	NC 8.59% UAAL 8.26 Total 16.85%	NC 5.10% UAAL 16.84 Total 21.94%	NC 11.55% UAAL 16.84 Total 28.39%	N/A	NC 10.96% UAAL 10.00 Total 20.96%	NC 10.92% UAAL 16.55 Total 27.47%	NC 10.14% UAAL 16.55 Total 26.69%	NC 12.56% UAAL 8.41 Total 20.97%
12/31/11	NC 8.55% UAAL 10.39 Total 18.94%	NC 4.91% UAAL 20.98 Total 25.89%	NC 12.03% UAAL 20.98 Total 33.01%	NC 10.99% UAAL 20.98 Total 31.97%	NC 10.57% UAAL 13.08 Total 23.65%	NC 11.29% UAAL 20.66 Total 31.95%	NC 10.11% UAAL 20.66 Total 30.77%	NC 13.11% UAAL 9.11 Total 22.22%
12/31/12	NC 9.68% UAAL 12.91 Total 22.59%	NC 5.56% UAAL 25.85 Total 31.41%	NC 13.69% UAAL 25.85 Total 39.54%	NC 12.10% UAAL 25.85 Total 37.95%	NC 11.83% UAAL 16.48 Total 28.31%	NC 12.88% UAAL 25.60 Total 38.48%	NC 11.02% UAAL 25.60 Total 36.62%	NC 14.20% UAAL 12.97 Total 27.17%
With 2-Year Phase-In	21.04%	29.84%	37.45%	35.96%	26.62%	36.57%	34.87%	25.71%
12/31/13 ⁽⁵⁾	NC 9.82% UAAL 11.34 Total 21.16%	NC 5.61% UAAL 23.72 Total 29.33%	NC 13.66% UAAL 23.72 Total 37.38%	NC 12.46% UAAL 23.72 Total 36.18%	NC 11.81% UAAL 15.22 Total 27.03%	NC 12.89% UAAL ⁽⁶⁾ 21.87 Total 34.76%	NC 10.53% UAAL ⁽⁶⁾ 21.87 Total 32.40%	NC 14.13% UAAL 12.28 Total 26.41%
12/31/14	NC 9.67% UAAL ⁽⁷⁾ 8.62 Total 18.29%	NC 5.49% UAAL 21.72 Total 27.21%	NC 13.22% UAAL 21.72 Total 34.94%	NC 10.54% UAAL 21.72 Total 32.26%	NC 10.78% UAAL 14.40 Total 25.18%	NC 12.40% UAAL ⁽⁸⁾ 6.26 Total 18.66%	NC 10.30% UAAL ⁽⁸⁾ 6.26 Total 16.56%	NC 13.59% UAAL 12.78 Total 26.37%
With 3-Year Phase-In	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12/31/15	NC 9.58% UAAL ⁽⁹⁾ 9.22 Total 18.80%	NC 5.46% UAAL 22.45 Total 27.91%	NC 13.19% UAAL 22.45 Total 35.64%	NC 11.40% UAAL 22.45 Total 33.85%	NC 10.70% UAAL 15.52 Total 26.22%	NC 12.33% UAAL ⁽¹⁰⁾ 1.42 Total 13.75%	NC 10.30% UAAL ⁽¹⁰⁾ 1.42 Total 11.72%	NC 13.44% UAAL 13.79 Total 27.23%
With 3-Year Phase-In	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date	General (2.0% @ 55, Cemetery, future service)	General (2.7% @ 55, OCFA)	General (2.0% @ 55, OCFA)	Safety Law Enforcement (3% @ 50)	Safety Law Enforcement (3% @ 55)	Safety Fire Authority (3% @ 50)	Safety Fire Authority (3% @ 55)	Safety Probation
12/31/06 ^{(1),(2)}	NC 10.31% UAAL 5.00	NC 11.43% UAAL 12.81	N/A	NC 20.19% UAAL 15.86	N/A	NC 19.93% UAAL 13.50	N/A	NC 20.61% UAAL 11.64
	Total 15.31%	Total 24.24%		Total 36.05%		Total 33.43%		Total 32.25%
12/31/07	NC 10.79% UAAL 4.36	NC 11.48% UAAL 11.53	N/A	NC 21.27% UAAL 18.25	N/A	NC 21.02% UAAL 17.22	N/A	NC 20.49% UAAL 10.90
	Total 15.15%	Total 23.01%		Total 39.52%		Total 38.24%		Total 31.39%
12/31/08	NC 10.85% UAAL 7.05	NC 12.03% UAAL 12.59	N/A	NC 21.39% UAAL 21.95	N/A	NC 21.16% UAAL 21.94	N/A	NC 20.15% UAAL 12.03
	Total 17.90%	Total 24.62%		Total 43.34%		Total 43.10%		Total 32.18%
12/31/09 ⁽³⁾	NC 11.24% UAAL 6.92	NC 11.98% UAAL 14.55	NC 11.11% UAAL 14.55	NC 21.13% UAAL 25.26	NC 20.38% UAAL 25.26	NC 21.31% UAAL 27.22	NC 18.30% UAAL 27.22	NC 20.17% UAAL 13.90
	Total 18.16%	Total 26.53%	Total 25.66%	Total 46.39%	Total 45.64%	Total 48.53%	Total 45.52%	Total 34.07%
12/31/10 ⁽⁴⁾	NC 10.90% UAAL 6.86	NC 11.85% UAAL 16.14	NC 11.11% UAAL 16.14	NC 21.05% UAAL 26.40	NC 20.38% UAAL 26.40	NC 21.54% UAAL 23.92	NC 18.30% UAAL 23.92	NC 20.07% UAAL 16.22
	Total 17.76%	Total 27.99%	Total 27.25%	Total 47.45%	Total 46.78%	Total 45.46%	Total 42.22%	Total 36.29%
12/31/11	NC 10.80% UAAL 8.23	NC 12.18% UAAL 20.43	NC 14.35% UAAL 20.43	NC 21.48% UAAL 29.38	NC 21.47% UAAL 29.38	NC 23.49% UAAL 19.66	NC 18.58% UAAL 19.66	NC 19.31% UAAL 17.26
	Total 19.03%	Total 32.61%	Total 34.78%	Total 50.86%	Total 50.85%	Total 43.15%	Total 38.24%	Total 36.57%
12/31/12	NC 12.34% UAAL 12.28	NC 13.92% UAAL 24.76	NC 14.01% UAAL 24.76	NC 24.24% UAAL 36.71	NC 24.20% UAAL 36.71	NC 26.16% UAAL 26.84	NC 21.12% UAAL 26.84	NC 21.26% UAAL 21.91
	Total 24.62%	Total 38.68%	Total 38.77%	Total 60.95%	Total 60.91%	Total 53.00%	Total 47.96%	Total 43.17%
With 2-Year Phase-In	22.99%	36.70%	36.99%	57.27%	57.37%	49.83%	44.85%	40.52%
12/31/13 ⁽⁵⁾	NC 12.33% UAAL ⁽⁷⁾ 9.87	NC 14.06% UAAL 23.34	NC 14.15% UAAL 23.34	NC 24.23% UAAL 32.47	NC 22.58% UAAL 32.47	NC 25.86% UAAL 24.14	NC 21.70% UAAL 24.14	NC 21.00% UAAL 19.72
	Total 22.20%	Total 37.40%	Total 37.49%	Total 56.70%	Total 55.05%	Total 50.00%	Total 45.84%	Total 40.72%
12/31/14	NC 11.79% UAAL 0.00	NC 13.53% UAAL 20.28	NC 12.47% UAAL 20.28	NC 25.79% UAAL 37.46	NC 23.55% UAAL 37.46	NC 27.05% UAAL 24.42	NC 22.38% UAAL 24.42	NC 22.17% UAAL 25.01
	Total 11.79%	Total 33.81%	Total 32.75%	Total 63.25%	Total 61.01%	Total 51.47%	Total 46.80%	Total 47.18%
With 3-Year Phase-In	N/A	N/A	N/A	58.92%	56.88%	48.60%	43.93%	42.84%
12/31/15	NC 11.33% UAAL 0.00	NC 13.44% UAAL 20.53	NC 12.72% UAAL 20.53	NC 25.56% UAAL 39.16	NC 23.24% UAAL 39.16	NC 26.87% UAAL 23.81	NC 22.10% UAAL 23.81	NC 21.92% UAAL 25.32
	Total 11.33%	Total 33.97%	Total 33.25%	Total 64.72%	Total 62.40%	Total 50.68%	Total 45.91%	Total 47.24%
With 3-Year Phase-In	N/A	N/A	N/A	62.55%	60.34%	49.24%	44.47%	45.07%

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	CalPEPRA Rate Group #9 2.5% @ 67	CalPEPRA Rate Group #10 2.5% @ 67
12/31/10	NC 7.24% UAAL 8.26	NC 5.78% UAAL 16.84	NC 7.64% UAAL 16.84		NC 8.34% UAAL 16.55		NC 9.78% UAAL 8.41	NC 7.36% UAAL 16.14
	Total 15.50%	Total 22.62%	Total 24.48%		Total 24.89%		Total 18.19%	Total 23.50%
12/31/11	NC 8.06% UAAL 10.39	NC 6.20% UAAL 20.98	NC 8.26% UAAL 20.98		NC 8.70% UAAL 20.66		NC 10.36% UAAL 9.11	NC 7.84% UAAL 20.43
	Total 18.45%	Total 27.18%	Total 29.24%		Total 29.36%		Total 19.47%	Total 28.27%
12/31/12	NC 8.68% UAAL 12.91	NC 6.78% UAAL 25.85	NC 7.44% UAAL 25.85		NC 9.38% UAAL 25.60		NC 10.97% UAAL 12.97	NC 8.50% UAAL 24.76
With 2-Year Phase-In	Total 21.59%	Total 32.63%	Total 33.29%		Total 34.98%		Total 23.94%	Total 33.26%
	20.33%	31.10%	32.05%		33.52%		22.87%	31.81%
12/31/13 ⁽⁵⁾	NC 9.39% UAAL 11.34	NC 6.70% UAAL 23.72	NC 8.56% UAAL 23.72		NC 9.66% UAAL ⁽⁶⁾ 21.87		NC 11.40% UAAL 12.28	NC 9.71% UAAL 23.34
	Total 20.73%	Total 30.42%	Total 32.28%		Total 31.53%		Total 23.68%	Total 33.05%
12/31/14	NC 8.87% UAAL ⁽⁷⁾ 8.62	NC 6.61% UAAL 21.72	NC 8.33% UAAL 21.72		NC 9.00% UAAL ⁽⁸⁾ 6.26	NC 10.04% UAAL 14.40	NC 9.85% UAAL 12.78	NC 9.63% UAAL 20.28
With 3-Year Phase-In	Total 17.49%	Total 28.33%	Total 30.05%		Total 15.26%	Total 24.44%	Total 22.63%	Total 29.91%
	N/A	N/A	N/A		N/A	N/A	N/A	N/A
12/31/15	NC 8.92% UAAL ⁽⁹⁾ 9.22	NC 6.56% UAAL 22.45	NC 8.35% UAAL 22.45	NC 6.68% UAAL 22.45	NC 9.25% UAAL ⁽¹⁰⁾ 1.42	NC 10.12% UAAL 15.52	NC 10.57% UAAL 13.79	NC 8.81% UAAL 20.53
With 3-Year Phase-In	Total 18.14%	Total 29.01%	Total 30.80%	Total 29.13%	Total 10.67%	Total 25.64%	Total 24.36%	Total 29.34%
	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

History of Employer Contribution Rates

(continued)

Employer Contribution Rate (% of pay)

Valuation Date	CalPEPRA Rate Group #11 2.5% @ 67	CalPEPRA Rate Group #6 2.7% @ 57	CalPEPRA Rate Group #7 2.7% @ 57	CalPEPRA Rate Group #8 2.7% @ 57
12/31/10	NC 7.31% UAAL 6.86	NC 11.37% UAAL 16.22	NC 15.03% UAAL 26.40	NC 14.53% UAAL 23.92
	Total 14.17%	Total 27.59%	Total 41.43%	Total 38.45%
12/31/11	NC 7.95% UAAL 8.23	NC 12.23% UAAL 17.26	NC 15.55% UAAL 29.38	NC 15.23% UAAL 19.66
	Total 16.18%	Total 29.49%	Total 44.93%	Total 34.89%
12/31/12	NC 8.66% UAAL 12.28	NC 13.91% UAAL 21.91	NC 17.05% UAAL 36.71	NC 16.41% UAAL 26.84
	Total 20.94%	Total 35.82%	Total 53.76%	Total 43.25%
With 2-Year Phase-In	19.63%	33.40%	50.61%	40.96%
12/31/13 ⁽⁵⁾	NC 8.66% UAAL ⁽⁶⁾ 9.87	NC 13.95% UAAL 19.72	NC 19.17% UAAL 32.47	NC 16.85% UAAL 24.14
	Total 18.53%	Total 33.67%	Total 51.64%	Total 40.99%
12/31/14	NC 11.81% UAAL 0.00	NC 15.25% UAAL 25.01	NC 20.10% UAAL 37.46	NC 15.71% UAAL 24.42
	Total 11.81%	Total 40.26%	Total 57.56%	Total 40.13%
With 3-Year Phase-In	N/A	36.02%	54.01%	38.08%
12/31/15	NC 12.23% UAAL 0.00	NC 15.00% UAAL 25.32	NC 20.04% UAAL 39.16	NC 15.30% UAAL 23.81
	Total 12.23%	Total 40.32%	Total 59.20%	Total 39.11%
With 3-Year Phase-In	N/A	38.20%	57.42%	38.09%

⁽¹⁾ Excludes contributions to RMBR/ABRA, if applicable.

⁽²⁾ Starting 12/31/2006, General (2.7% @ 55) excludes OCFA.

⁽³⁾ The UAAL established as a result of including additional premium pay items is amortized over a 25-year period.

⁽⁴⁾ The UAAL established as a result of reallocating contributions and benefit payments among Rate Groups is amortized over a 24-year period.

⁽⁵⁾ The outstanding balance of the December 31, 2012 UAAL has been combined and re-amortized over a period of 20 years.

⁽⁶⁾ This rate has not been adjusted to reflect additional UAAL contributions paid subsequent to the December 31, 2013 valuation.

⁽⁷⁾ The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I and Department of Education) to about 5.67% as of December 31, 2014.

⁽⁸⁾ 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. The UAAL rate for Law Library is 20.21% before reflecting a credit for Law Library's future service only benefit improvement.

⁽⁹⁾ The net UAAL contribution rates for County and O.C. IHSS Public Authority (i.e., excluding U.C.I and Department of Education) to about 5.57% as of December 31, 2015.

⁽¹⁰⁾ 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. The UAAL rate for Law Library is 22.08% before reflecting the additional UAAL contributions made during calendar year 2016 and a credit for Law Library's future service only benefit improvement.

Summary of Active Membership

Valuation Date	Number	Annual Salary	Annual Average Salary	Increase in Average Salary (%)
12/31/06				
General	19,129	\$ 1,049,095,000	\$ 54,843	2.05
Safety	<u>3,662</u>	<u>273,857,000</u>	74,783	2.82
Total	22,791	\$ 1,322,952,000	\$ 58,047	2.15
12/31/07				
General	19,803	\$ 1,156,684,000	\$ 58,410	6.50
Safety	<u>3,815</u>	<u>300,475,000</u>	78,761	5.32
Total	23,618	\$ 1,457,159,000	\$ 61,697	6.29
12/31/08				
General	19,795	\$ 1,238,077,000	\$ 62,545	7.08
Safety	<u>3,925</u>	<u>331,687,000</u>	84,506	7.29
Total	23,720	\$ 1,569,764,000	\$ 66,179	7.26
12/31/09				
General	18,873	\$ 1,258,558,000	\$ 66,686	6.62
Safety	<u>3,760</u>	<u>359,933,000</u>	95,727	13.28
Total	22,633	\$ 1,618,491,000	\$ 71,510	8.06
12/31/10				
General	18,155	\$ 1,232,657,000	\$ 67,896	1.81
Safety	<u>3,587</u>	<u>346,582,000</u>	96,622	0.93
Total	21,742	\$ 1,579,239,000	\$ 72,635	1.57
12/31/11				
General	17,717	\$ 1,249,064,000	\$ 70,501	3.84
Safety	<u>3,704</u>	<u>370,410,000</u>	100,003	3.50
Total	21,421	\$ 1,619,474,000	\$ 75,602	4.08
12/31/12				
General	17,529	\$ 1,238,958,000	\$ 70,680	0.25
Safety	<u>3,727</u>	<u>370,643,000</u>	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	<u>3,821</u>	<u>377,343,000</u>	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	<u>3,754</u>	<u>380,578,000</u>	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	<u>3,686</u>	<u>378,590,000</u>	102,710	1.31
Total	21,525	\$ 1,633,111,000	\$ 75,870	-1.22

Excludes Deferred and Pending members.

117/485

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)				
2006	10,218	965	\$ 46,950	(268)	\$ (5,580)	10,915	\$ 326,819	14.49	\$ 2,495
2007	10,915	817	41,552	(311)	(6,596)	11,421	361,775	10.70	2,640
2008	11,421	658	38,298	(301)	(6,426)	11,778	393,647	8.81	2,785
2009	11,778	744	32,435	(279)	(6,829)	12,243	419,253	6.50	2,854
2010	12,243	851	46,736	(332)	(8,334)	12,762	457,655	9.16	2,988
2011	12,762	888	45,913	(361)	(9,371)	13,289	494,197	7.98	3,099
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

* Includes COLA granted during the plan year.

Note: Annual allowances exclude RMBR and STAR COLA.

Development of Actuarial and Valuation Value of Assets

As of December 31, 2015

Plan Year Ending	Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain/ (Loss)	Deferred Factor	Deferred Return
2012	\$ 1,014,471,000	\$ 659,447,000	\$ 355,024,000	0.2	\$ 71,005,000
2013	1,031,118,000	696,553,000	334,565,000	0.4	133,826,000
2014	487,104,000	780,627,000	(293,523,000)	0.6	(176,114,000)
2015	(51,601,000)	833,757,000	(885,358,000)	0.8	(708,286,000)

(1) Total Deferred Return	\$ (679,569,000)
(2) Net Market Value of Assets (Excludes \$108,789,000 in County Investment Account and \$227,166,000 in Prepaid Employer Contributions)	\$ 11,548,529,000 *
(3) Actuarial Value of Assets (2) – (1)	\$ 12,228,098,000 **
(4) Non-valuation Reserves	
(a) Unclaimed member deposit	\$ -
(b) Medicare medical insurance reserve	89,000
(c) Subtotal	\$ 89,000
(5) Valuation Value of Assets (3) – (4)(c)	\$ 12,228,009,000
(6) Deferred Return Recognized in Each of the Next 4 Years	
(a) Amount recognized on 12/31/2016	\$ (97,858,000)
(b) Amount recognized on 12/31/2017	(168,863,000)
(c) Amount recognized on 12/31/2018	(235,776,000)
(d) Amount recognized on 12/31/2019	(177,072,000)
(e) Subtotal (may not total exactly due to rounding)	\$ (679,569,000)

* Based on the preliminary unaudited financial statement provided by OCERS for the December 31, 2015 valuation.

** Ratio of Actuarial Value of Assets to Net Market Value of Assets is 105.9% ((3) / (2)).

Short-Term Solvency Test

(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)
12/31/06	\$ 1,087,804	\$ 4,274,829	\$ 3,402,412	\$ 6,466,085	100	100	32.43
12/31/07	1,215,825	4,803,585	3,819,276 ⁽¹⁾	7,288,900	100	100	33.24 ⁽¹⁾
12/31/08	1,376,514	5,211,893	4,272,308	7,748,380	100	100	27.15
12/31/09	1,536,849	5,680,031	4,641,698	8,154,687	100	100	20.20
12/31/10	1,680,401	6,107,350	4,638,122	8,672,592	100	100	19.08
12/31/11	1,829,406	6,881,152	4,812,420	9,064,355	100	100	7.35
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

⁽¹⁾ Revised due to the Board's adoption of revised retirement rates for General plans with improved benefit formulas.

Actuarial Methods and Assumptions

Section 1 - Post – Retirement Mortality Rates:

- Healthy:** For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years.
- Disabled:** For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set forward six years for males and set forward three years for females.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.
- The mortality tables shown above were determined to contain sufficient provision to reflect future mortality improvement, based on a review of the mortality experience in the January 1, 2011 through December 31, 2013 Actuarial Experience Study.
- Beneficiaries:** Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who is receiving a service (non-disability) retirement.
- Employee Contribution Rates:** For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 40% male and 60% female.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years weighted 80% male and 20% female.

Section 2 - Termination Rates Before Retirement:

Age	Mortality Rate Percentages			
	General		Safety	
	Male	Female	Male	Female
25	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.02
35	0.07	0.04	0.06	0.04
40	0.10	0.07	0.09	0.06
45	0.14	0.11	0.12	0.09
50	0.20	0.16	0.18	0.14
55	0.34	0.25	0.27	0.21
60	0.59	0.41	0.48	0.33
65	1.00	0.76	0.82	0.60

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.

Actuarial Methods and Assumptions

(continued)

Section 2 - Termination Rates Before Retirement (Continued):

Disability Incidence Rates

Disability Incidence Rate Percentages				
Age	General		Safety	
	All Other ⁽¹⁾	OCTA ⁽²⁾	Law & Fire ⁽³⁾	Probation ⁽³⁾
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.01	0.03
30	0.01	0.03	0.04	0.08
35	0.03	0.20	0.14	0.10
40	0.08	0.36	0.26	0.10
45	0.11	0.43	0.42	0.16
50	0.14	0.48	0.92	0.20
55	0.18	0.74	1.98	0.23
60	0.29	1.41	5.20	0.10

⁽¹⁾ 55% of General All Other disabilities are assumed to be service connected disabilities. The other 45% are assumed to be non-service connected.

⁽²⁾ 65% of General - OCTA disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected.

⁽³⁾ 100% of Safety – Law Enforcement, Fire and Probation disabilities are assumed to be service connected disabilities.

Actuarial Methods and Assumptions

(continued)

Section 2 - Termination Rates Before Retirement (Continued):

Termination Rates

Years of Service	Termination Rate Percentages			
	General		Safety	
	All Other ⁽¹⁾	OCTA ⁽²⁾	Law & Fire ⁽³⁾	Probation ⁽⁴⁾
0	11.00	17.50	4.00	16.00
1	8.00	13.50	3.00	13.00
2	7.00	10.50	2.00	10.00
3	5.00	10.00	1.00	6.00
4	4.00	9.00	1.00	4.00
5	3.75	7.00	1.00	3.50
6	3.50	5.00	0.95	3.00
7	3.00	5.00	0.90	2.50
8	2.75	4.00	0.85	2.25
9	2.50	3.50	0.80	2.00
10	2.25	3.50	0.75	1.75
11	2.00	3.50	0.65	1.75
12	2.00	3.00	0.60	1.50
13	1.75	3.00	0.50	1.25
14	1.75	3.00	0.50	1.00
15	1.75	3.00	0.50	1.00
16	1.50	3.00	0.50	1.00
17	1.50	2.75	0.50	0.50
18	1.50	2.75	0.50	0.50
19	1.50	2.75	0.50	0.50
20+	1.25	1.75	0.25	0.50

⁽¹⁾ 40% of all terminated members with less than 5 years of service and 25% of all terminated members with 5 or more years of service will choose a refund of contributions.

⁽²⁾ 45% of all terminated members with less than 5 years of service and 35% of all terminated members with 5 or more years of service will choose a refund of contributions.

⁽³⁾ 20% of all terminated members with less than 5 years of service and 20% of all terminated members with 5 or more years of service will choose a refund of contributions.

⁽⁴⁾ 40% of all terminated members with less than 5 years of service and 30% of all terminated members with 5 or more years of service will choose a refund of contributions.

Actuarial Methods and Assumptions

(continued)

Retirement Rates

Age	Rate (%) Retirement							
	General			Safety				
	Enhanced	Non-Enhanced ⁽¹⁾	SJC	Law (3% @ 50) ⁽²⁾	Law (3% @ 55) ⁽²⁾	Fire (3% @ 50) ⁽²⁾	Fire (3% @ 55) ⁽²⁾	Probation ⁽²⁾
49	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0
50	2.5	2.5	3.0	16.0	11.5	6.0	8.0	3.0
51	2.0	2.5	3.0	16.0	12.0	8.0	10.0	3.0
52	2.0	2.5	3.0	16.0	12.7	9.0	11.0	4.0
53	2.0	2.5	3.0	16.0	17.9	10.0	12.0	4.0
54	5.0	2.5	3.0	22.0	18.8	16.0	14.0	6.0
55	15.0	3.0	4.0	22.0	30.7	19.0	24.0	11.0
56	10.0	3.5	5.0	20.0	20.0	20.0	23.0	11.0
57	10.0	5.0	6.0	20.0	20.0	23.0	27.0	17.0
58	10.0	5.0	7.0	20.0	25.0	30.0	27.0	20.0
59	11.0	7.0	9.0	26.0	30.0	30.0	36.0	20.0
60	12.0	9.0	11.0	45.0	100.0	45.0	100.0	20.0
61	12.0	10.0	13.0	45.0	100.0	45.0	100.0	20.0
62	15.0	16.0	15.0	45.0	100.0	45.0	100.0	25.0
63	16.0	16.0	15.0	45.0	100.0	45.0	100.0	50.0
64	16.0	18.0	20.0	45.0	100.0	45.0	100.0	50.0
65	21.0	21.0	20.0	100.0	100.0	100.0	100.0	100.0
66	22.0	26.0	24.0	100.0	100.0	100.0	100.0	100.0
67	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
68	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
69	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
70	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
71	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
72	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
73	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
74	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
75	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

⁽¹⁾ These assumptions are also used for the CalPEPRA 1.62% @ 65 formula (Plan T and Plan W).

⁽²⁾ Retirement rate is 100% after a member accrues a benefit of 100% of final average earnings.

Actuarial Methods and Assumptions

(continued)

Retirement Rates

(continued)

Age	Rate (%) Retirement			
	CalPEPRA General Formula	CalPEPRA Safety – Probation Formula ⁽¹⁾	CalPEPRA Safety – Law Formula ⁽¹⁾	CalPEPRA Safety – Fire Formula ⁽¹⁾
50	0.0	2.5	11.0	6.5
51	0.0	2.5	11.5	8.0
52	4.0	3.0	12.0	9.0
53	1.5	3.0	16.0	10.0
54	1.5	5.5	17.0	12.0
55	2.5	10.0	28.0	21.0
56	3.5	10.0	18.0	20.0
57	5.5	15.0	17.5	22.0
58	7.5	20.0	22.0	25.0
59	7.5	20.0	26.0	31.5
60	7.5	100.0	100.0	100.0
61	7.5	100.0	100.0	100.0
62	14.0	100.0	100.0	100.0
63	14.0	100.0	100.0	100.0
64	14.0	100.0	100.0	100.0
65	18.0	100.0	100.0	100.0
66	22.0	100.0	100.0	100.0
67	23.0	100.0	100.0	100.0
68	23.0	100.0	100.0	100.0
69	23.0	100.0	100.0	100.0
70	30.0	100.0	100.0	100.0
71	30.0	100.0	100.0	100.0
72	30.0	100.0	100.0	100.0
73	30.0	100.0	100.0	100.0
74	30.0	100.0	100.0	100.0
75	100.0	100.0	100.0	100.0

⁽¹⁾ Retirement rate is 100% after a member accrues a benefit of 100% of final average earnings.

Actuarial Methods and Assumptions

(continued)

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

General	58
Safety	53

We assume that 20% of future General and 30% of future Safety deferred vested members are reciprocal. For reciprocals, we assume 4.25% compensation increases for General and 5.00% for Safety per annum.

Liability Calculation for Current Deferred Vested Members: Liability for a current deferred vested member is calculated based on salary, service, and eligibility for reciprocal benefit as provided by the Retirement System. For those members without salary information that have 3 or more years of service, we used an average salary. For those members without salary information that have less than 3 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: 75% of male members and 50% of female members are assumed to be married at retirement or time of pre-retirement death.

Age of Spouse: Female (or male) three years younger (or older) than spouse.

Net Investment Return: 7.25%; net of investment and administrative expenses.

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

Consumer Price Index: Increase of 3.00% per year, retiree COLA increases due to CPI subject to a 3.00% maximum change per year.

Actuarial Methods and Assumptions

(continued)

Salary Increases

Annual Rate of Compensation Increase (%)		
Inflation: 3.00% per year, plus “across the board” salary increases of 0.50% per year, plus the following merit and promotion increases:		
Years of Service	General	Safety
Less than 1	10.00%	14.00%
1	7.25	10.00
2	6.00	8.50
3	4.75	6.75
4	4.00	5.25
5	3.25	4.50
6	2.25	3.50
7	2.00	3.25
8	1.50	2.25
9	1.25	2.25
10	1.25	1.75
11	1.25	1.75
12	1.25	1.75
13	1.25	1.75
14	1.25	1.75
15	1.25	1.75
16	0.75	1.50
17	0.75	1.50
18	0.75	1.50
19	0.75	1.50
20 & over	0.75	1.50

Actuarial Methods and Assumptions

(continued)

Additional Cashout Assumptions:

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

	<u>Final One Year Salary</u>	<u>Final Three Year Salary</u>
General Members	3.50%	2.80%
Safety - Probation	3.80%	2.80%
Safety - Law	5.20%	4.70%
Safety - Fire	2.00%	2.00%

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

CalPEPRA Formulas: None

Increase in Section 7522.10 Compensation Limit:

Increase of 3.00% per year from the valuation date.

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 current age minus Vesting Credit. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salaries, with Normal Cost determined as a level percentage of individual salary, as if the current benefit accrual rate had always been in effect. 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.
<i>Non-CalPEPRA General Plans:</i>	
2.5% @ 55 Plans	(Orange County Sanitation District and Law Library ¹)
Plan G	General members hired before September 21, 1979.
Plan H	General members hired on or after September 21, 1979. (Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010 are in Plan B)
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 ¹ , Orange County Employees Retirement System ² , Children and Family Commission ³ 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. ¹ Improvement is prospective only for service after June 23, 2005. ² Improvement for management employees is prospective only for service after June 30, 2005. ³ Improvement is prospective only for service after December 22, 2005.
2.0% @ 55 Plans	(Transportation Corridor Agency, Cemetery District - future service effective December 7, 2007 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.
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.
<i>All Other General Employers:</i>	
Plan A	General members hired before September 21, 1979.
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)

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.

Summary of Major Plan Provisions

(continued)

Final Compensation for Benefit Determination:

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

Service Retirement Eligibility:

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

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

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

2.7% @ 55	Retirement Age	Benefit Formula
Plan I (§31676.19)	50	(2.00% x FAS1 x Yrs)
Tier 1	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	Retirement Age	Benefit Formula
Plan M (§31676.16)	50	(1.43% x FAS1 x Yrs)
Tier 1	55	(2.00% 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)**
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)***

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

*** 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)

1.62% @ 65	Retirement Age	Benefit Formula
Plan O (§31676.01)	50	$(0.79\% \times \text{FAS1} \times \text{Yrs})$
Tier 1	55	$(0.99\% \times \text{FAS1} \times \text{Yrs})$
	60	$(1.28\% \times \text{FAS1} \times \text{Yrs})$
	62	$(1.39\% \times \text{FAS1} \times \text{Yrs})$
	65 or later	$(1.62\% \times \text{FAS1} \times \text{Yrs})$
Plan P, Plan T and Plan W (§31676.01)	50	$(0.79\% \times \text{FAS3} \times \text{Yrs})$
Tier 2	55	$(0.99\% \times \text{FAS3} \times \text{Yrs})$
	60	$(1.28\% \times \text{FAS3} \times \text{Yrs})$
	62	$(1.39\% \times \text{FAS3} \times \text{Yrs})$
	65 or later	$(1.62\% \times \text{FAS3} \times \text{Yrs})$

2.0% @ 57	Retirement Age	Benefit Formula
Plan S (§31676.12)	50	$(1.34\% \times \text{FAS3} \times \text{Yrs})$
Tier 2	55	$(1.77\% \times \text{FAS3} \times \text{Yrs})$
	60	$(2.34\% \times \text{FAS3} \times \text{Yrs})$
	62	$(2.62\% \times \text{FAS3} \times \text{Yrs})$
	65 or later	$(2.62\% \times \text{FAS3} \times \text{Yrs})$

All Other General Members	Retirement Age	Benefit Formula
Plan A (§31676.12)	50	$(1.34\% \times \text{FAS1} \times \text{Yrs})$
Tier 1	55	$(1.77\% \times \text{FAS1} \times \text{Yrs})$
	60	$(2.34\% \times \text{FAS1} \times \text{Yrs})$
	62	$(2.62\% \times \text{FAS1} \times \text{Yrs})$
	65 or later	$(2.62\% \times \text{FAS1} \times \text{Yrs})$
Plan B (§31676.1)	50	$(1.18\% \times \text{FAS3} \times \text{Yrs})$
Tier 2	55	$(1.49\% \times \text{FAS3} \times \text{Yrs})$
	60	$(1.92\% \times \text{FAS3} \times \text{Yrs})$
	62	$(2.09\% \times \text{FAS3} \times \text{Yrs})$
	65 or later	$(2.43\% \times \text{FAS3} \times \text{Yrs})$
Plan U (§7522.20(a))	52	$(1.00\% \times \text{FAS3} \times \text{Yrs})$
	55	$(1.30\% \times \text{FAS3} \times \text{Yrs})$
	60	$(1.80\% \times \text{FAS3} \times \text{Yrs})$
	62	$(2.00\% \times \text{FAS3} \times \text{Yrs})$
	65	$(2.30\% \times \text{FAS3} \times \text{Yrs})$
	67 or later	$(2.50\% \times \text{FAS3} \times \text{Yrs})$

Summary of Major Plan Provisions

(continued)

Benefit Formula: Safety Plans

3.0% @ 50	Retirement Age	Benefit Formula
Plan E (§31664.1)	50	(3.00% x FAS1 x Yrs)
Tier 1	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)

3.0% @ 55	Retirement Age	Benefit Formula
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)	50	(2.29% x FAS3 x Yrs)
Tier 2	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
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:

<i>Plans A, B, E, F, G, H, I, J, M, N,</i>	100% of Highest Average Compensation.
<i>O, P, Q, R, S, T and W</i>	(§31676.01, §31676.1, §31676.12, §31676.16, §31676.18, §31676.19, §31664.1, §31664.2)
<i>Plans U and V</i>	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:

<i>Service or Ordinary Disability Retirement</i>	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)
<i>Line-of-Duty Disability</i>	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:

<i>Less than Five Years of Service</i>	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)
<i>Five or More Years of Service</i>	If contributions left on deposit, 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

<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/200 of FAS1. (§31621.5)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.

Plan B

<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/120 of FAS3. (§31621)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.

Plans G, H, I and J

<i>Basic</i>	Provide for an average annuity at age 55 equal to 1/100 of FAS3 (FAS1 for Plans G and I). (§31621.8)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.

Plans M, N, O and P

<i>Basic</i>	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3 (FAS1 for Plans M and O). (§31621)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.

Plan S

<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/100 of FAS3. (§31621.2)
<i>Cost-of-Living</i>	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 service are exempt from paying members 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

(2006 - 2010)

(Dollars in Thousands)

Gains & Losses in Actuarial Accrued Liabilities During Years Ended December 31, Resulting from Differences Between Assumed Experience & Actual Experience					
Type of Activity	Gains (or Losses) Per Year				
	2006	2007	2008	2009	2010
Retirements	\$ -	\$ -	\$ (54,911)	\$ -	\$ -
Pay Increases	(21,679)	(136,417)	(97,561)	77,858	215,936
Investment Income	112,612	176,681	(257,752)	(322,523)	(224,044)
Other	(39,155)	(43,538)	(17,159)	(14,931)	63,174
Gain (or Loss) During Year From Experience	\$ 51,778	\$ (3,274)	\$ (427,383)	\$ (259,596)	\$ 55,066
Nonrecurring Items:					
Method and Procedure Changes	-	-	-	-	-
Plan Amendments and Assumption Changes	-	(237,147)	(115,764)	-	-
Correction to Include All Premium Pay Items	-	-	-	(228,051)	-
Composite Gain (or Loss) During Year	\$ 51,778	\$ (240,421)	\$ (543,147)	\$ (487,647)	\$ 55,066

(2011-2015)

(Dollars in Thousands)

Gains & Losses in Actuarial Accrued Liabilities During Years Ended December 31, Resulting from Differences Between Assumed Experience & Actual Experience					
Type of Activity	Gains (or Losses) Per Year				
	2011	2012	2013	2014	2015
Retirements	\$ -	\$ -	\$ -	\$ -	\$ (62,070)
Pay Increases	154,946	244,750	294,326	125,746	282,696
COLA Increases	-	-	-	153,484	119,367
Investment Income	(388,935)	(387,808)	176,930	9,570	(229,138)
Other	(38,159)	(19,979)	30,354	(4,476)	10,056
Gain (or Loss) During Year From Experience	\$ (272,148)	\$ (163,037)	\$ 501,610	\$ 284,324	\$ 120,911
Nonrecurring Items:					
Plan Amendments and Assumption Changes	(363,842)	(934,619)	-	122,171	-
Correction to Include All Premium Pay Items	-	-	-	-	-
Composite Gain (or Loss) During Year	\$ (635,990)	\$ (1,097,656)	\$ 501,610	\$ 406,495	\$ 120,911

Schedule of Funding Progress

Actuarial Valuation Date December 31	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
2006	\$ 6,466,085,000	\$ 8,765,045,000	\$ 2,298,960,000	73.77%	\$ 1,322,952,000	173.78%
2007	7,288,900,000	9,838,686,000	2,549,786,000	74.08%	1,457,159,000	174.98%
2008	7,748,380,000	10,860,715,000	3,112,335,000	71.34%	1,569,764,000	198.27%
2009	8,154,687,000	11,858,578,000	3,703,891,000	68.77%	1,618,491,000	228.85%
2010	8,672,592,000	12,425,873,000	3,753,281,000	69.79%	1,579,239,000	237.66%
2011	9,064,355,000	13,522,978,000	4,458,623,000	67.03%	1,619,474,000	275.31%
2012	9,469,208,000	15,144,888,000	5,675,680,000	62.52%	1,609,600,000	352.55%
2013	10,417,125,000	15,785,042,000	5,367,917,000	65.99%	1,604,496,000	334.55%
2014	11,449,911,000	16,413,124,000	4,963,213,000	69.76%	1,648,160,000	301.14%
2015	12,228,009,000	17,050,357,000	4,822,348,000	71.72%	1,633,112,000	295.29%

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, unclaimed member reserve and Medicare Medical Insurance Reserve.

Actuarial Valuation Date December 31	Funded Ratio Based on Net Market Value of Assets
2006	77.69%
2007	78.43%
2008	57.51%
2009	62.94%
2010	67.25%
2011	62.60%
2012	63.17%
2013	67.65%
2014	69.63%
2015	67.73%

Orange County Fire Authority OPEB Plan Actuarial Certification

SECTION VIII. ACTUARIAL CERTIFICATION

This report summarizes the GASB actuarial valuation for the Orange County Fire Authority (OCFA) as of July 1, 2016. To the best of our knowledge, the report presents a fair position of the funded status of the plan in accordance with GASB Statements No. 43 (Financial Reporting for Post-Employment Benefit Plans Other Than Pension Plans) and No. 45 (Accounting and Financial Reporting by Employers for Post-Employment Benefits Other Than Pensions). The valuation is also based upon our understanding of the plan provisions as summarized within the report.

The information presented herein is based on the actuarial assumptions and substantive plan provisions summarized in this report and participant information and asset information furnished to us by the Plan Sponsor. We have reviewed the employee census provided by the Plan Sponsor for reasonableness when compared to the prior information provided but have not audited the information at the source, and therefore do not accept responsibility for the accuracy or the completeness of the data on which the information is based. When relevant data may be missing, we may have made assumptions we feel are neutral or conservative to the purpose of the measurement. We are not aware of any significant issues with and have relied on the data provided.

The discount rate and other economic assumptions have been selected by the Plan Sponsor. Demographic assumptions have been selected by the Plan Sponsor with the concurrence of Nyhart. In our opinion, the actuarial assumptions are individually reasonable and in combination represent our estimate of anticipated experience of the Plan. All calculations have been made in accordance with generally accepted actuarial principles and practice.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following:

- plan experience differing from that anticipated by the economic or demographic assumptions;
- changes in economic or demographic assumptions;
- increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and
- changes in plan provisions or applicable law.

While some sensitivity analysis was provided in the report, we did not perform an analysis of the potential range of future measurements due to the limited scope of our engagement.

To our knowledge, there have been no significant events prior to the current year's measurement date or as of the date of this report that could materially affect the results contained herein.

Neither Nyhart nor any of its employees has any relationship with the plan or its sponsor that could impair or appear to impair the objectivity of this report. Our professional work is in full compliance with the American Academy of Actuaries "Code of Professional Conduct" Precept 7 regarding conflict of interest. The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Should you have any questions please do not hesitate to contact me.

Certified by:


Marilyn K. Jones, ASA, EA, MAAA, FCA
Consulting Actuary

Date: November 4, 2016

nyhart

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Orange County Fire Authority OPEB Plan Summary of Retired Members and Beneficiaries

Fiscal Year Ending*	Benefit Type	Added to Rolls		Removed from Rolls		Rolls at Year End		Increase in Retiree Allowance	Average Annual Allowance (in 000's)	Change in Average Benefit
		Number	Annual Allowance (in 000's)	Number	Annual Allowance (in 000's)	Number	Annual Allowance (in 000's)**			
6/30/14	Direct Contribution	107	\$ 618	5	\$ 22	573	\$ 3,131	26.1%	\$ 5	3.6%
	Implicit Rate Subsidy	70	140	4	3	414	823	-27.5%	2	-39.0%
	Total	107	\$ 758	5	\$ 25	573	\$ 3,954	9.3%	\$ 7	-10.2%
6/30/16	Direct Contribution	93	\$ 597	4	\$ 23	662	\$ 4,018	28.3%	\$ 6	11.1%
	Implicit Rate Subsidy	93	390	4	4	662	1,391	69.0%	2	5.7%
	Total	93	\$ 987	4	\$ 27	662	\$ 5,409	36.8%	\$ 8	18.4%

* Valuations are performed biennially.

** Includes increase / decrease (subsidy) for continuing retirees.

Orange County Fire Authority OPEB Plan Solvency Test

Valuation Date*	Benefit Type	Active Member Contribution	Liability for Retired Members (in 000's)	Active Members Employer Financed Portion (in 000's)	Total (in 000's)	Actuarial Value of Plan Assets (in 000's)	Active Member Contribution	Liability for Retired Members	Active Members Employer Financed Portion
6/30/14	Direct Contribution	\$ -	\$ 70,702	\$ 87,705	\$ 158,407	\$ 36,945	100%	52.3%	0.0%
	Implicit Rate Subsidy	-	6,839	13,810	20,649	-	100%	0.0%	0.0%
	Total	\$ -	\$ 77,541	\$ 101,515	\$ 179,056	\$ 36,945	100%	47.6%	0.0%
6/30/16	Direct Contribution	\$ -	\$ 116,922	\$ 117,407	\$ 234,329	\$ 35,858	100%	30.7%	0.0%
	Implicit Rate Subsidy	-	11,620	17,354	28,974	-	100%	0.0%	0.0%
	Total	\$ -	\$ 128,542	\$ 134,761	\$ 263,303	\$ 35,858	100%	27.9%	0.0%

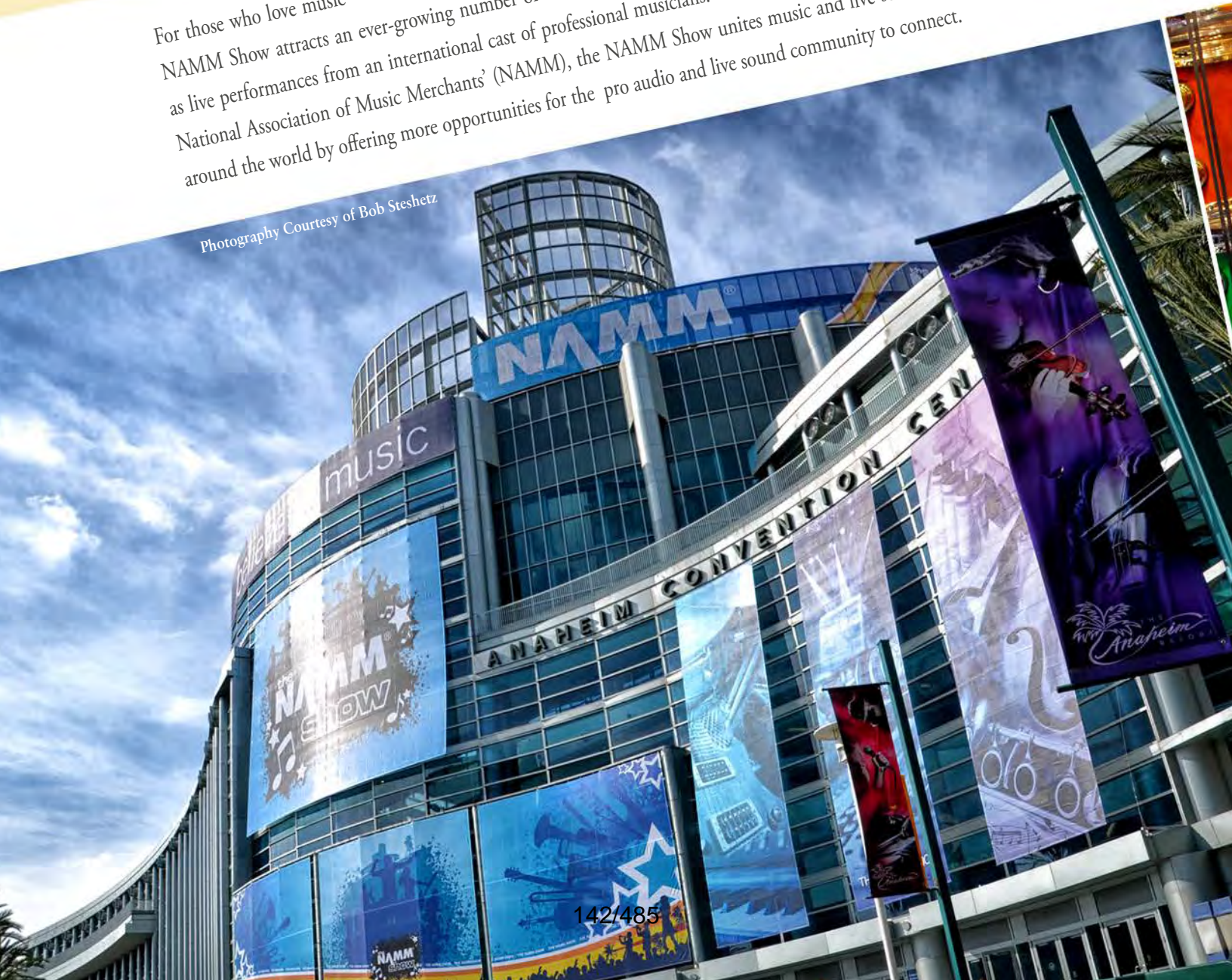
* Valuations are performed biennially.

NAMM

Anaheim Convention Center

For those who love music – and especially the instruments and technology that are used to help create music – the annual NAMM Show attracts an ever-growing number of exhibitors and visitors to see the innovative ideas and products, as well as live performances from an international cast of professional musicians. Held every winter in Anaheim and hosted by the National Association of Music Merchants' (NAMM), the NAMM Show unites music and live sound professionals from all around the world by offering more opportunities for the pro audio and live sound community to connect.

Photography Courtesy of Bob Steshetz





NAMM®



Statistical

Section V

Statistical

Statistical Section Review

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

The Government Finance Officers Association (GFOA) 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

2007 – 2016
(Dollars in Thousands)

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Additions										
Employer Contributions	\$ 401,037	\$ 433,911	\$ 377,976	\$ 372,437	\$ 387,585	\$ 406,805	\$ 427,095	\$ 625,520	\$ 571,298	\$ 567,196
Employee Contributions	159,476	172,291	171,928	177,929	183,820	191,215	209,301	232,656	249,271	258,297
Investment Income/ (Loss)	764,890	(1,625,928)	1,076,073	886,693	48,753	1,002,763	1,151,193	497,760	(11,903)	1,060,040
Net Securities Lending	3,452	6,145	3,989	1,849	1,703	2,007	1,454	1,435	1,030	1,203
Total Additions	\$ 1,328,855	\$ (1,013,581)	\$ 1,629,966	\$ 1,438,908	\$ 621,861	\$ 1,602,790	\$ 1,789,043	\$ 1,357,371	\$ 809,696	\$ 1,886,736
Deductions										
Benefits	\$ 353,861	\$ 419,502	\$ 461,530	\$ 459,383	\$ 493,749	\$ 541,154	\$ 586,284	\$ 630,678	\$ 675,963	\$ 717,976
Administrative Expenses	10,381	11,006	10,947	12,368	12,828	14,209	11,705	11,905	12,521	16,870
Total Deductions	\$ 364,242	\$ 430,508	\$ 472,477	\$ 471,751	\$ 506,577	\$ 555,363	\$ 597,989	\$ 642,583	\$ 688,484	\$ 734,846
Changes in Fiduciary Net Position	\$ 964,613	\$ (1,444,089)	\$ 1,157,489	\$ 967,157	\$ 115,284	\$ 1,047,427	\$ 1,191,054	\$ 714,788	\$ 121,212	\$ 1,151,890

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

2007 - 2016
(Dollars in Thousands)

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Additions										
Employer Contributions	N/A	N/A	N/A	\$ 14,582	\$ 39,694	\$ 27,395	\$ 66,057	\$ 64,852	\$ 36,557	\$ 42,411
Investment Income/(Loss)	N/A	N/A	N/A	8,561	(641)	10,308	13,702	7,374	(698)	16,902
Net Securities Lending	N/A	N/A	N/A	18	18	21	20	25	18	21
Total Additions	\$ -	\$ -	\$ -	\$ 23,161	\$ 39,071	\$ 37,724	\$ 79,779	\$ 72,251	\$ 35,877	\$ 59,334
Deductions										
Benefits	N/A	N/A	N/A	\$ 25,514	\$ 26,250	\$ 27,089	\$ 28,293	\$ 29,299	\$ 30,107	\$ 30,818
Administrative Expenses	N/A	N/A	N/A	18	18	19	20	20	22	22
Total Deductions	\$ -	\$ -	\$ -	\$ 25,532	\$ 26,268	\$ 27,108	\$ 28,313	\$ 29,319	\$ 30,129	\$ 30,840
Changes in Fiduciary Net Position	\$ -	\$ -	\$ -	\$ (2,371)	\$ 12,803	\$ 10,616	\$ 51,466	\$ 42,932	\$ 5,748	\$ 28,494

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

2007 - 2016
(Dollars in Thousands)

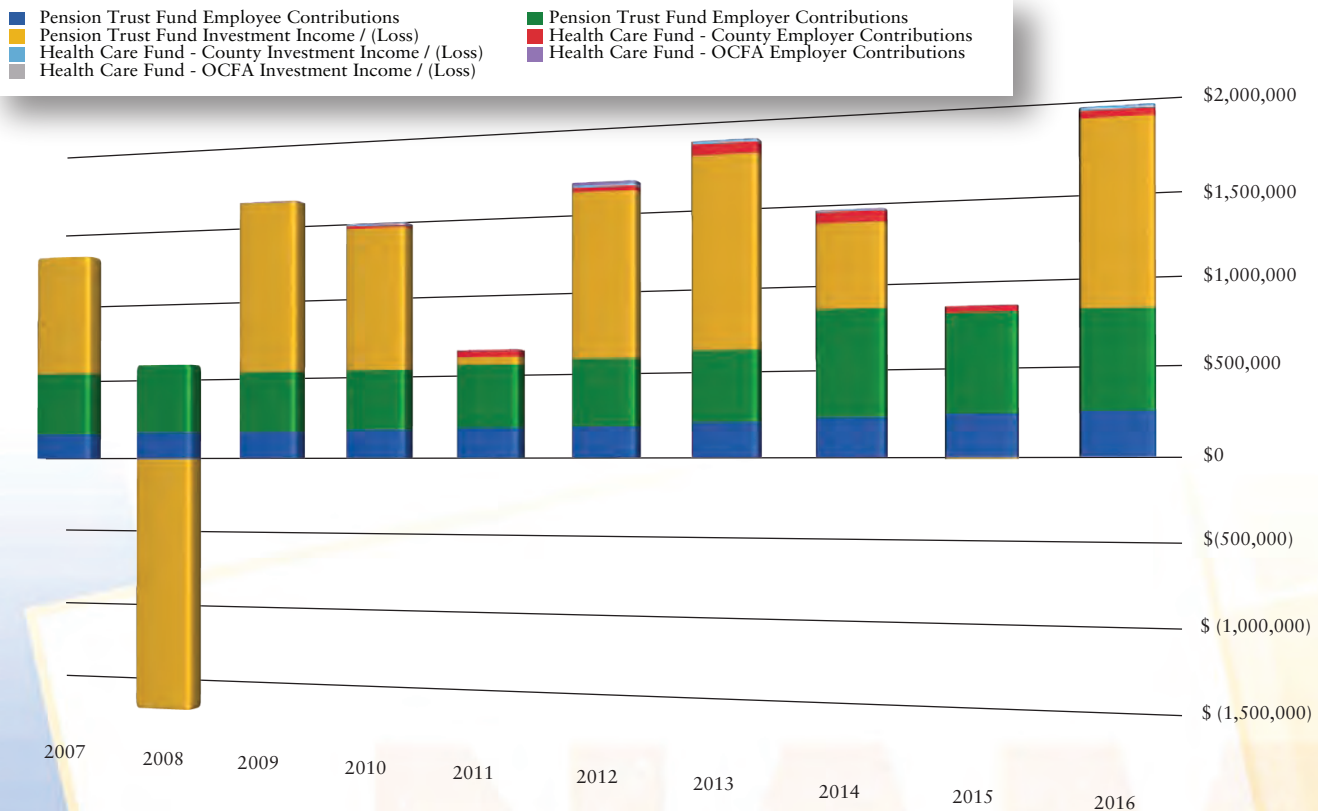
Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Additions										
Employer Contributions	N/A	N/A	N/A	\$ 3,634	\$ 3,660	\$ 3,590	\$ 18,349	\$ 2,667	\$ 2,624	\$ 2,414
Investment Income/(Loss)	N/A	N/A	N/A	1,358	(7)	1,736	1,963	1,583	(99)	2,845
Net Securities Lending	N/A	N/A	N/A	3	3	3	4	5	3	3
Total Additions	\$ -	\$ -	\$ -	\$ 4,995	\$ 3,656	\$ 5,329	\$ 20,316	\$ 4,255	\$ 2,528	\$ 5,262
Deductions										
Benefits	N/A	N/A	N/A	\$ 2,158	\$ 2,649	\$ 2,804	\$ 2,550	\$ 3,138	\$ 3,448	\$ 3,867
Administrative Expenses	N/A	N/A	N/A	9	9	9	14	22	22	22
Total Deductions	\$ -	\$ -	\$ -	\$ 2,167	\$ 2,658	\$ 2,813	\$ 2,564	\$ 3,160	\$ 3,470	\$ 3,889
Changes in Fiduciary Net Position	\$ -	\$ -	\$ -	\$ 2,828	\$ 998	\$ 2,516	\$ 17,752	\$ 1,095	\$ (942)	\$ 1,373

N/A: Detailed information not available.

Schedule and Graph of Fiduciary Revenues by Source

2007 - 2016
(Dollars in Thousands)

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Pension Trust Fund										
Employee Contributions	\$ 159,476	\$ 172,291	\$ 171,928	\$ 177,929	\$ 183,820	\$ 191,215	\$ 209,301	\$ 232,656	\$ 249,271	\$ 258,297
Employer Contributions	401,037	433,911	377,976	372,437	387,585	406,805	427,095	625,520	571,298	567,196
Investment Income/(Loss) ^{1,2}	768,342	(1,619,783)	1,080,062	888,542	50,456	1,004,770	1,152,647	499,195	(10,873)	1,061,243
Health Care Fund - County										
Employer Contributions	N/A	N/A	N/A	14,582	39,694	27,395	66,057	64,852	36,557	42,411
Investment Income/(Loss) ¹	N/A	N/A	N/A	8,579	(623)	10,329	13,722	7,399	(680)	16,923
Health Care Fund - OCFA										
Employer Contributions	N/A	N/A	N/A	3,634	3,660	3,590	18,349	2,667	2,624	2,414
Investment Income/(Loss) ¹	N/A	N/A	N/A	1,361	(4)	1,739	1,967	1,588	(96)	2,848
Total	\$ 1,328,855	\$ (1,013,581)	\$ 1,629,966	\$ 1,467,064	\$ 664,588	\$ 1,645,843	\$ 1,889,138	\$ 1,433,877	\$ 848,101	\$ 1,951,332



N/A: Detailed information not available.

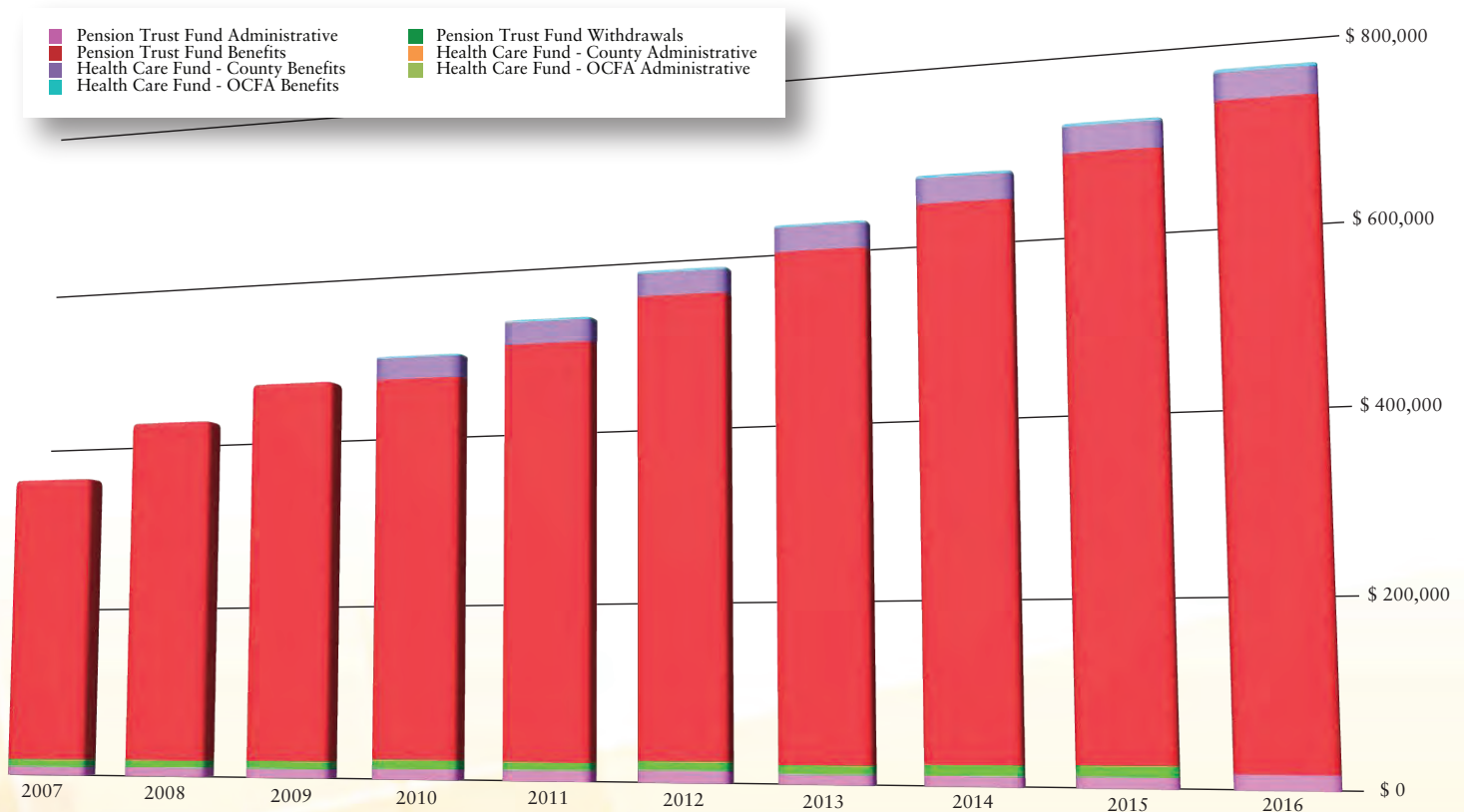
¹ Investment Income / (Loss) includes net appreciation/(depreciation) less investment manager fees, security lending fees and commission recapture.

² Beginning in 2013, Investment Income / (Loss) includes net appreciation/(depreciation) less investment manager fees, investment department expenses, security lending fees and commission recapture.

Schedule and Graph of Expenses by Type

2007 - 2016
(Dollars in Thousands)

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Pension Trust Fund										
Administrative	\$ 10,381	\$ 11,006	\$ 10,947	\$ 12,368	\$ 12,828	\$ 14,209	\$ 11,705	\$ 11,905	\$ 12,521	\$ 16,870
Withdrawals										
Separation	8,007	7,022	7,604	8,566	6,833	8,078	7,516	9,843	10,764	9,411
Death	792	1,337	1,448	1,880	2,041	2,019	2,348	1,887	1,093	4,232
Benefits	345,062	411,143	452,478	448,937	484,875	531,057	576,420	618,948	664,106	704,333
Health Care Fund - County										
Administrative	N/A	N/A	N/A	18	18	19	20	20	22	22
Benefits	N/A	N/A	N/A	25,514	26,250	27,089	28,293	29,299	30,107	30,818
Health Care Fund - OCFA										
Administrative	N/A	N/A	N/A	9	9	9	14	22	22	22
Benefits	N/A	N/A	N/A	2,158	2,649	2,804	2,550	3,138	3,448	3,867
Total	\$ 364,242	\$ 430,508	\$ 472,477	\$ 499,450	\$ 535,503	\$ 585,284	\$ 628,866	\$ 675,062	\$ 722,083	\$ 769,575



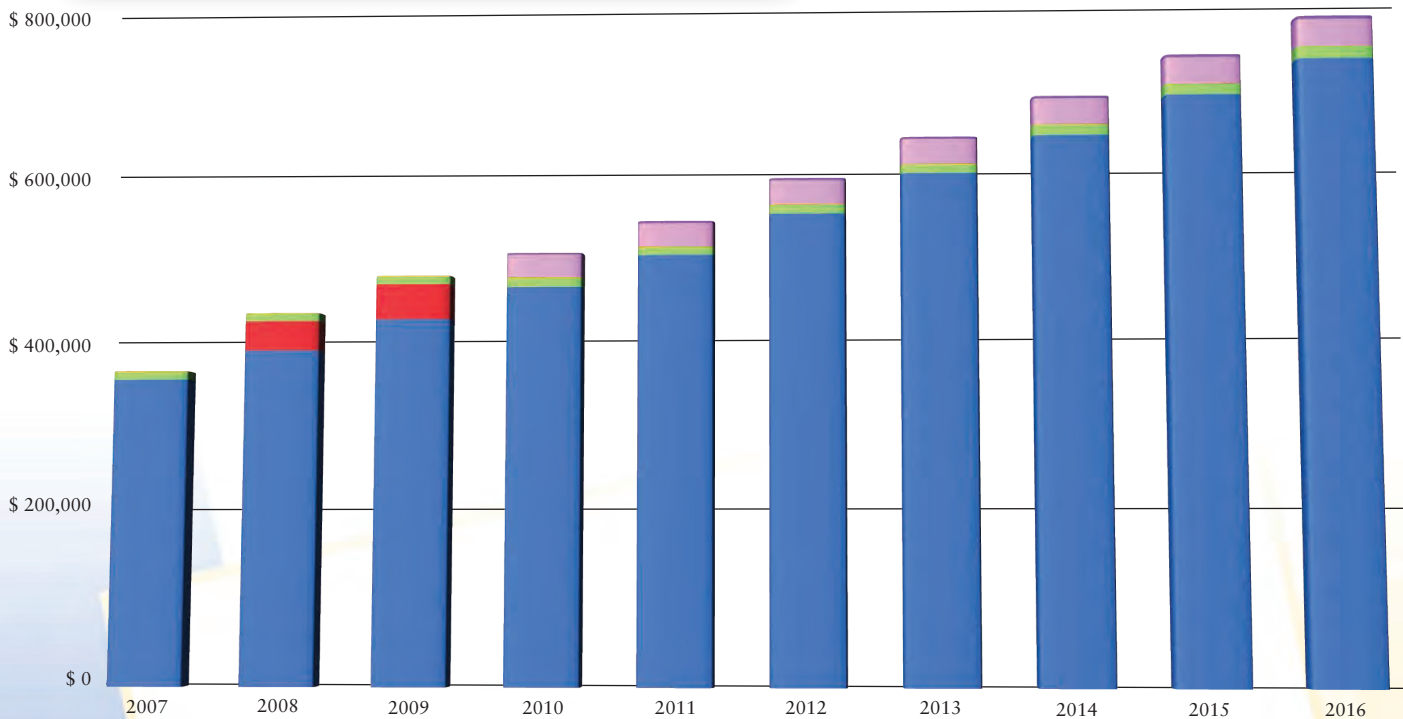
N/A: Detailed information not available.

Schedule and Graph of Benefit Expenses by Type

2007 - 2016
(Dollars in Thousands)

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Pension Trust Fund										
Retirement	\$ 344,321	\$ 376,937	\$ 411,959	\$ 448,099	\$ 484,012	\$ 530,269	\$ 575,633	\$ 618,233	\$ 663,582	\$ 703,949
Health Care ¹	N/A	33,480	39,858	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Withdrawals	8,799	8,359	9,052	10,446	8,874	10,097	9,864	11,730	11,857	13,643
Death Benefits	741	726	661	838	863	788	787	715	524	384
Health Care Fund - County										
Health Care	N/A	N/A	N/A	25,514	26,250	27,089	28,293	29,299	30,107	30,818
Health Care Fund - OCFA										
Health Care	N/A	N/A	N/A	2,158	2,649	2,804	2,550	3,138	3,448	3,867
Total	\$ 353,861	\$ 419,502	\$ 461,530	\$ 487,055	\$ 522,648	\$ 571,047	\$ 617,127	\$ 663,115	\$ 709,518	\$ 752,661

■ Pension Trust Fund Retirement
■ Pension Trust Fund Withdrawals
■ Pension Trust Fund Health Care
■ Pension Trust Fund Death Benefits
■ Health Care Fund - County
■ Health Care Fund - OCFA



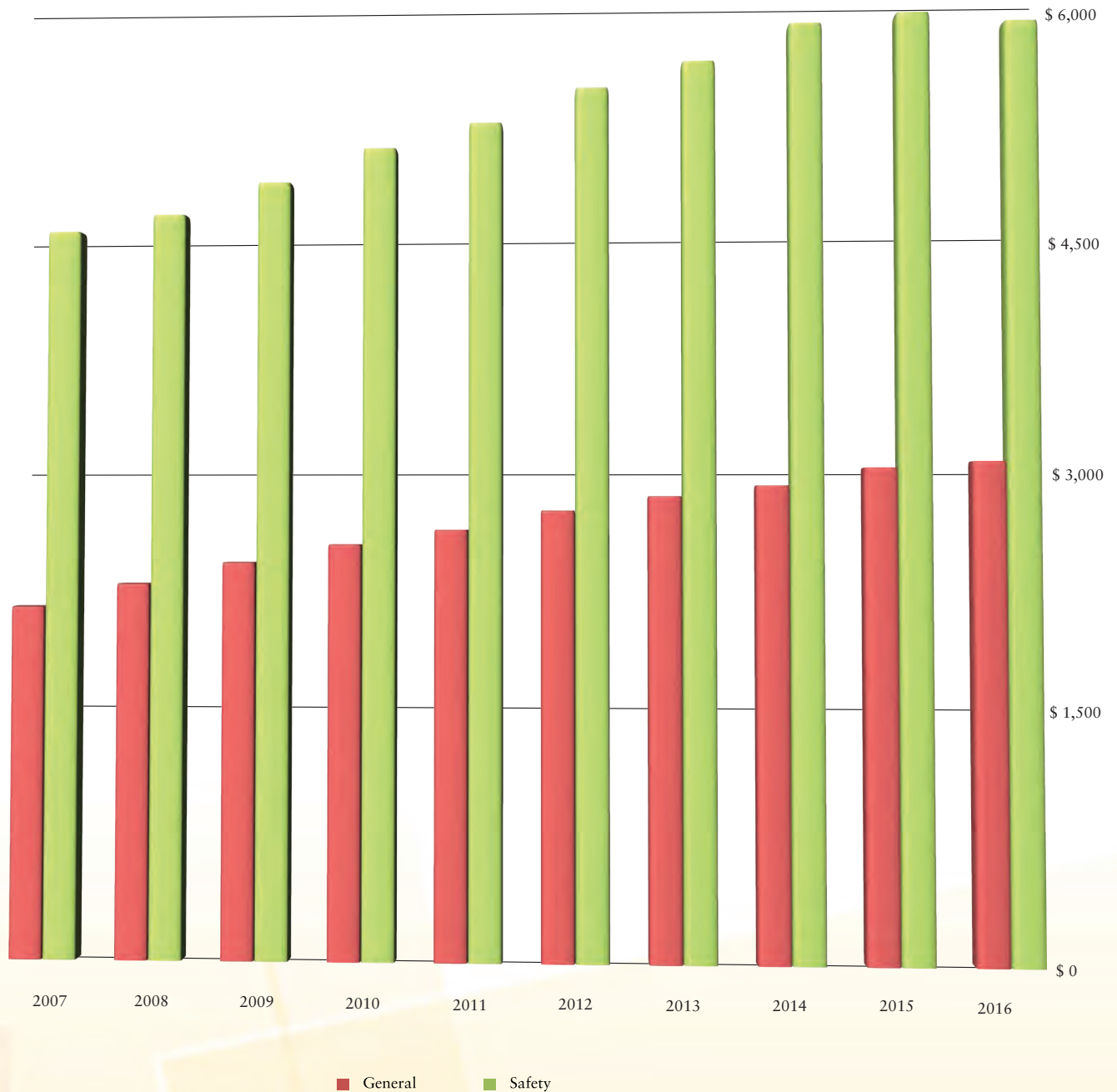
N/A: Detailed information not available.

¹ Health care benefits for 2008 and 2009 encompass all plans, including 401(h), which are reported as trust funds, and 115, which are reported as agency funds.

Schedule and Graph of Average Monthly Pension Check

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General	\$ 2,228	\$ 2,373	\$ 2,508	\$ 2,621	\$ 2,714	\$ 2,836	\$ 2,924	\$ 2,991	\$ 3,103	\$ 3,142
Safety	\$ 4,618	\$ 4,724	\$ 4,926	\$ 5,141	\$ 5,297	\$ 5,516	\$ 5,679	\$ 5,914	\$ 5,974	\$ 5,917



* Year 2006 includes health grant

Source: OCERS' Pension Gold Information System and V3 Pension Administration System Solution

149/485

Schedule of Average Pension Benefit Payments by Years of Service

Service Retirement Effective Dates	Years of Service						
	0-5	5-10	10-15	15-20	20-25	25-30	30 & Over
Period 1/1/07-12/31/07							
Average Monthly Pension Benefits	\$ 368	\$ 817	\$ 1,593	\$ 2,407	\$ 3,366	\$ 5,626	\$ 6,401
Monthly Final Average Salary	\$ 2,213	\$ 4,206	\$ 5,065	\$ 5,239	\$ 5,714	\$ 7,219	\$ 7,223
Number of Retired Members	16	45	110	111	100	145	104
Period 1/1/08-12/31/08							
Average Monthly Pension Benefits	\$ 321	\$ 876	\$ 1,784	\$ 2,451	\$ 3,793	\$ 5,323	\$ 7,687
Monthly Final Average Salary	\$ 2,539	\$ 4,166	\$ 5,512	\$ 5,330	\$ 6,484	\$ 6,864	\$ 8,424
Number of Retired Members	19	31	83	90	78	91	97
Period 1/1/09-12/31/09							
Average Monthly Pension Benefits	\$ 381	\$ 950	\$ 1,821	\$ 2,716	\$ 3,711	\$ 5,852	\$ 7,467
Monthly Final Average Salary	\$ 3,766	\$ 4,228	\$ 5,564	\$ 6,006	\$ 6,417	\$ 7,669	\$ 8,378
Number of Retired Members	26	45	102	87	110	106	124
Period 1/1/10-12/31/10							
Average Monthly Pension Benefits	\$ 587	\$ 986	\$ 1,855	\$ 2,929	\$ 4,046	\$ 5,922	\$ 6,856
Monthly Final Average Salary	\$ 3,666	\$ 4,800	\$ 5,537	\$ 6,291	\$ 6,962	\$ 7,764	\$ 7,741
Number of Retired Members	23	45	108	106	130	127	129
Period 1/1/11-12/31/11							
Average Monthly Pension Benefits	\$ 678	\$ 1,057	\$ 1,689	\$ 3,054	\$ 4,257	\$ 5,910	\$ 6,766
Monthly Final Average Salary	\$ 4,843	\$ 5,825	\$ 5,475	\$ 6,497	\$ 7,314	\$ 7,874	\$ 7,650
Number of Retired Members	16	55	111	86	120	123	155
Period 1/1/12-12/31/12							
Average Monthly Pension Benefits	\$ 647	\$ 1,142	\$ 1,701	\$ 2,957	\$ 4,058	\$ 5,802	\$ 7,015
Monthly Final Average Salary	\$ 5,988	\$ 5,398	\$ 5,672	\$ 6,347	\$ 6,759	\$ 7,702	\$ 7,750
Number of Retired Members	20	71	128	88	187	145	172
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

Source: OCERS' Pension Gold Information System and V3 Pension Administration System Solution

Schedule of Pension Benefit Recipients by Type of Benefit

December 31, 2016

Monthly Benefit	1	2	3	4	5	6	7	Total
\$1-500	596	126	3	5	13	71	14	828
\$501-1,000	1,087	248	-	33	41	88	105	1,602
\$1,001-1,500	1,336	209	13	80	27	86	88	1,839
\$1,501-2,000	1,116	145	100	72	24	55	39	1,551
\$2,001-2,500	1,145	113	238	21	25	44	18	1,604
\$2,501-3,000	950	111	203	20	38	34	12	1,368
\$3,001-3,500	815	63	115	9	12	22	6	1,042
\$3,501-4,000	729	49	105	8	17	9	7	924
\$4,001-4,500	618	32	119	3	11	5	6	794
\$4,501-5,000	623	35	41	-	13	7	4	723
\$5,001-5,500	495	18	41	3	4	3	3	657
\$5,501-6,000	476	12	28	2	3	2	3	526
\$6,001-6,500	405	15	18	-	1	-	-	439
\$6,501-7,000	373	8	21	-	4	-	2	408
Over \$7,000	2,004	19	116	1	12	-	2	2,154
Total	12,768	1,203	1,161	257	245	426	309	16,369

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.

Types of Retirement Benefit

1. Normal Retirement for Age and Service
2. Survivor Payment - Normal Retirement
3. Service-Connected Disability Retirement
4. Nonservice-Connected Disability Retirement
5. Survivor Payment - Disability Retirement
6. DRO (Domestic Relations Order Payees)
7. Active Deaths

Schedule of Pension Benefit Recipients by Option Selected

December 31, 2016

Monthly Benefit	UM	OP1	OP2	OP3	OP4	DB	UMC	O2C	O3C	O4C	SCDC	NSCDC	LSRC	SCLDE	AN	Total
\$1-500	562	1	29	2	2	71	121	10	8	-	1	12	1	-	8	828
\$501-1,000	1,069	1	48	1	1	88	272	14	4	-	19	69	16	-	-	1,602
\$1,001-1,500	1,380	1	44	3	1	86	226	10	1	-	4	74	9	-	-	1,839
\$1,501-2,000	1,246	1	34	5	2	55	158	12	2	1	3	28	4	-	-	1,551
\$2,001-2,500	1,372	-	27	1	4	44	129	11	-	-	1	13	2	-	-	1,604
\$2,501-3,000	1,150	-	17	4	2	34	142	7	1	-	3	8	-	-	-	1,368
\$3,001-3,500	915	1	18	2	3	22	64	12	-	-	1	4	-	-	-	1,042
\$3,501-4,000	820	1	11	3	7	9	65	4	-	-	1	1	2	-	-	924
\$4,001-4,500	717	-	16	4	3	5	44	2	-	-	1	2	-	-	-	794
\$4,501-5,000	638	-	22	-	4	7	46	5	-	-	-	1	-	-	-	723
\$5,001-5,500	525	-	10	1	3	3	20	3	1	-	-	1	-	-	-	567
\$5,501-6,000	493	1	7	-	5	2	14	2	-	-	1	1	-	-	-	526
\$6,001-6,500	410	-	8	-	5	-	13	3	-	-	-	-	-	-	-	439
\$6,501-7,000	387	1	4	-	2	-	11	2	-	-	-	1	-	-	-	408
Over \$7,000	<u>2,087</u>	<u>1</u>	<u>20</u>	<u>2</u>	<u>11</u>	<u>-</u>	<u>27</u>	<u>5</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>2,154</u>
Total	<u>13,771</u>	<u>9</u>	<u>315</u>	<u>28</u>	<u>55</u>	<u>426</u>	<u>1,352</u>	<u>102</u>	<u>17</u>	<u>1</u>	<u>35</u>	<u>215</u>	<u>35</u>	<u>-</u>	<u>8</u>	<u>16,369</u>

Definition of Options:

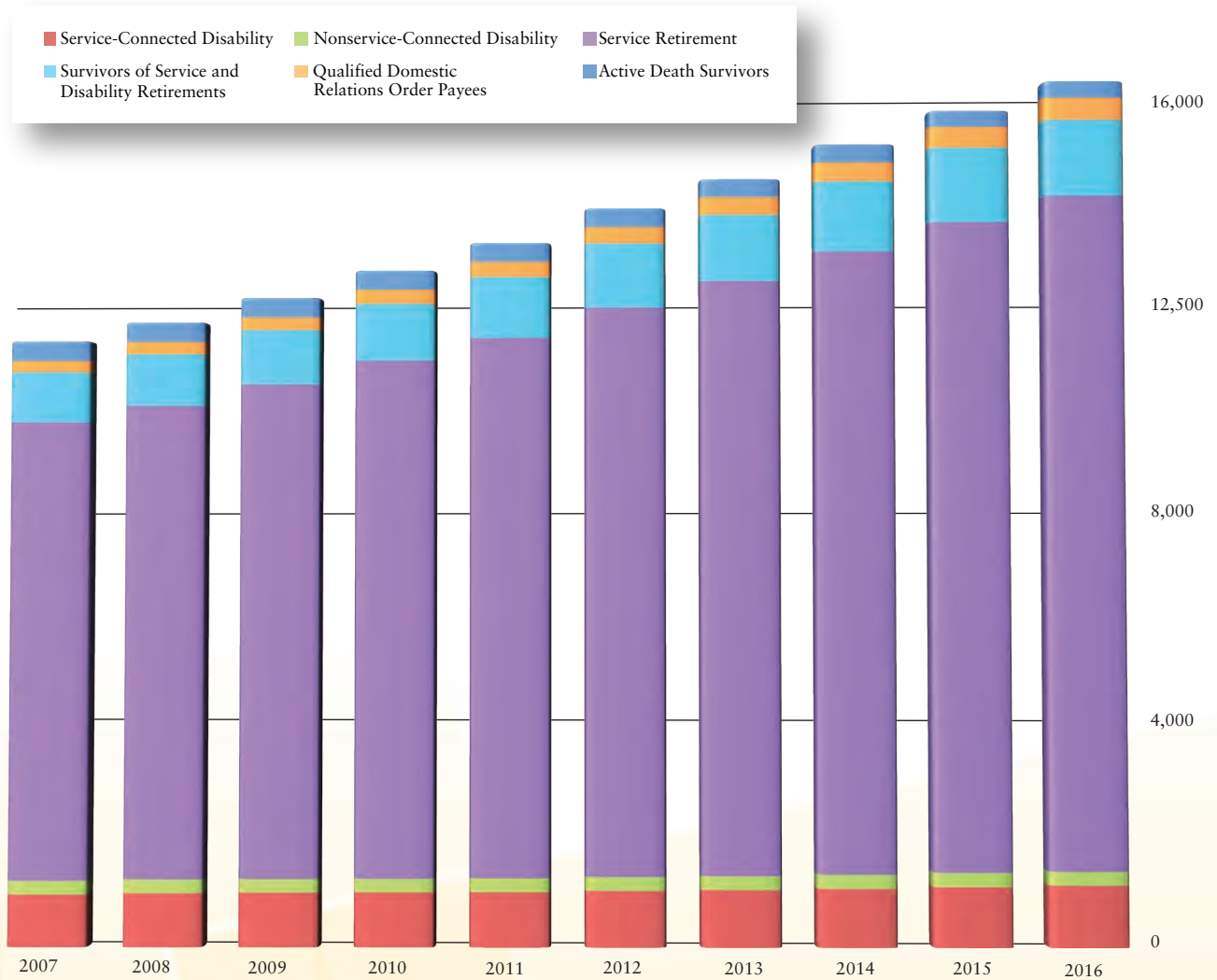
- UM: Unmodified -- Maximum retirement allowance
- OP1: Option 1 -- Reduced retirement allowance, at death of retiree beneficiary receives remaining balance on account
- OP2: Option 2 -- Reduced retirement allowance
- OP3: Option 3 -- Reduced retirement allowance
- OP4: Option 4 -- Reduced retirement 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 Gold Information System and V3 Pension Administration System Solution

Schedule and Graph of Pension Benefit Recipients

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Service-Connected Disability	986	1,009	1,022	1,027	1,032	1,059	1,072	1,098	1,131	1,161
Nonservice-Connected Disability	257	258	252	254	259	260	263	265	271	257
Service Retirement	8,636	8,924	9,322	9,767	10,189	10,739	11,226	11,760	12,278	12,768
Survivors of Service and Disability Retirements	946	978	1,031	1,079	1,160	1,221	1,261	1,336	1,423	1,448
Qualified Domestic Relations Order Payees	221	238	248	272	289	314	340	366	399	426
Active Death Survivors	374	371	368	363	360	354	343	344	308	309
Total	11,420	11,778	12,243	12,762	13,289	13,947	14,505	15,169	15,810	16,369



Source: OCERS' Pension Gold Information System and V3 Pension Administration System Solution

Schedule of Average Retirement Age

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General	60.07	59.82	60.31	60.55	60.65	60.42	61.32	60.79	59.37	59.44
Safety	54.47	54.03	54.98	54.18	54.56	54.33	54.80	54.06	53.51	53.58

Schedule of Average Years of Service at Retirement

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General	20.04	20.44	20.79	20.53	20.82	20.88	20.00	21.13	18.22	19.56
Safety	24.66	23.77	22.63	23.91	25.27	24.41	24.25	24.47	24.18	22.81

Schedule of Beneficiaries Receiving a Pension

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General	1,190	1,214	1,253	1,286	1,352	1,398	1,503	1,457	1,498	1,514
Safety	130	135	146	156	168	177	187	223	233	243
Total	<u>1,320</u>	<u>1,349</u>	<u>1,399</u>	<u>1,442</u>	<u>1,520</u>	<u>1,575</u>	<u>1,690</u>	<u>1,680</u>	<u>1,731</u>	<u>1,757</u>

Schedule of Active and Deferred Members

2007 – 2016

Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
General										
Active	19,803	19,795	18,873	18,155	17,717	17,559	17,637	17,873	17,838	18,072
Deferred	3,353	3,560	3,707	3,905	3,998	3,980	4,205	4,380	4,668	4,940
Safety										
Active	3,815	3,925	3,760	3,587	3,704	3,730	3,731	3,587	3,687	3,674
Deferred	293	321	387	403	408	402	408	409	424	430
Total	<u>27,264</u>	<u>27,601</u>	<u>26,727</u>	<u>26,050</u>	<u>25,827</u>	<u>25,671</u>	<u>25,981</u>	<u>26,249</u>	<u>26,617</u>	<u>27,116</u>

Schedule of Participating Employers Pension Plan

2007 – 2016

Years Ended December 31	Total	Orange County	OCTA	Superior Court	Fire Authority	OC Sanitation District	City of San Juan Capistrano	TCA	All Other Sponsors
2007 Number of Covered Employees	23,618	17,702	2,012	1,845	1,116	598	93	86	166
Percentage to Total System	100%	74.95%	8.52%	7.81%	4.73%	2.53%	0.39%	0.36%	0.70%
2008 Number of Covered Employees	23,720	17,798	2,022	1,812	1,121	615	93	93	166
Percentage to Total System	100%	75.03%	8.52%	7.64%	4.73%	2.59%	0.39%	0.39%	0.70%
2009 Number of Covered Employees	22,633	17,021	1,836	1,711	1,114	611	88	92	160
Percentage to Total System	100%	75.20%	8.11%	7.56%	4.92%	2.70%	0.39%	0.41%	0.71%
2010 Number of Covered Employees	21,742	16,486	1,639	1,635	1,064	594	87	79	158
Percentage to Total System	100%	75.83%	7.54%	7.52%	4.89%	2.73%	0.40%	0.36%	0.73%
2011 Number of Covered Employees	21,421	16,084	1,549	1,638	1,244	596	80	80	150
Percentage to Total System	100%	75.09%	7.23%	7.65%	5.81%	2.78%	0.37%	0.37%	0.70%
2012 Number of Covered Employees	21,289	16,118	1,509	1,569	1,195	596	80	74	148
Percentage to Total System	100%	75.70%	7.09%	7.37%	5.61%	2.80%	0.38%	0.35%	0.70%
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%

Source: OCERS' Pension Gold Information System and V3 Pension Administration System Solution

155/485

History of Actuarial Assumption Rates

For the Period January 1945 - December 2016

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
1/1/1945	2.50%	0.00%
7/1/1962	3.50%	0.00%
12/31/1965	4.00%	0.00%
7/1/1969	4.50%	0.00%
6/30/1970	5.00%	0.00%
8/31/1973	5.75%	0.00%
7/1/1975	6.00%	0.00%
7/1/1981	7.25%	5.00%
7/1/1989	7.50%	5.50%
7/1/1991	8.00%	6.00%
7/1/1996	8.00%	3.50%
7/1/2000	8.00%	5.50%
7/1/2003	7.50%	4.50%
12/31/2004	7.75%	3.50% ¹
12/31/2007	7.75%	3.50% ²
12/31/2011	7.75%	3.50% ³
12/31/2012	7.25%	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



ORANGE COUNTY
CCERS
EMPLOYEES RETIREMENT SYSTEM

Orange County FAIR

The first Orange County Fairs were primarily livestock exhibitions and horse races. The Fair became an annual event and the “carnival of products” was added around the turn of the century. Over the years the Fair grew and was held at various locations until 1949 when the current site, the former Santa Ana Army Air Base, was purchased and made its permanent location. The OC Fair has grown from a small community celebration to a 23-day festival with livestock, carnival rides, product displays, music concerts, fried foods of every variety, and more.



Facility Map



158/485



Glossary

Section VI

Glossary

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.

Comprehensive Annual Financial Report (CAFR)

The CAFR 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.

Glossary of Terms

(Continued)

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.

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).

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

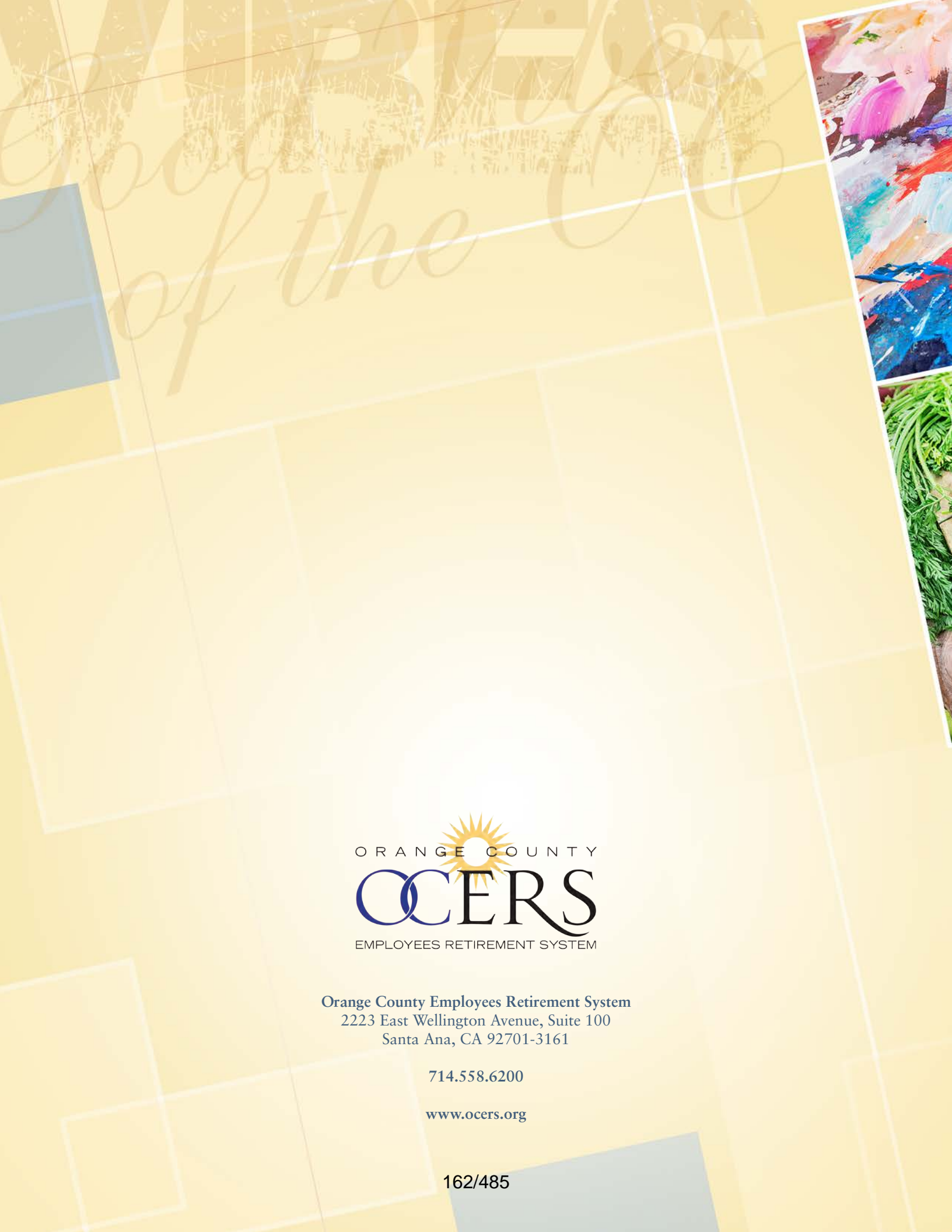
The portion of the actuarial present value of projected benefit payments that is attributed to past periods of member service in conformity with the requirements of GASB Statement No. 67.

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.



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162/485



**Orange County Employees
Retirement System**
Governmental Accounting Standards Board
(GASB) Statement 67
Actuarial Valuation as of December 31, 2016

This report has been prepared at the request of the Board of Retirement to assist in administering the Fund. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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May 31, 2017

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

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement 67 Actuarial Valuation as of December 31, 2016. It contains various information that will need to be disclosed in order to comply with GASB Statement 67.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the System. The census and financial information on which our calculations were based was prepared by OCERS. That assistance is gratefully acknowledged.

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

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

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

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By:

A handwritten signature in black ink, appearing to read "Paul Angelo".

*Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary*

A handwritten signature in black ink, appearing to read "Andy Yeung".

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

AW/bqb

SECTION 1

VALUATION SUMMARY

Purpose	i
General Observations on GASB 67 Actuarial Valuation .	i
Significant Issues in Valuation Year.....	ii
Summary of Key Valuation Results.....	iii
Important Information about Actuarial Valuations	iv

SECTION 2

GASB STATEMENT 67 INFORMATION

EXHIBIT 1 General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan.....	1
EXHIBIT 2 Net Pension Liability	4
EXHIBIT 3 Schedules of Changes in OCERS Net Pension Liability – Last Two Plan Years	7
EXHIBIT 4 Schedule of OCERS’ Contribution – Last Ten Plan Years	8
EXHIBIT 5 Projection of Pension Plan’s Fiduciary Net Position for Use in Calculation of Discount Rate as of December 31, 2016	12

SECTION 1: Valuation Summary for the Orange County Employees Retirement System

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standards Board (GASB) Statement 67 as of December 31, 2016. This valuation is based on:

- The benefit provisions of OCERS, as administered by the Board of Retirement;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of December 31, 2015, provided by OCERS;
- The assets of the Plan as of December 31, 2016, provided by OCERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2016 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2016 valuation.

General Observations on GASB 67 Actuarial Valuation

The following points should be considered when reviewing this GASB 67 report:

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans can still develop and adopt funding policies under current practices.
- 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. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on generally the same basis as OCERS' Actuarial Accrued Liability (AAL) measure for funding. We note that the same is generally true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis.

SECTION 1: Valuation Summary for the Orange County Employees Retirement System

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

- The NPL's measured as of December 31, 2016 and 2015 have been determined by rolling forward the TPL as of December 31, 2015 and 2014, respectively.
- The NPL decreased from \$5,716.6 million as of December 31, 2015 to \$5,191.2 million as of December 31, 2016 primarily as a result of the gains from lower than expected active salary increases and lower than expected retiree COLA increases during 2015 (because liabilities are rolled forward from December 31, 2015 to December 31, 2016, these changes are not reflected until this valuation as of December 31, 2016) as well as a 8.72% return on the market value of assets during 2016 that was greater than the assumed return of 7.25%. Changes in these values during the last two fiscal years ending December 31, 2015 and December 31, 2016 can be found in Exhibit 3.
- The discount rate used to determine the TPL and NPL as of both December 31, 2016 and 2015 was 7.25% following the same assumption used by the System in the pension funding valuations as of the same dates. The detailed calculation of the discount rate of 7.25% used in the calculation of the TPL and NPL as of December 31, 2016 can be found in Exhibit 5 of Section 2. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 4 in Section 2.
- The Plan's Fiduciary Net Position of \$11,657,318,000 as of December 31, 2015 is equal to the final market value of assets in the Pension Trust Fund as of December 31, 2015. This differs from the \$11,548,529,000 market value of assets used in our December 31, 2015 funding valuation because the funding valuation excludes \$108,789,000 in the County Investment Account.

The Plan's Fiduciary Net Position of \$12,809,208,000 as of December 31, 2016 is equal to the final market value of assets in the Pension Trust Fund as of December 31, 2016. This differs from the \$12,657,418,000 market value of assets used in our December 31, 2016 funding valuation because the funding valuation excludes \$117,723,000 in the County Investment Account and \$34,067,000 in O.C. Sanitation District UAAL Deferred Account.

- O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit of \$509,000 given to O.C. Law Library to reflect that their future service enhancement did not increase the UAAL. This credit is also reflected as an "Other" item in Exhibit 3 when we develop the roll forward of the TPL.

SECTION 1: Valuation Summary for the Orange County Employees Retirement System

Summary of Key Valuation Results

	2016	2015
Disclosure elements for plan year ending December 31:		
Service cost ⁽¹⁾	\$427,473,217	\$439,453,529
Total Pension Liability	18,000,424,603	17,373,922,741
Plan's Fiduciary Net Position	12,809,208,000	11,657,318,000
Net Pension Liability	5,191,216,603	5,716,604,741
Schedule of contributions for plan year ending December 31:		
Actuarially determined contributions ⁽²⁾	\$521,447,000	\$502,886,000
Actual contributions ⁽²⁾	567,196,000	571,298,000
Contribution deficiency (excess)	(45,749,000) ⁽³⁾	(68,412,000) ⁽⁴⁾
Demographic data for plan year ending December 31:		
Number of retired members and beneficiaries	16,369	15,810
Number of vested terminated members	5,370	5,091
Number of active members	21,746	21,525
Key assumptions as of December 31:		
Investment rate of return	7.25%	7.25%
Inflation rate	3.00%	3.00%
Projected salary increases ⁽⁵⁾	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%

⁽¹⁾ Please note that Service Cost is always based on the previous year's assumptions, meaning each of these values is based on the assumptions as of December 31, 2015, which were unchanged from the assumptions as of December 31, 2014.

⁽²⁾ Reduced by discount for prepaid contributions, transfers from County Investment Account and O.C. Sanitation District UAAL Deferred Account, if any.

⁽³⁾ Includes additional contributions of \$5,133,000 made by O.C. Fire Authority, \$1,500,000 made by Law Library and \$5,587,000 made by O.C. Sanitation District towards the reduction of their UAAL as well as \$33,529,000 made by O.C. Sanitation District to their UAAL Deferred Account.

⁽⁴⁾ Includes additional contributions of \$18,412,000 made by O.C. Fire Authority and \$50,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.

⁽⁵⁾ Includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotional increases.

SECTION 1: Valuation Summary for the Orange County Employees Retirement System

Important Information about Actuarial Valuations

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

In order to prepare an actuarial valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

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

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

- The valuation is prepared at the request of the Board to assist OCERS in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan’s assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term

SECTION 1: Valuation Summary for the Orange County Employees Retirement System

cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

- If OCERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

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

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 1

General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan

Plan Description

Plan administration. The Orange County Employees Retirement System (OCERS) was established by the County of Orange in 1945. OCERS is administered by the Board of Retirement and governed by the County Employees’ Retirement Law of 1937 (California Government Code Section 31450 et. seq.). OCERS is a cost-sharing multiple employer public employee retirement system whose main function is to provide service retirement, disability, death and survivor benefits to the Safety and General members employed by the County of Orange. OCERS also provides retirement benefits to the employee members of the Orange County Courts, the Orange County Retirement System, two cities and twelve special districts.

The management of OCERS is vested with the Orange County Board of Retirement. The Board consists of nine members and one alternate. The County Treasurer is a member of the Board of Retirement by law. Four members are appointed by the Board of Supervisors, one of whom may be a County Supervisor. Two members are elected by the General membership; one member and one alternate are elected by the Safety membership, one member is elected by the retired members of the System. All members of the Board of Retirement serve terms of three years except for the County Treasurer whose term runs concurrent with the County Treasurer term.

Plan membership. At December 31, 2016, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	16,369
Vested terminated members entitled to, but not yet receiving benefits	5,370
Active members	<u>21,746</u>
Total	43,485

Benefits provided. OCERS provides service retirement, disability, death and survivor benefits to eligible employees. All regular full-time employees of the County of Orange or contracting agencies who work a minimum of 20 hours per week become members of OCERS effective on the first day of employment in an eligible position. There are separate retirement plans for General and Safety member employees. Safety membership is extended to those involved in active law enforcement, fire suppression, and certain probation officers. Any new Safety member who becomes a member on or after January 1, 2013 is designated PEPPRA Safety and is subject to the provisions of California Public Employees’ Pension Reform Act of 2013 (PEPPRA), California Government Code 7522 et seq. All other employees are classified as General members. New General

SECTION 2: GASB Information for Orange County Employees Retirement System

members employed after January 1, 2013 are designated as PEPRA General subject to the provisions of California Government Code 7522 et seq.

General members hired prior to January 1, 2013, including all members of Plan T and Plan W hired on or after January 1, 2013, are eligible to retire once they attain the age of 50 and have acquired ten or more years of retirement service credit. A member with thirty years of service is eligible to retire regardless of age. General members who are first hired on or after January 1, 2013, excluding members of Plan T and Plan W, are eligible to retire once they have attained the age of 52, and have acquired five years of retirement service credit.

Safety members hired prior to January 1, 2013, are eligible to retire once they attain the age of 50 and have acquired ten or more years of retirement service credit. A member with twenty years of service is eligible to retire regardless of age. Safety members who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 50, and have acquired five years of retirement service credit.

All General and Safety members can also retire at the age of 70 regardless of service.

The retirement benefit the member will receive is based upon age at retirement, final average compensation, years of retirement service credit and retirement plan and tier.

General member benefits are calculated pursuant to the provisions of Sections 31676.01, 31676.1, 31676.12, 31676.16, 31676.18 or 31676.19. For Section 31676.01, the monthly allowance is equal to 1/90th of final compensation times years of accrued retirement service credit times age factor from that Section. For Section 31676.1, the monthly allowance is equal to 1/60th of final compensation times years of accrued retirement service credit times age factor from that Section. For Sections 31676.12, 31676.16, 31676.18 or 31676.19, the monthly allowance is equal to 1/50th of final compensation times years of accrued retirement service credit times age factor from the corresponding Section. General member benefits for those who are first hired on or after January 1, 2013, excluding members of Plan T and Plan W, are calculated pursuant to the provision of California Government Code Section 7522.20(a). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.20(a).

Safety member benefits are calculated pursuant to the provisions of California Government Code Sections 31664.1 and 31664.2. The monthly allowance is equal to 3% of final compensation times years of accrued retirement service credit times age factor from the corresponding Section. Safety member benefits for those who are first hired on or after January 1, 2013, are calculated pursuant to the provision of California Government Code Section 7522.25(d). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.25(d).

SECTION 2: GASB Information for Orange County Employees Retirement System

For members with membership dates before January 1, 2013, including all members of Plan T and Plan W hired on or after January 1, 2013, the maximum monthly retirement allowance is 100% of final compensation. There is no maximum for members with membership dates on or after January 1, 2013, excluding members of Plan T and Plan W.

Final average compensation consists of the highest 12 consecutive months for a General Tier 1 or Safety Tier 1 member and the highest 36 consecutive months for a General Tier 2, General PEPRA, Safety Tier 2 or Safety PEPRA member.

The member may elect an unmodified retirement allowance, or choose an optional retirement allowance. The unmodified retirement allowance provides the highest monthly benefit and a 60% continuance to an eligible surviving spouse or domestic partner. An eligible surviving spouse or domestic partner is one 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. There are four optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the unmodified retirement allowance in order to allow the member the ability to provide certain benefits to a surviving spouse, domestic partner, or named beneficiary having an insurable interest in the life of the member.

OCERS provides an annual cost-of-living benefit to all retirees. The cost-of-living adjustment, based upon the Consumer Price Index for All Urban Consumers for the Los Angeles-Riverside-Orange County Area, is capped at 3.0%.

The County of Orange and contracting agencies contribute to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Retirement. Employer contribution rates are adopted annually based upon recommendations received from OCERS' actuary after the completion of the annual actuarial valuation. The average employer contribution rate for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 (based on the December 31, 2013 valuation) was 39.05%^{1,2} of compensation. The average employer contribution rate for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 (based on the December 31, 2014 valuation) was 37.41%^{1,2} of compensation.

All members are required to make contributions to OCERS regardless of the retirement plan or tier in which they are included. The average member contribution rate for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 (based on the December 31, 2013 valuation) was 12.77%² of compensation. The average member contribution rate for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 (based on the December 31, 2014 valuation) was 12.42%² of compensation.

¹ These contribution rates are higher than the composite rate for 2016 as shown on page 8 of this report because these rates do not reflect the shift in payroll to the lower cost plans from the valuation date to the date of rate implementation.

² It should be noted that the contribution rates provided above have not been adjusted to reflect any pick-ups or reverse pick-ups.

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 2

Net Pension Liability

The components of the Net Pension Liability as follows:

	December 31, 2016	December 31, 2015
Total Pension Liability	\$18,000,424,603	\$17,373,922,741
Plan's Fiduciary Net Position	<u>(12,809,208,000)</u>	<u>(11,657,318,000)</u>
Net Pension Liability	\$5,191,216,603	\$5,716,604,741
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	71.16%	67.10%

The Net Pension Liability (NPL) was measured as of December 31, 2016 and 2015. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement date while the Total Pension Liability (TPL) was determined based upon rolling forward the TPL from actuarial valuations as of December 31, 2015 and 2014, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of December 31, 2016 and 2015 are the same as those used in the OCERS actuarial valuation as of December 31, 2016 and 2015, respectively.

Actuarial assumptions. The TPL's as of December 31, 2016 and 2015 were determined by actuarial valuations as of December 31, 2015 and 2014, respectively. The actuarial assumptions used were based on the results of an experience study for the period from January 1, 2011 through December 31, 2013. They are the same assumptions used in the December 31, 2016 funding valuation for OCERS. The assumptions are outlined on page 10 of this report. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%, vary by service, including inflation
Investment rate of return	7.25%, net of pension plan investment expense, including inflation
Other assumptions	See analysis of actuarial experience during the period January 1, 2011 through December 31, 2013

SECTION 2: GASB Information for Orange County Employees Retirement System

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These 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 deducting 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, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap U.S. Equity	14.90%	5.92%
Small/Mid Cap U.S. Equity	2.73%	6.49%
Developed International Equity	10.88%	6.90%
Emerging International Equity	6.49%	8.34%
Core Bonds	10.00%	0.73%
Global Bonds	2.00%	0.30%
Emerging Market Debt	3.00%	4.00%
Real Estate	10.00%	4.96%
Diversified Credit (US Credit)	8.00%	4.97%
Diversified Credit (Non-US Credit)	2.00%	6.76%
Hedge Funds	7.00%	4.13%
GTAA	7.00%	4.22%
Real Return	10.00%	5.86%
Private Equity	<u>6.00%</u>	9.60%
Total	100.00%	

Discount rate: The discount rate used to measure the TPL was 7.25% as of both December 31, 2016 and 2015. 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

SECTION 2: GASB Information for Orange County Employees Retirement System

beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both December 31, 2016 and 2015.

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the NPL as of December 31, 2016, calculated using the discount rate of 7.25%, as well as what the NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate:

	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
OCERS's Net Pension Liability as of December 31, 2016	\$7,669,194,567	\$5,191,216,603	\$3,151,808,889

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 3

Schedule of Changes in OCERS Net Pension Liability – Last Two Plan Years

	2016	2015
Total Pension Liability		
1. Service cost	\$427,473,217	\$439,453,529
2. Interest	1,241,079,174	1,197,308,212
3. Change of benefit terms	0	0
4. Differences between expected and actual experience	(323,565,741)	(205,462,673)
5. Changes of assumptions	0	0
6. Benefit payments, including refunds of member contributions	(717,976,000)	(675,963,000)
7. Transfer of members among Rate Groups	0	0
8. Other ⁽¹⁾	<u>(508,788)</u>	<u>0</u>
9. Net change in Total Pension Liability	\$626,501,862	\$755,336,068
10. Total Pension Liability – beginning	<u>17,373,922,741</u>	<u>16,618,586,673</u>
11. Total Pension Liability – ending	<u>\$18,000,424,603</u>	<u>\$17,373,922,741</u>
Plan Fiduciary Net Position		
12. Contributions – employer ⁽²⁾	\$567,196,000	\$571,298,000
13. Contributions – plan members	258,297,000	249,271,000
14. Net investment income	1,061,243,000	(10,873,000)
15. Benefit payments, including refunds of member contributions	(717,976,000)	(675,963,000)
16. Transfer of members among Rate Groups	0	0
17. Administrative expense	(16,870,000)	(12,521,000)
18. Other	<u>0</u>	<u>0</u>
19. Net change in Plan Fiduciary Net Position	\$1,151,890,000	\$121,212,000
20. Plan Fiduciary Net Position – beginning	<u>11,657,318,000</u>	<u>11,536,106,000</u>
21. Plan Fiduciary Net Position – ending	\$12,809,208,000	\$11,657,318,000
22. Net Pension Liability – ending (11) – (21)	<u>\$5,191,216,603</u>	<u>\$5,716,604,741</u>
23. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	71.16%	67.10%
24. Covered payroll ⁽³⁾	\$1,602,675,000	\$1,521,036,000
25. Plan Net Pension Liability as percentage of covered payroll	323.91%	375.84%

⁽¹⁾ O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit of \$509,000 given to O.C. 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⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 4

Schedule of OCERS' Contributions – Last Ten Plan Years

Year Ended December 31	Actuarially Determined Contributions⁽¹⁾⁽²⁾	Contributions in Relation to the Actuarially Determined Contributions⁽¹⁾⁽²⁾	Contribution Deficiency (Excess)	Covered Payroll⁽³⁾	Contributions as a Percentage of Covered Payroll⁽¹⁾⁽²⁾
2007	\$326,736,000	\$326,736,000	\$0	\$1,410,559,000	23.16%
2008	359,673,000	360,365,000 ⁽⁴⁾	(692,000)	1,526,113,000	23.61%
2009	337,496,000	338,387,000 ⁽⁵⁾	(891,000)	1,598,888,000	21.16%
2010	372,437,000	372,437,000	0	1,511,569,000	24.64%
2011	387,585,000	387,585,000	0	1,498,914,000	25.86%
2012	406,521,000	406,521,000	0	1,497,475,000	27.15%
2013	426,020,000	427,095,000 ⁽⁶⁾	(1,075,000)	1,494,745,000	28.57%
2014	476,320,000	625,520,000 ⁽⁷⁾	(149,200,000)	1,513,206,000	41.34%
2015	502,886,000	571,298,000 ⁽⁸⁾	(68,412,000)	1,521,036,000	37.56%
2016	521,447,000	567,196,000 ⁽⁹⁾	(45,749,000)	1,602,675,000	35.40%

⁽¹⁾ Reduced by transfers from County Investment Account (funded by pension obligation proceeds held by OCERS). Those transfers are as follows:

<i>Plan Year Ended December 31</i>	<i>Transfers from County Investment Account</i>	<i>Plan Year Ended December 31</i>	<i>Transfers from County Investment Account</i>
2007	\$0	2012	\$5,500,000
2008	0	2013	5,000,000
2009	34,900,000	2014	5,000,000
2010	11,000,000	2015	0
2011	11,000,000	2016	0

⁽²⁾ Reduced by discount for prepaid contributions.

⁽³⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

⁽⁴⁾ Includes additional contributions of \$692,000 made by O.C. Fire Authority towards the reduction of their UAAL.

⁽⁵⁾ Includes additional contributions of \$891,000 made by O.C. Fire Authority towards the reduction of their UAAL.

⁽⁶⁾ Includes additional contributions of \$1,075,000 made by O.C. Fire Authority towards the reduction of their UAAL.

⁽⁷⁾ Includes additional contributions of \$1,663,000 made by O.C. Cemetery District, \$22,537,000 made by O.C. Fire Authority and \$125,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.

SECTION 2: GASB Information for Orange County Employees Retirement System

⁽⁸⁾ *Includes additional contributions of \$18,412,000 made by O.C. Fire Authority and \$50,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.*

⁽⁹⁾ *Includes additional contributions of \$5,133,000 made by O.C. Fire Authority, \$1,500,000 made by Law Library and \$5,587,000 made by O.C. Sanitation District towards the reduction of their UAAL as well as \$33,529,000 made by O.C. Sanitation District to their UAAL Deferred Account.*

SECTION 2: GASB Information for Orange County Employees Retirement System

Notes to Exhibit 4

**Methods and assumptions used to establish
“actuarially determined contribution” rates:**

Valuation date	Actuarially determined contribution rates for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 are calculated based on the December 31, 2013 valuation. Actuarially determined contribution rates for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 are calculated based on the December 31, 2014 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	<p>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.</p> <p>For valuation purposes, the Valuation Value of Assets is reduced by the value of the non-valuation reserves.</p>

SECTION 2: GASB Information for Orange County Employees Retirement System

Notes to Exhibit 4 – continued

Actuarial assumptions:

December 31, 2013 valuation

<i>Investment rate of return</i>	7.25%, net of pension plan investment expense, including inflation
<i>Inflation rate</i>	3.25%
<i>Real across-the-board salary increase</i>	0.50%
<i>Projected salary increases</i>	General: 4.75% to 13.75% and Safety: 4.75% to 17.75%, vary by service, including inflation
<i>Cost of living adjustments</i>	3.00% of retirement income
<i>Other assumptions</i>	Same as those used in the December 31, 2013 funding actuarial valuation

December 31, 2014 valuation

<i>Investment rate of return</i>	7.25%, net of pension plan investment expense, including inflation
<i>Inflation rate</i>	3.00%
<i>Real across-the-board salary increase</i>	0.50%
<i>Projected salary increases</i>	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%, vary by service, including inflation
<i>Cost of living adjustments</i>	3.00% of retirement income
<i>Other assumptions</i>	Same as those used in the December 31, 2014 funding actuarial valuation

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 5

Projection of Pension Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of December 31, 2016 (\$ in millions)

Year Beginning January 1	Projected Beginning Plan's Fiduciary Net Position (a)	Projected Total Contributions * (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan's Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2016	\$11,657	\$825	\$718	\$17	\$1,061	\$12,809
2017	12,809	789	808	19	927	13,699
2018	13,699	806	863	20	990	14,612
2019	14,612	829	922	21	1,055	15,554
2020	15,554	849	982	23	1,122	16,520
2021	16,520	852	1,043	24	1,190	17,496
2022	17,496	860	1,108	25	1,259	18,482
2023	18,482	863	1,177	27	1,328	19,470
2024	19,470	870	1,247	28	1,397	20,462
2025	20,462	878	1,318	30	1,467	21,460
2041	30,586	157	2,442	44	2,135	30,391
2042	30,391	147	2,489	44	2,118	30,123
2043	30,123	139	2,525	44	2,097	29,791
2044	29,791	133	2,553	43	2,072	29,399
2045	29,399	126	2,577	43	2,043	28,949
2090	24,993	45	62	36	1,810	26,750
2091	26,750	46	48	39	1,938	28,648
2092	28,648	48	37	41	2,076	30,693
2093	30,693	50	29	44	2,224	32,895
2094	32,895	52	22	48	2,384	35,262
2131	437,709	633	0 **	633	31,734	469,442
2132	469,442					
2132 Discounted Value:	150 ***					

* Of all the projected total contributions, only the first year's (i.e., 2016) contribution has been reduced by discount for prepaid contributions, transfers from County Investment Account and O.C. Sanitation District UAAL Deferred Account, if any.

** Less than \$1 million, when rounded.

*** \$469,442 million when discounted with interest at the rate of 7.25% per annum has a value of \$150 million as of December 31, 2016. Of this amount, about \$117 million is the balance available in the County Investment Account and \$34 million is the O.C. Sanitation District UAAL Deferred Account as of December 31, 2016.

SECTION 2: GASB Information for Orange County Employees Retirement System

EXHIBIT 5

Projection of Pension Plan's Fiduciary Net Position for Use in Calculation of Discount Rate as of December 31, 2016 (\$ in millions) – continued

Notes:

- (1) Amounts may not total exactly due to rounding.
- (2) Amounts shown in the year beginning January 1, 2016 row are actual amounts, based on the financial statements provided by OCERS.
- (3) Years 2026-2040, 2046-2089, and 2095-2130 have been omitted from this table.
- (4) Column (a): Except for the "discounted value" shown for 2132, all of the projected beginning Plan's Fiduciary Net Position amounts shown have not been adjusted for the time value of money.
- (5) Column (b): Projected total contributions include member and employer normal cost rates applied to closed group projected payroll (based on covered active members as of December 31, 2015), plus employer contributions to the Unfunded Actuarial Accrued Liability. Contributions are assumed to occur halfway through the year, on average.
- (6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of December 31, 2015. The projected benefit payments reflect the cost of living increase assumptions used in the December 31, 2015 valuation report. The 2016 benefit payments have been increased by the balance of the Medicare Insurance Reserve as of December 31, 2016.
- (7) Column (d): Projected administrative expenses are calculated as approximately 0.14% of the projected beginning Plan's Fiduciary Net Position amount. The 0.14% portion was based on the actual calendar year 2016 administrative expenses (unaudited) as a percentage of the actual beginning Plan's Fiduciary Net Position as of January 1, 2016. Administrative expenses are assumed to occur halfway through the year, on average.
- (8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.25% per annum.
- (9) As illustrated in this Exhibit, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.25% per annum was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2016 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

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June 1, 2017

To the Audit Committee of the
Orange County Employees Retirement System
Santa Ana, California

We have audited the financial statements of the System for the year ended December 31, 2016. Professional standards require that we provide you with information about our responsibilities under generally accepted auditing standards and *Government Auditing Standards*, as well as certain information related to the planned scope and timing of our audit. We have communicated such information in our meeting with the Audit Committee on March 29, 2017. Professional standards also require that we communicate to you the following information related to our audit.

Significant Audit Findings

Qualitative Aspects of Accounting Practices

Management is responsible for the selection and use of appropriate accounting policies. The significant accounting policies used by the System are described in Note 2 to the basic financial statements. As discussed in Note 2 to the basic financial statements, the System adopted the provisions of Governmental Accounting Standards Board (GASB) Statement No. 72, *Fair Value Measurement and Application* for the year ended December 31, 2016. We noted no transactions entered into by the System during the year for which there is a lack of authoritative guidance or consensus. All significant transactions have been recognized in the financial statements in the proper period.

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

- Actuarial valuations of the total pension liability and actuarially determined contributions for the Defined Benefit Pension Plan.

The actuarial pension data contained in Note 9 to the basic financial statements and required supplementary information is based on actuarial calculations performed by the System's actuary in accordance with the parameters set forth in GASB Statement No. 67, *Financial Reporting for Pension Plans – an amendment of GASB Statement No. 25*. The actuarial pension valuation is very sensitive to the underlying assumptions, including the discount rate.

- Actuarial valuations of other postemployment benefit assets, liabilities and annual required contributions for the Orange County Fire Authority Health Care Plan.

The actuarial data for the Orange County Fire Authority (the Authority) Health Care Plan contained in Note 10 to the basic financial statements and required supplementary information is based on actuarial calculations performed by the Authority's third-party actuary in accordance with the parameters set forth in GASB Statement No. 43, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*.

- Fair value of real estate, private equity, real return, absolute return and diversified credit investments, including derivative investments, and related income.

Directly held real estate investment fair values are based on recent estimates provided by independent third-party appraisers. Commingled fund real estate investment fair values are based on net asset value per share of the investment provided by the investment management firms or general partners. The fair value of private equity, real return and absolute return investments that are not publicly traded were determined by management, in consultation with the general partner and valuation specialists, based on the net asset value per share (or its equivalent) of OCERS' ownership interest in partner's capital. The fair values of diversified credit investments structured as partnerships are based on net asset value per share of the investment. The fair values for diversified credit investments comprised of mortgages, direct lending and energy-based credit funds are based on the general partner's estimates considering factors such as market quotes, earnings-multiple analysis or discounted cash flow analysis.

We evaluated the key factors and assumptions used to develop these estimates in determining that they are reasonable in relation to the financial statements taken as a whole.

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

- Participating employers' net pension liability, which is based on the total pension liability determined in the actuarial valuation of December 31, 2015, and rolled forward to December 31, 2016, and the related sensitivity analysis.
- The schedule of funded status for the Orange County Fire Authority Health Care Plan as of July 1, 2016, the most recent actuarial valuation.

As described in Notes 9 and 10 to the basic financial statements, the actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future, and these amounts and assumptions are subject to continual revision as actual results are compared to past expectations.

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

Difficulties Encountered in Performing the Audit

We encountered no significant difficulties in dealing with management in performing and completing our audit.

Corrected and Uncorrected Misstatements

Professional standards require us to accumulate all known and likely misstatements identified during the audit, other than those that are clearly trivial, and communicate them to the appropriate level of management. There were no such misstatements identified other than those that are clearly trivial.

Disagreements with Management

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

Management Representations

We have requested certain representations from management that are included in the management representation letter dated June 1, 2017.

Management Consultations with Other Independent Accountants

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

Other Audit Findings or Issues

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

Other Matters

We applied certain limited procedures to Management's Discussion and Analysis, the Schedule of Changes in Net Pension Liability of Participating Employers, Schedule of Investment Returns, Schedule of Employer Contributions, Schedule of Funding Progress – OPEB Plan Orange County Fire Authority, the Schedule of Employer Contributions – OPEB Plan Orange County Fire Authority, as listed in the table of contents, which are required supplementary information (RSI) that supplements the basic financial statements. Our procedures consisted of inquiries of management regarding the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We did not audit the RSI and do not express an opinion or provide any assurance on the RSI.

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

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

Restriction on Use

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

Very truly yours,

Macias Gini & O'Connell LLP



**Independent Auditor's Report on Internal Control Over
Financial Reporting and on Compliance and Other Matters
Based on an Audit of Financial Statements Performed
in Accordance With *Government Auditing Standards***

To the Board of Retirement of the
Orange County Employees Retirement System
Santa Ana, California

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of the Orange County Employees Retirement System (the System) as of and for the year ended December 31, 2016, and the related notes to the financial statements, which collectively comprise the System's basic financial statements, and have issued our report thereon dated June 1, 2017. Our report contained an emphasis-of-matter paragraph that describes the System's adoption of the provisions of Governmental Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application* for the year ended December 31, 2016. Our report also contained emphasis-of-matter paragraphs that describe the System's net pension liability as of December 31, 2016, and the actuarial funded status of the Orange County Fire Authority health care plan as of July 1, 2016.

Internal Control over Financial Reporting

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

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

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

Compliance and Other Matters

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

Purpose of this Report

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

A handwritten signature in black ink that reads "Macias Gini E O'Connell LPA". The signature is written in a cursive, slightly slanted style.

Newport Beach, California
June 1, 2017

B

Memorandum

DATE: June 1, 2017
TO: Audit Committee Members
FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations; Tracy Bowman, Director of Finance
SUBJECT: GASB 68 Valuation and Audit Report

Recommendations

1. Approve OCERS' audited Schedule of Allocated Pension Amounts by Employer as of and for the Year Ended December 31, 2016.
2. Approve the Governmental Accounting Standards Board (GASB) Statement 68 Actuarial Valuation as of December 31, 2016 for distribution to employers.

Background/Discussion

GASB Statement No. 68, *Accounting and Financial Reporting for Pensions – an Amendment of GASB Statement No. 27*, requires employers to record their proportionate share of the total pension liability less the plan's fiduciary net position (i.e., net pension liability) on the face of their financial statements. A proportionate share of the total pension expense and collective deferred inflows of resources and deferred outflows of resources of the pension trust fund at OCERS will also be shown on the face of each employer's financial statements.

Presentation

Staff will present a summary of informational highlights from the attached Governmental Accounting Standards Board (GASB) Statement 68 Actuarial Valuation Based on December 31, 2016 Measurement Date for Employer Reporting as of June 30, 2017 and the Schedule of Allocated Pension Amounts by Employer (see attached slide presentation).

Net Pension Liability vs. Unfunded Actuarial Accrued Liability

The attached Governmental Accounting Standards Board (GASB) Statement 68 Actuarial Valuation Based on December 31, 2016 Measurement Date for Employer Reporting as of June 30, 2017 is used for financial reporting purposes and was prepared by Segal Consulting. This report is *separate and distinct from the funding actuarial valuation*. The net pension liability (NPL) shown in Exhibit 2 of the GASB 68 valuation as of December 31, 2016 is \$5,191,216,603 compared to the unfunded actuarial accrued liability (UAAL) of \$4,830,483,000 in the funding actuarial valuation as of December 31, 2016. The differences between the NPL and the UAAL are a direct result of the different liability and asset values used in measuring these amounts. The primary differences can be attributed to NPL being calculated using the Plan's current market value of assets, including the proceeds available in the County Investment Account, and the UAAL is calculated by adjusting the market value of assets for asset smoothing per OCERS Actuarial Funding Policy and excluding the County Investment Account reserves. Differences are also created by timing differences of when actuarial gains and losses are recognized in the liability calculation for financial reporting purposes compared to funding valuation purposes.

Memorandum

Schedule of Allocated Pension Amounts by Employer

The attached draft Schedule of Allocated Pension Amounts by Employer as of and for the Year Ended December 31, 2016 and related notes were audited by OCERS' independent auditor, Macias Gini & O'Connell LLP (MGO). It is anticipated that a copy of the final report with the unmodified (clean) audit opinion from MGO will be available for distribution to the Audit Committee by June 7, 2017. This schedule can also be found in Appendix B of the GASB 68 valuation.

The proportionate share allocation is based on rate groups. All rate groups, with the exception of rate groups 1 and 2, have only one active employer, so all of the NPL for those rate groups is allocated to that employer. For rate groups 1 and 2, the NPL is allocated based on the actual employer contributions within the rate group. If an employer participates in several rate groups, the employer's total proportionate share of the NPL is the sum of its allocated NPL from each rate group.

The audit report and GASB 68 valuation, once approved by the Audit Committee and Board of Retirement, will be made available to participating employers with the following disclaimer:

To complete its financial statements, each participating employer will need to record its own proportionate share of collective pension amounts for all benefits provided through OCERS' cost-sharing multiple-employer defined benefit pension plan. OCERS has provided a schedule of pension amounts by employer, prepared by independent actuary Segal Consulting, in accordance with the methodology set forth in GASB 68, based on data maintained and provided by OCERS. This schedule has been audited by independent auditor, MGO. Please note that OCERS is not responsible for employers' compliance with the requirements of GASB 68. Employers are solely responsible for accurately presenting their financial statements within the requirements of GASB 68.

Submitted by:



Tracy Bowman
Director of Finance

Approved by:



Brenda Shott
Asst. CEO, Finance & Internal Operations

GASB 68: Audit & Valuation



June 9, 2017

Agenda

1. Overview of what is needed from Committee/Board
2. GASB 68 vs Annual Funding Valuation
3. Audit Report
4. Pension Amounts & Proportionate Share
5. Reconcile Reporting vs Funding Amounts
6. Other Information in GASB 68 Reporting
7. Update on inactive employers

Overview

1. Approve Audit Report on GASB 68 Schedules
2. Approve distribution of GASB 68 Actuarial Valuation to plan sponsors
 - Information needed by employers for their annual financial reporting
 - **Reports are prepared in accordance with GASB requirements – no actionable decisions to be made**
 - Committee Charter requires approval of all audit reports

Pension Information



Pension
Funding

Pension
Accounting &
Reporting

GASB 68

DISTINCT SEPERATION between financial reporting information and what is used for funding the system and setting contribution rates

- Net Pension Liability (not the same as UAAL)
- Pension Expense (not the same as contributions)
- Deferred Outflows and Inflows (different amortization schedule than what is used for funding)
- Proportionate Share Calculation (exceptions)

Audit Report on GASB 68 Schedules

MGO issued “clean opinion”

- Audited schedules that include amounts and information required for GASB 68 reporting for each employer
- Allows for employer’s auditors to rely on MGO’s work avoiding multiple audits of OCERS information
- Schedule was prepared by Segal and is included in Appendix B of the full GASB 68 valuation (Section 3, pg. 128)
- Footnotes in report provide additional information about schedules

Schedule of Pension Amounts

All Employers

	2016	2015
Deferred Outflows of Resources		
Differences Between Expected and Actual Experience	\$3,792,676	\$2,849,306
Net Diff – Proj vs Actual Invest Earnings	\$627,991,311	\$856,878,707
Changes of Assumptions	\$89,986,612	\$118,284,287
Changes in Proportion	\$21,323,498	\$11,462,838
Total Deferred Outflows of Resources	\$743,094,097	\$989,475,138
Deferred Inflow of Resources		
Differences Between Expected and Actual Experience	\$579,008,315	\$395,853,967
Net Diff – Proj vs Actual Invest Earnings	\$172,554,667	\$2,045,437
Changes of Assumptions	\$155,711,355	\$204,677,189
Changes in Proportion	\$21,323,498	\$11,462,838
Total Deferred Inflows of Resources	\$928,597,835	\$614,039,431
Net Pension Liability	\$5,191,216,603	\$5,716,604,741
Pension Expense	\$600,371,307	\$669,599,955

Proportionate Share

GASB requires “proportionate share” of the pension amounts to be recorded in participating employers financial statements.

How is Proportionate Share Calculated?

- Rate Groups = collection of members employed by plan sponsors who offer similar benefit plans (liabilities and assets)
- Rate Groups with multiple employers (Rate Groups 1 & 2 only) use contributions made during year as basis for allocating pension amounts to each employer within the Rate Group
 - Exceptions: Rate Group 1 –Pension Amounts for UCI, OCDE and Vector segregated in accordance with Declining Payroll and Terminated Employer Policies

Example of Proportionate Share

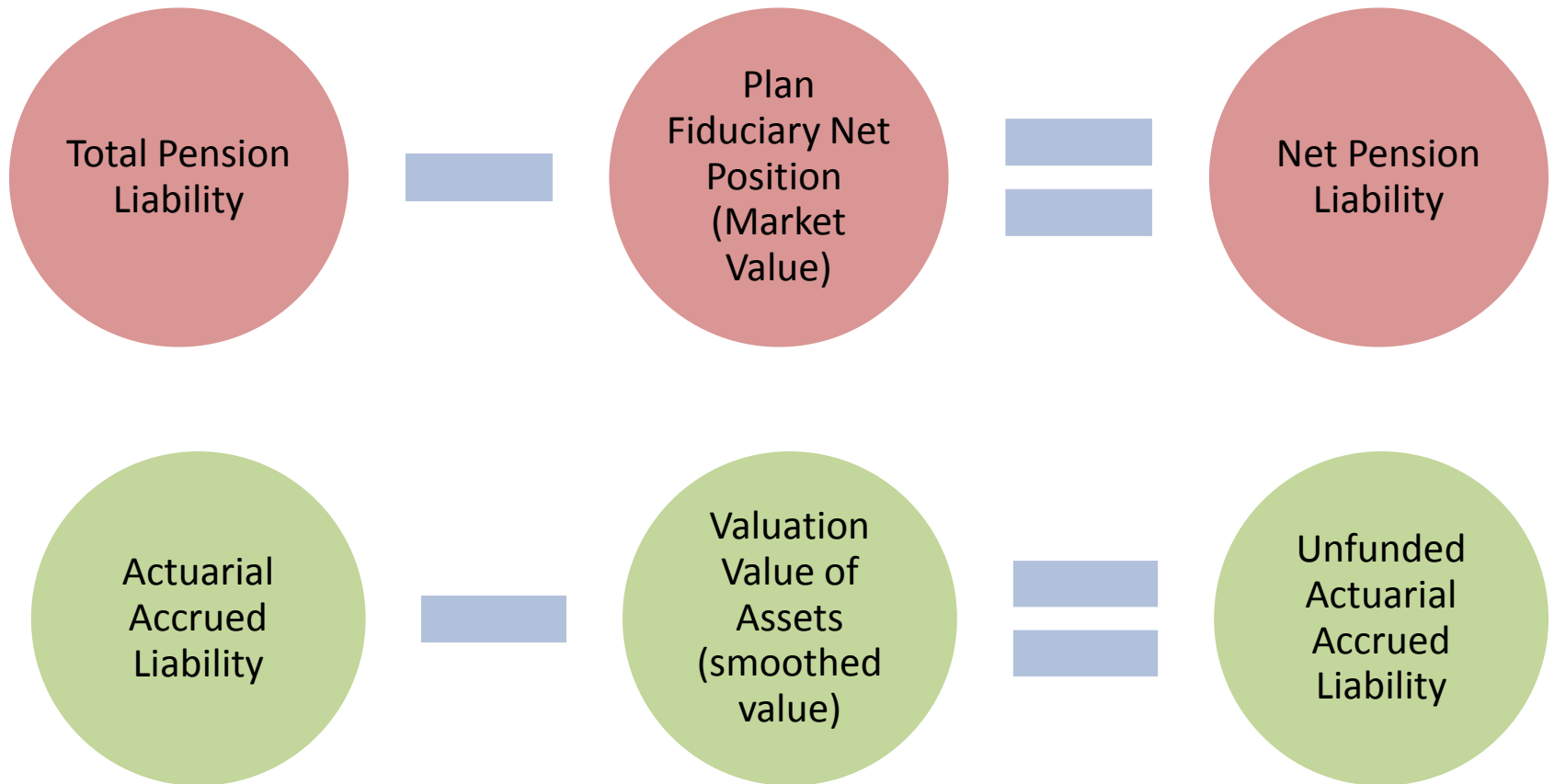
- Rate Group 2 = multiple employers
- Proportionate Share % calculated by amount of employer's contributions last year compared to the total contributions of all employers in Rate Group 2
- Pension Amounts for Rate Group 2 are allocated based on the % calculated for each employer
- Next slide shows proportionate share amounts for OCERS as an employer (for illustrative purposes)

OCERS' Proportionate Share of Pension Amounts

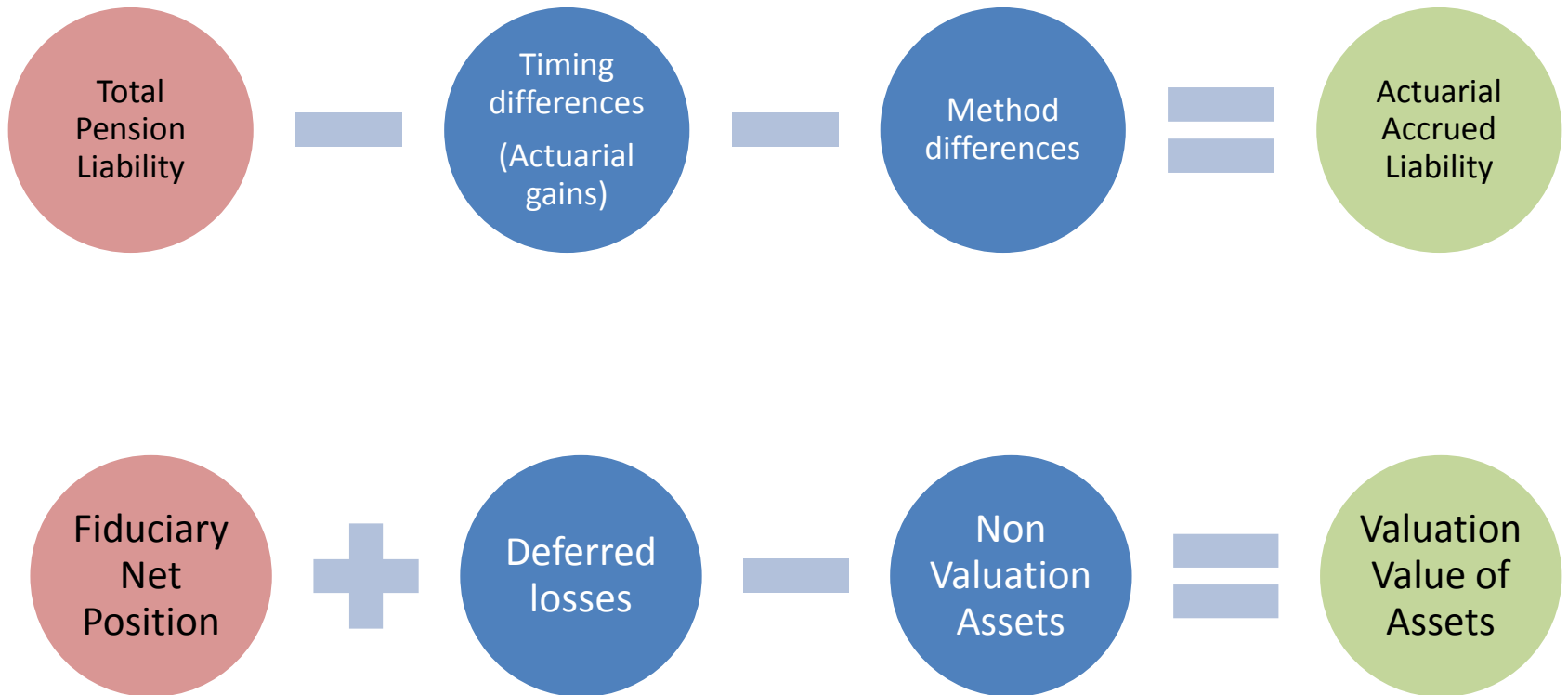
Deferred Outflows of Resources	2016	2015
Net Difference – Projected vs Actual Inv Earnings	\$2,460,971	\$3,460,039
Changes in Proportion	\$1,631,373	\$2,070,980
Total Deferred Outflows of Resources	\$4,092,344	\$5,531,019
Deferred Inflows of Resources		
Differences Between Expected and Actual Experience	\$2,535,127	\$1,764,788
Net Difference – Projected vs Actual Inv Earnings	\$666,587	
Changes of Assumptions	\$921,940	\$1,248,450
Changes in Proportion	\$555,990	
Total Deferred Inflows of Resources	\$4,679,644	\$3,013,238
Net Pension Liability as of 12/31	\$21,886,393	\$24,747,342
Pension Expense	\$2,219,132	\$2,728,176

202/485
10

NPL vs UAAL



Reconciling



Reconciliation NPL vs UAAL

Total All Employers

Liabilities Reconciliation	2016	2015
Total Pension Liability (reporting)	\$18,000,424,603	\$17,373,922,741
Net Actuarial (Gain)/Loss (timing differences)	(\$61,392,000)	(\$325,157,000)
Other (Gain)/Loss from Roll Forward (method of calculation)	(\$5,571,603)	\$1,591,259
Actuarial Accrued Liability (funding)	\$17,933,461,000	\$17,050,357,000
Asset Reconciliation		
Plan Fiduciary Net Position (Market Value used in GASB Reporting)	\$12,809,208,000	\$11,657,318,000
County Investment Account	(\$117,723,000)	(\$108,789,000)
OC Sanitation District UAAL Deferred Account	(\$34,067,000)	-
Adjustment for Deferred Investment Return and Non-Valuation Reserve	\$445,560,000	\$679,480,000
Valuation of Assets Included in Funding Valuation	\$13,102,978,000	\$12,228,009,000
Net Pension Liability – Reporting	\$5,191,216,603	\$5,716,604,741
UAAL	\$4,830,483,000	\$4,822,348,000

GASB 68 “Blended” Discount Rate

GASB requires discount rate to be calculated using cashflow analysis (projected benefits, current assets, and projected assets for **current members** for total plan)

1. Projected benefits covered by projected assets
 - Discount using long-term expected rate of return on assets
2. **IF** analysis shows projected benefits are **not** covered by projected assets
 - Discount using yield on 20-year AA/Aa tax-exempt municipal bond index
3. Solve for a single “blended” rate that gives the same total present value

#2 does NOT occur for OCERS because of closed amortization period and employers pay actuarial determined contributions

Therefore: GASB discount rate is same as funding valuation assumed rate

7.25%

206/485

Sensitivity of the NPL to Changes in Investment Assumptions

Employer	1% Decrease (6.25%)	Current Rate (7.25%)	1% Increase (8.25%)
Orange County	\$5,872,594,838	\$4,043,855,643	\$2,538,779,781
O.C. Cemetery	1,431,770	222,409	(772,911)
O.C. Law Library	3,049,905	1,770,282	717,136
Vector Control District	5,364,042	1,669,793	(1,370,622)
OCERS	31,508,013	21,886,393	13,967,676
OCFA	709,796,767	469,460,660	271,606,264
Dept of Ed	6,325,632	4,415,517	2,843,468
TCA	18,110,922	12,423,364	7,742,431
City of San Juan	36,118,552	25,089,009	16,011,553
O.C. Sanitation	73,906,089	(10,384,510)	(79,756,756)
OCTA	348,386,225	230,260,478	133,041,470
UCI	52,130,271	36,113,699	22,931,855
O.C. Children and Family Comm	4,546,726	3,158,290	2,015,589
LAFCO	1,930,365	1,340,888	855,741
City of RSM	16,867	9,332	3,131
O.C. Superior Court	502,676,449	349,173,850	222,839,238
O.C. IHSS Public Auth	1,301,134	781,506	353,845
Total All Employers	\$7,669,194,567	\$5,191,216,603	\$3,151,808,889

Other GASB 68 Valuation Data

	12/31/2016	12/31/2015	12/31/2014
Service Cost	\$427,473,217	\$439,453,529	\$438,599,931
Interest on TPL	\$1,241,079,174	\$1,197,308,212	\$1,153,351,962
Actuarially Determined Contributions	\$521,447,000	\$502,886,000	\$476,320,000
Actual Contributions	\$567,196,000	\$571,298,000	\$625,520,000
Contribution excess	\$45,749,000	\$68,412,200	\$149,200,000
# retired members & beneficiaries	16,369	15,810	15,169
# inactive members	5,370	5,092	4,789
# active members	21,746	21,525	21,460
Average Remaining Service Life of ALL members	5.94	6.06	6.18

Update on Inactive Employers Not included in GASB 68 Schedules

- Two inactive employers in Rate Group 1 who terminated before OCERS had Terminated Employer Policy or Declining Payroll Policy
 - Capistrano Beach Sanitary District
 - 4 Retired Members & Beneficiaries
 - Cypress Recreation & Parks District
 - 21 Retired Members & Beneficiaries
 - 7 Deferred Members
- Currently in discussions with Cypress Recreation & Parks District.
- Research continues with determining if successor agency for Capistrano Beach Sanitary District (which no longer exists) is responsible party for UAAL

ORANGE COUNTY EMPLOYEES
RETIREMENT SYSTEM
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

Orange County Employees Retirement System
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

Table of Contents

	<i>Pages</i>
Independent Auditor's Report.....	1
Schedule of Allocated Pension Amounts by Employer	3
Notes to the Schedule of Allocated Pension Amounts by Employer.....	7



Independent Auditor's Report

To the Board of Retirement of the
Orange County Employees Retirement System
Santa Ana, California

We have audited the employer allocations and the total for all employers of the rows titled total deferred outflows of resources, total deferred inflows of resources, net pension liability, and total pension expense excluding employer paid member contributions (specified row totals) included in the accompanying Schedule of Allocated Pension Amounts by Employer (Schedule) of the Orange County Employees Retirement System (OCERS) Cost-Sharing Multiple-Employer Defined Benefit Pension Plan as of and for the year ended December 31, 2016, and the related notes to the Schedule of Allocated Pension Amounts by Employer.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

Our responsibility is to express opinions on the employer allocations and the specified row totals in the Schedule based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the Schedule is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the Schedule. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the Schedule, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the Schedule 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 the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the Schedule.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Opinions

In our opinion, the Schedule referred to above presents fairly, in all material respects, the employer allocations, and the total deferred outflows of resources, total deferred inflows of resources, net pension liability, and total pension expense excluding employer-paid member contributions for the total of all participating employers for the Orange County Employees Retirement System Cost-Sharing Multiple-Employer Defined Benefit Pension Plan as of and for the year ended December 31, 2016, in accordance with accounting principles generally accepted in the United States of America.

Other Matter

We have audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of OCERS as of and for the year ended December 31, 2016, and our report thereon dated June 1, 2017, expressed an unmodified opinion on those financial statements.

Restriction on Use

Our report is intended solely for the information and use of OCERS' management, the Board of Retirement, the Orange County Employees Retirement System Cost-Sharing Multiple-Employer Defined Benefit Pension Plan employers and their auditors and is not intended to be and should not be used by anyone other than these specified parties.

Macias Gini & O'Connell LLP

Newport Beach, California
June 7, 2017

**Orange County Employees Retirement System
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016**

Deferred Outflows of Resources	Orange County	O.C. Cemetery District	O.C. Law Library	O.C. Vector Control District	O.C. Retirement System
Differences Between Expected and Actual Experience	\$0	\$25,468	\$0	\$12,918	\$0
Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	331,747,738	302,293	1,957,028	1,057,425	1,794,384
Changes of Assumptions	71,482,998	0	0	0	0
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	16,466,285	0	162,832	0	1,631,373
Total Deferred Outflows of Resources	\$419,697,021	\$327,671	\$2,119,860	\$1,070,343	\$3,425,757
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$441,331,575	\$297,296	\$1,027,751	\$1,669,650	\$2,535,127
Changes of Assumptions	116,628,948	104,151	539,068	0	921,940
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	124,932	0	1,720,279	0	555,990
Total Deferred Inflows of Resources	\$558,085,455	\$401,447	\$3,287,098	\$1,669,650	\$4,013,057
Net Pension Liability as of December 31, 2016	\$4,043,855,643	\$222,409	\$1,770,282	\$1,669,793	\$21,886,393
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Plan Pension Expense	\$439,031,086	\$185,759	\$571,594	\$166,366	\$1,892,074
Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	3,667,117	0	(372,508)	0	327,058
Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions	\$442,698,203	\$185,759	\$199,086	\$166,366	\$2,219,132

(Continued)

**Orange County Employees Retirement System
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016**

	O.C. Fire Authority	Department of Education	Transportation Corridor Agency	City of San Juan Capistrano	O.C. Sanitation District
Deferred Outflows of Resources					
Differences Between Expected and Actual Experience	\$1,181,288	\$544,088	\$198,368	\$0	\$0
Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	45,677,125	285,569	934,360	2,056,953	16,675,662
Changes of Assumptions	18,503,614	0	0	0	0
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	0	852,511	1,720,279
Total Deferred Outflows of Resources	\$65,362,027	\$829,657	\$1,132,728	\$2,909,464	\$18,395,941
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$52,828,035	\$228,305	\$389,345	\$2,906,090	\$14,897,427
Changes of Assumptions	2,314,092	178,187	496,686	1,056,846	6,589,263
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	0	2,791,050	162,832
Total Deferred Inflows of Resources	\$55,142,127	\$406,492	\$886,031	\$6,753,986	\$21,649,522
Net Pension Liability/(Asset) as of December 31, 2016	\$469,430,660	\$4,415,517	\$12,423,364	\$25,089,009	\$(10,384,510)
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Plan Pension Expense	\$79,967,025	\$476,679	\$1,831,342	\$2,168,940	\$10,969,208
Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	0	(355,326)	372,508
Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions	\$79,967,025	\$476,679	\$1,831,342	\$1,813,614	\$11,341,716

(Continued)

**Orange County Employees Retirement System
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016**

	O.C. Transportation Authority	U.C.I.	O.C. Children and Families Comm.	Local Agency Formation Comm.	Rancho Santa Margarita
Deferred Outflows of Resources					
Differences Between Expected and Actual Experience	\$846,803	\$982,335	\$0	\$0	\$1,408
Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	22,626,666	1,171,348	258,936	109,934	10,654
Changes of Assumptions	0	0	0	0	0
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	0	365,286	0
Total Deferred Outflows of Resources	\$23,473,469	\$2,153,683	\$258,936	\$475,220	\$12,062
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$18,879,529	\$886,050	\$365,828	\$155,317	\$4,224
Changes of Assumptions	10,519,667	1,406,403	133,039	56,483	551
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	914,592	198,634	0
Total Deferred Inflows of Resources	\$29,399,196	\$2,292,453	\$1,413,459	\$410,434	\$4,775
Net Pension Liability as of December 31, 2016	\$230,260,478	\$36,113,699	\$3,158,290	\$1,340,888	\$9,332
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Plan Pension Expense	\$29,906,543	\$2,466,246	\$273,034	\$115,921	\$3,002
Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	0	(215,071)	37,415	0
Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions	\$29,906,543	\$2,466,246	\$57,963	\$153,336	\$3,002

(Continued)

**Orange County Employees Retirement System
 Cost-Sharing Multiple-Employer Defined Benefit Pension Plan
 Schedule of Allocated Pension Amounts by Employer
 As of and for the Year Ended December 31, 2016**

	O.C. Superior Court	O.C. IHSS Public Authority	Total for all Employers
Deferred Outflows of Resources			
Differences Between Expected and Actual Experience	\$0	\$0	\$3,792,676
Net Difference Between Projected and Actual Investment Earnings on Pension Plan Investments	28,627,453	143,116	455,436,644
Changes of Assumptions	0	0	89,986,612
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	0	124,932	21,323,498
Total Deferred Outflows of Resources	\$28,627,453	\$268,048	\$570,539,430
Deferred Inflows of Resources			
Differences Between Expected and Actual Experience	\$40,445,221	\$161,545	\$579,008,315
Changes of Assumptions	14,708,557	57,474	155,711,355
Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	14,855,189	0	21,323,498
Total Deferred Inflows of Resources	\$70,008,967	\$219,019	\$756,043,168
Net Pension Liability as of December 31, 2016	\$349,173,850	\$781,506	\$5,191,216,603
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions			
Proportionate Share of Plan Pension Expense	\$30,186,015	\$160,473	\$600,371,307
Net Amortization of Deferred Amounts from Changes in Proportion and Differences Between Employer Contributions and Proportionate Share of Contributions	(3,490,860)	29,667	0
Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions	\$26,695,155	\$190,140	\$600,371,307

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 1 – PLAN DESCRIPTION

The Orange County Employees Retirement System (OCERS or System) administers a cost-sharing multiple-employer defined benefit pension plan (the Plan) for the County of Orange, Orange County Superior Court of California, City of San Juan Capistrano, and twelve special districts: Orange County Cemetery District, Orange County Children and Families Commission, Orange County Department of Education, 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, Transportation Corridor Agencies and the University of California, Irvine Medical Center and Campus. The Orange County Department of Education and the University of California, Irvine Medical Center and Campus are closed to new member participation. Capistrano Beach, Cypress Recreation & Parks District, Orange County Vector Control and City of Rancho Santa Margarita are no longer active employers, but retired members and their beneficiaries, as well as deferred members, remain in the System. Capistrano Beach and Cypress Recreation & Parks District are not presented in the accompanying schedule as OCERS is in the process of locating and assessing the ability to collect any unfunded liabilities from these inactive employers. OCERS is legally and fiscally independent of the County of Orange.

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 the date of OCERS membership. Additional information regarding the pensions plan's benefit structure is included in the Summary of Plan Description that is available on the web at: www.ocers.org/member_active/spd.htm.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Basis of Accounting

Employers participating in the Plan are required to report pension information in their financial statements in accordance with Governmental Accounting Standards Board (GASB) Statement No. 68, *Accounting and Financial Reporting for Pensions – an Amendment of GASB Statement No. 27*. The Schedule of Allocated Pension Amounts by Employer (the Schedule) along with OCERS' audited financial statements, the GASB Statement 67 Actuarial Valuation as of December 31, 2016 and the GASB Statement 68 Actuarial Valuation Based on December 31, 2016 Measurement Date for Employer Reporting as of June 30, 2016, prepared by OCERS' third-party actuary, provide the required information for financial reporting related to the Plan that employers may use in their financial statements.

The accompanying Schedule was prepared by OCERS' third-party actuary and was derived from information provided by OCERS in accordance with accounting principles generally accepted in the United States of America (GAAP) as applicable to governmental organizations.

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Basis of Presentation and Basis of Accounting (Continued)

Legally or statutorily required employer contributions for the year ended December 31, 2016, less any amounts of those legally or statutorily required contributions that are paid by the employees (referred to as reverse pick-ups), are used as the basis for determining each employer’s proportion of total contributions. For the year ended December 31, 2016, employer paid member contributions of \$2,376,000 under Government Code Section 31581.1 which OCERS reports as employer contributions as these payments do not become part of the accumulated employee contributions, have been excluded in determining each employer’s proportion of total contributions. Contributions made by the employer on behalf of employees under Government Code Section 31581.2 are classified as employee contributions and are not included in the proportionate share calculation for the year ended December 31, 2016.

Employer contributions have been adjusted to include transfers made from the County Investment Account and they have not been reduced for discount due to prepaid contributions. Contributions for each employer are assigned to its respective participating Rate Group. Rate Groups are a collection of members who are or were employed by employers that offer similar pension benefit formula(s). Rate Groups exist for the purpose of risk-pooling and the contribution rates developed by the actuary should, in the long-term, fairly and accurately reflect the benefit plan offered/promised to members in each group. Rate Groups can contain one or more employers and employers may be included in one or more rate groups. If an employer participates in several Rate Groups, the employer’s total proportionate share of the Net Pension Liability (NPL) and related allocated pension amounts is the sum of its allocated pension amounts from each Rate Group.

The following Rate Groups have only one active employer, so all of the NPL for that Rate Group is allocated to the corresponding employer:

Rate Group	Employer
3	Orange County Sanitation District*
4	City of Rancho Santa Margarita
5	Orange County Transportation Authority
6	County of Orange (Probation)
7	County of Orange (Law Enforcement)
8	Orange County Fire Authority (Safety)
9	Transportation Corridor Agencies
10	Orange County Fire Authority (General)
11	Orange County Cemetery District
12	Orange County Public Law Library*

*Orange County Public Law Library was moved from Rate Group #3 and put into Rate Group #12, their own rate group, after the last valuation as of December 31, 2015. Orange County Sanitation District is currently the sole employer in Rate Group #3.

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Basis of Presentation and Basis of Accounting (Continued)

The total Plan contributions are determined through OCERS’ annual actuarial valuation process. The actuarially determined rate is the estimated amount necessary to finance the costs of benefits earned by employees during the year, with an additional amount to finance any unfunded accrued liability. California Government Code Title 3, Division 4, Parts 3 and 3.9, Articles 6 and 6.8 define the methodology used to calculate member basic contribution rates for General members and Safety members. The employer is required to contribute the difference between the actuarially determined rate and the contribution rate of employees. Legally or statutorily required employer contributions were determined by multiplying the employer’s contribution rate by the employers’ payrolls for the fiscal year.

The NPL is the Total Pension Liability (TPL) minus the Plan Fiduciary Net Position (plan assets). The TPL for each Rate Group is obtained from valuation results. The Fiduciary Net Position for each Rate Group is estimated by adjusting the valuation value of assets for each membership class by the ratio of the total Plan Fiduciary Net Position (excluding the balance of the County of Orange (County) Investment Account) to total OCERS’ valuation value of assets. The County Investment Account is then allocated among the four County Rate Groups using the proportion of the County’s 2016 contributions that were derived from the proceeds of the Pension Obligation Bonds for each of the four County Rate Groups. The NPL is then allocated to the respective employers based on the legally or statutorily required employer contributions within each Rate Group.

In developing the pension expense amounts, the NPL proportionate share percentage is used to calculate the employer’s pension expense components (service cost, interest, change in benefit terms, differences between expected and actual experience, changes in assumptions and benefit payments, including refunds of employee contributions), with the exception of Vector Control, Rancho Santa Margarita, University of California, Irvine Medical Center and Campus (UCI) and the Orange County Department of Education (OCDE) which were adjusted to reflect the appropriate amount of service costs based on their current inactive membership.

The employer contributions used to determine the NPL proportionate share percentage for Rate Group 1 excludes UCI employer contributions of \$1,315,000. This employer’s contribution was intended to reduce the NPL of the specific employer not the respective Rate Group as a whole. The percentages of contributions by employer do not equal the percentages used to allocate the NPL by employer because the NPL for the County has been reduced to reflect the portion of the County Investment Account, as described above. The amounts of the County Investment Account that have been allocated to those Rate Groups are as follows:

Rate Group	2016
1	\$4,350,249
2	72,351,166
6	7,519,398
7	33,502,187
Total	\$117,723,000

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Basis of Presentation and Basis of Accounting (Continued)

In addition, the NPL for Rate Group 1 was adjusted by the Orange County Vector Control District withdrawal liability and the NPL for the OCDE and UCI prior to allocating the net NPL to the other employers in Rate Group 1 described as follows:

The Orange County Vector Control District is no longer an active employer, but retired members and their beneficiaries, as well as deferred members remain in the Plan. For this employer, the allocated net pension liability is based on the most recent estimate of the withdrawal liability and adjusted to reflect the Plan Fiduciary Net Position as of December 31, 2016.

The participation in the Plan for the OCDE and UCI is closed to new members. On June 15, 2015, the Board of Retirement adopted a policy that establishes guidelines to ensure organizations with declining payroll satisfy the financial obligation of their Unfunded Actuarial Accrued Liability (UAAL). Under this policy, going forward, the funding obligation for a covered employer's UAAL is no longer pro-rata based on its payroll. Instead, the employer's UAAL is determined based on its specific actuarial accrued liability and a share of assets allocated to the employer in accordance with a formula set forth in the policy. The employer's contributions for its UAAL are to be paid at level, fixed-dollar amounts over a period not to exceed twenty years. The employer will also be liable, or receive a credit, for any change in its funding obligation determined annually thereafter as a result of actuarial experience or changes in actuarial assumptions.

On October 19, 2015, the Board of Retirement approved the amortization schedule for payment of the OCDE UAAL and UCI UAAL of \$3,238,000 and \$27,586,000, respectively. These balances were calculated based on the December 31, 2014 actuarial valuation assuming fixed-dollar payments over twenty years beginning on July 1, 2016. As per the policy, the UAAL balances were updated as of the December 31, 2015 actuarial valuation to reflect actuarial gains or losses and other events that will be captured in a new twenty-year closed amortization layer. The amortization schedules for the new UAAL layers for the OCDE and UCI, after being adjusted for interest to December 31, 2016, can be found on OCERS' website as discussed in Note 5 – Additional Financial and Actuarial Information.

Capistrano Beach Sanitary District (Capistrano) and Cypress Recreation & Parks District (Cypress) are no longer active employers. Capistrano has four retired members remaining in the Plan and Cypress has twenty-one retired members and beneficiaries, and seven deferred members. At the time these employers left the System, OCERS did not have an express policy addressing how the UAAL would be funded for inactive employers. OCERS is in the process of locating and assessing the ability to collect any UAAL from these inactive employers. It will be determined in the future if these employers will be allocated the actuarial accrued liability under OCERS' Declining Employer Payroll Policy.

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Use of Estimates in the Preparation of Financial Schedules

The preparation of the Schedule of Allocated Pension Amounts in conformity with GAAP requires management to make significant estimates and assumptions that affect the reported amounts during the reporting period. Actual results could differ from those estimates.

The components of the NPL related to OCERS’ plan at December 31, 2016, are as follows (dollars in thousands):

	<u>2016</u>
Total pension liability	\$ 18,000,425
Less: Plan fiduciary net position	(12,809,208)
Plan net pension liability	<u>\$ 5,191,217</u>

For the measurement period ended December 31, 2016 (the measurement date), total pension liability was determined by rolling forward the December 31, 2015 (the valuation date) total pension liability. The actuarial assumptions used were based on the results of an experience study for the period from January 1, 2011 through December 31, 2013.

NOTE 3 -- ACTUARIAL METHODS AND ASSUMPTIONS

Actuarial Methods and Assumptions Used to Determine Total Pension Liability

The December 31, 2016 total pension liability was based on the following actuarial methods and assumptions:

Actuarial Experience Study	Three-Year Period Ending December 31, 2013
Actuarial Cost Method	Entry Age in accordance with the requirements of GASB Statement No. 68
Actuarial Assumptions	
Investment Rate of Return	7.25% . net of pension plan investment expenses; including inflation
Inflation Rate	3.00%
Projected Salary Increases	General: 4.25% to 13.5% and Safety: 5.00% to 17.50% Vary by service, including inflation
Cost of Living Adjustments	3.00% of retirement income

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 3 – ACTUARIAL METHODS AND ASSUMPTIONS (CONTINUED)

Actuarial Methods and Assumptions Used to Determine Total Pension Liability (Continued)

Mortality Assumptions

The mortality assumptions used in the TPL at December 31, 2016 were based on the results of the actuarial experience study for the period January 1, 2011 through December 31, 2013 using the Society of Actuaries RP-2000 Combined Healthy Mortality Table projected with the Society of Actuaries Scale BB to 2020. The mortality assumptions for all groups are then customized to account for OCERS' Plan membership experience. For healthy general members, no adjustments are made. For healthy safety members, the ages are set back two years. For general members that are disabled, the ages are set forward six years for males and three years for females. For safety members that are disabled, no adjustments are made. Beneficiaries are assumed to have the same mortality as a general member of the opposite sex who is receiving a service (non-disability) retirement.

Discount Rate

The discount rate used to measure the TPL as of December 31, 2016 was 7.25 percent. In determining the discount rate OCERS took into account the projection of cash flows and 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's fiduciary net position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2016.

According to Paragraph 30 of Statement 68, the long-term expected rate of return should be determined net of pension plan investment expense but without reduction for pension plan administrative expense.

The 7.25 percent investment return assumption used in the actuarial valuation for funding is net of administrative expenses. Administrative expenses are assumed to be 16 basis points. The investment return assumption remained the same for reporting purposes due to the immaterial impact administrative expenses has on the overall assumed rate of return.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and 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 rate of return by the target asset allocation percentage and by adding expected inflation and deducting expected investment expenses. Additional information on the target allocation and projected arithmetic real rate of return for each major asset class is available in the OCERS' Comprehensive Annual Financial Report for the year ended December 31, 2016.

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 3 – ACTUARIAL METHODS AND ASSUMPTIONS (CONTINUED)

Actuarial Methods and Assumptions Used to Determine Total Pension Liability (Continued)

Amortization of Deferred Outflows and Deferred Inflows of Resources

The net difference between projected and actual investment earnings on pension plan investments in the Schedule of Allocated Pension Amounts by Employer represents the unamortized balance relating to the current measurement period and the prior measurement period on a net basis. The net difference between projected and actual investment earnings on pension plan investments is amortized over a five-year period on a straight-line basis beginning with the year in which they occur. One-fifth was recognized in pension expense during the measurement period, and the remaining net difference between projected and actual investment earnings on pension plan investments at the measurement date is to be amortized over the remaining period.

Deferred outflows of resources and deferred inflows of resources related to the differences between expected and actual experience, changes of assumptions, and changes in proportion and differences between employer contributions and proportionate share of contributions are recognized over the average of the expected remaining service lives of all employees that are provided with pensions through the Plan determined as of December 31, 2015 (the beginning of the measurement period ending December 31, 2016) which is 5.94 years. Prior measurement period differences between expected and actual experience, changes of assumptions, and changes in proportion and differences between employer contributions and proportionate share of contributions continue to be recognized based on the expected remaining service lives of all employees calculated as of the beginning of those measurement periods.

The Schedule of Allocated Pension Amounts by Employer does not reflect contributions made to OCERS subsequent to the measurement date as defined in GASB Statement No. 68 paragraph 57. Appropriate treatment of such amounts is the responsibility of the employers.

NOTE 4 - LITIGATION

On February 23, 2016, the OCDE filed a declaratory relief action against OCERS, seeking a declaration that the OCDE was not obligated after the OCDE no longer had any active employees to continue making employer contributions towards the portion of the UAAL attributable to the benefits owed to the OCDE's retirees and beneficiaries. OCERS vigorously defended the action, contending the OCDE remained liable to make contributions and counter-sued the OCDE for the amount owed. Based on calculations performed by OCERS' third-party actuary, the OCDE's share of UAAL is approximately \$3.8 million, if amortized in the ordinary course, as of December 31, 2016. On January 27, 2017, the Court entered a judgment in favor of OCERS and ordered the OCDE to pay the payments that were due between July 2016 and December 2016, including interest at 7.25% per annum from the due date of each payment to the date paid. The OCDE complied with the Court's order. Subsequently, on May 22, 2017, the Court granted OCERS' Motion for Judgment on the Pleadings and held that OCERS was within its authority to assess the UAAL against the OCDE and that the OCDE's obligation to pay OCERS is ministerial and mandatory. OCERS intends to pursue collection from the OCDE of OCERS' legal fees and administrative costs incurred in connection with this matter pursuant to Government Code section 31580.1.

**Orange County Employees Retirement System—
Cost-Sharing Multiple-Employer Defined Benefit Pension Plan**
Notes to the Schedule of Allocated Pension Amounts by Employer
As of and for the Year Ended December 31, 2016

NOTE 5 - ADDITIONAL FINANCIAL AND ACTUARIAL INFORMATION

Additional financial and actuarial information required for GASB Statement No. 68 disclosures is presented in OCERS' Comprehensive Annual Financial Report as of and for the year ended December 31, 2016, the OCERS' GASB Statement No. 67 Actuarial Valuation as of December 31, 2016, the OCERS' GASB Statement No. 68 Actuarial Valuation Based on the December 31, 2016, Measurement Date for Employer Reporting as of June 30, 2016, and the Unfunded Actuarial Liability and Associated Amortization Schedules as of the December 31, 2015 valuation for the Orange County Department Education and University of California, Irvine Medical Center and Campus, which can be found on OCERS' website at www.ocers.org.

Orange County Employees Retirement System

**Governmental Accounting Standards Board
(GASB) Statement 68**

**Actuarial Valuation Based on December 31, 2016
Measurement Date for Employer Reporting
as of June 30, 2017**



This report has been prepared at the request of the Board of Retirement to assist the sponsors of the Fund in preparing their financial report for their liabilities associated with the OCERS pension plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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June 2, 2017

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

Dear Board Members:

We are pleased to submit this Governmental Accounting Standards Board (GASB) Statement 68 Actuarial Valuation based on December 31, 2016 measurement date for employer reporting as of June 30, 2017. It contains various information that will need to be disclosed in order for OCERS employers to comply with GASB 68.


This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the sponsors in preparing their financial report for their liabilities associated with the OCERS pension plan. The census and financial information on which our calculations were based was provided by OCERS. That assistance is gratefully acknowledged.

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

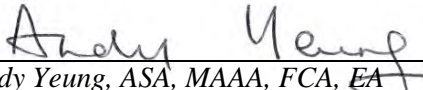
The actuarial calculations were completed under the supervision of Andy Yeung, ASA, MAAA, FCA, Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our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

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 

*Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary*



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

AW/jl

SECTION 1

VALUATION SUMMARY

Purpose i
General Observations on
GASB 68 Actuarial Valuation . i
Significant Issues in Valuation
Year..... ii
Summary of Key Valuation
Results..... iv
Important Information about
Actuarial Valuations v

SECTION 2

GASB 68 INFORMATION

EXHIBIT 1
General Information – “Financial
Statements”, Note Disclosures and
Required Supplementary
Information for a Cost-Sharing
Pension Plan 1
EXHIBIT 2
Net Pension Liability 4
EXHIBIT 3
Target Asset Allocation 5
EXHIBIT 4
Discount Rate Sensitivity 7
EXHIBIT 5
Schedule of Changes in Net
Pension Liability – Last Two Plan
Years..... 8
EXHIBIT 6
Schedule of OCERS’
Contributions – Last Ten Plan
Years..... 10
EXHIBIT 7
Determination of Proportionate
Share 14

SECTION 2 (CONTINUED)

EXHIBIT 8
Pension Expense 36
EXHIBIT 9
Deferred Outflows of Resources
and Deferred Inflows of
Resources..... 54
EXHIBIT 10
Schedule of Proportionate Share
of the Net Pension Liability 73
EXHIBIT 11
Schedule of Reconciliation of Net
Pension Liability 91
EXHIBIT 12
Schedule of Recognition of
Changes in Total Net Pension
Liability 109
EXHIBIT 13
Allocation of Changes in Total
Net Pension Liability 111

SECTION 3

**ACTUARIAL ASSUMPTIONS
AND METHODS AND
APPENDICES**

Actuarial Assumptions and
Methods 114
Appendix A
Calculation of Discount Rate
as of December 31, 2016 126
Appendix B
Schedule of Pension Amounts
by Employer as of
December 31, 2016 128
Appendix C
Glossary of Terms..... 133

SECTION 1: Valuation Summary for Orange County Employees Retirement System

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standards Board (GASB) Statement 68 for employer reporting as of June 30, 2017. The results used in preparing this GASB 68 report are comparable to those used in preparing the Governmental Accounting Standards Board (GASB) Statement 67 report for the plan based on a reporting date and a measurement date as of December 31, 2016. This valuation is based on:

- The benefit provisions of OCERS, as administered by the Board of Retirement;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of December 31, 2015, provided by OCERS;
- The assets of the Plan as of December 31, 2016, provided by OCERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2016 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2016 valuation.

General Observations on GASB 68 Actuarial Valuation

The following points should be considered when reviewing this GASB 68 report:

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans can still develop and adopt funding policies under current practices.
- 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. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on generally the same basis as OCERS' Actuarial Accrued Liability (AAL) measure for funding. We note that the same is generally true for the Normal Cost component of the annual plan cost for funding and financial reporting.

SECTION 1: Valuation Summary for Orange County Employees Retirement System

- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) calculated on a market value basis.

Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

- The NPL's measured as of December 31, 2016 and 2015 have been determined by rolling forward the TPL as of December 31, 2015 and 2014, respectively.
- The NPL decreased from \$5,716.6 million as of December 31, 2015 to \$5,191.2 million as of December 31, 2016 primarily as a result of the gains from lower than expected active salary increases and lower than expected retiree COLA increases during 2015 (because liabilities are rolled forward from December 31, 2015 to December 31, 2016, these changes are not reflected until this valuation as of December 31, 2016) as well as a 8.72% return on the market value of assets during 2016 that was greater than the assumed return of 7.25%. Changes in these values during the last two fiscal years ending December 31, 2015 and December 31, 2016 can be found in Exhibit 5
- The discount rate used to determine the TPL and NPL as of both December 31, 2016 and 2015 was 7.25% following the same assumption used by the System in the pension funding valuations as of the same dates. The detailed calculation of the discount rate of 7.25% used in the calculation of the TPL and NPL as of December 31, 2016 can be found in Appendix A of Section 3. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 13 in Section 2.
- The Plan's Fiduciary Net Position of \$11,657,318,000 as of December 31, 2015 is equal to the final market value of assets in the Pension Trust Fund as of December 31, 2015. This differs from the \$11,548,529,000 market value of assets used in our December 31, 2015 funding valuation because the funding valuation excludes \$108,789,000 in the County Investment Account.

The Plan's Fiduciary Net Position of \$12,809,208,000 as of December 31, 2016 is equal to the final market value of assets in the Pension Trust Fund as of December 31, 2016. This differs from the \$12,657,418,000 market value of assets used in our December 31, 2016 funding valuation because the funding valuation excludes \$117,723,000 in the County Investment Account and \$34,067,000 in O.C. Sanitation District UAAL Deferred Account.

SECTION 1: Valuation Summary for Orange County Employees Retirement System

- O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit of \$509,000 given to O.C. Law Library to reflect that their future service enhancement did not increase the UAAL. This credit is also reflected as an “Other” item in Exhibit 3 when we develop the roll forward of the TPL.
- In Appendix B, we show the Schedule of Pension Amounts by Employer. The expanded information shown in Appendix B has been used to prepare Exhibits 8 and 9.
- Results shown in this report exclude any employer contributions made after the measurement date of December 31, 2015. Employers should consult with their auditors to determine the deferred outflow that should be created for these contributions.
- All Rate Groups except Rate Groups #1 and #2 only have one active employer, so all of the NPL for those Rate Groups is allocated to that employer.

For Rate Groups #1¹ and #2, the NPL is allocated based on the actual employer contributions within the Rate Group. The steps we used are as follows:

- Calculate ratio of employer's contributions to the total contributions for the Rate Group.
- Multiply this ratio by the NPL for the Rate Group to determine the employer's proportionate share of the NPL for the Rate Group.

If the employer is in several Rate Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Rate Group. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers. The NPL allocation can be found in Exhibit 7 in Section 2.

¹ *The allocation of NPL for Rate Group #1 is after adjustments: (a) to account for the latest estimate of the withdrawal liability for O.C. Vector Control District and (b) to exclude NPLs for University of California – Irvine (U.C.I.) and Department of Education, so as to reflect the Board's UAAL contribution policy for these two employers with declining payroll.*

SECTION 1: Valuation Summary for Orange County Employees Retirement System

Summary of Key Valuation Results

Reporting Date for Employer under GASB 68 ⁽¹⁾	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Disclosure elements for plan year ending December 31:		
1. Service cost ⁽²⁾	\$427,473,217	\$439,453,529
2. Total Pension Liability	18,000,424,603	17,373,922,741
3. Plan Fiduciary Net Position	12,809,208,000	11,657,318,000
4. Net Pension Liability	5,191,216,603	5,716,604,741
5. Pension expense	600,371,307	669,599,955
Schedule of contributions for plan year ending December 31:		
6. Actuarially determined contributions ⁽³⁾	\$521,447,000	\$502,886,000
7. Actual contributions ⁽³⁾	567,196,000	571,298,000
8. Contribution deficiency (excess) (6) – (7)	(45,749,000) ⁽⁴⁾	(68,412,200) ⁽⁵⁾
Demographic data for plan year ending December 31:		
9. Number of retired members and beneficiaries	16,369	15,810
10. Number of inactive members	5,370	5,091
11. Number of active members	21,746	21,525
Key assumptions as of December 31:		
12. Investment rate of return	7.25%	7.25%
13. Inflation rate	3.00%	3.00%
14. Projected salary increases ⁽⁶⁾	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%

⁽¹⁾ The reporting date and measurement date for the plan are December 31, 2016 and December 31, 2015, respectively.

⁽²⁾ Please note that Service cost is always based on the previous year's assumptions, meaning each of these values is based on the assumptions as of December 31, 2015, which were unchanged from the assumptions as of December 31, 2014.

⁽³⁾ Reduced by discount for prepaid contributions and transfers from County Investment Account and O.C. Sanitation District UAAL Deferred Account, if any.

⁽⁴⁾ Includes additional contributions of \$5,133,000 made by O.C. Fire Authority, \$1,500,000 made by Law Library and \$5,587,000 made by O.C. Sanitation District towards the reduction of their UAAL as well as \$33,529,000 made by O.C. Sanitation District to their UAAL Deferred Account.

⁽⁵⁾ Includes additional contributions of \$18,412,000 made by O.C. Fire Authority and \$50,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.

⁽⁶⁾ Includes inflation at 3.00% plus real across-the-board salary increases of 0.50% plus merit and promotional increases.

SECTION 1: Valuation Summary for Orange County Employees Retirement System

Important Information about Actuarial Valuations

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

In order to prepare an actuarial valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

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

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

- The valuation is prepared at the request of the Board to assist the sponsors of the Fund in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.

SECTION 1: Valuation Summary for Orange County Employees Retirement System

- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If OCERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board should look to their other advisors for expertise in these areas.

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

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 1

General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan

Plan Description

Plan administration. The Orange County Employees Retirement System (OCERS) was established by the County of Orange in 1945. OCERS is administered by the Board of Retirement and governed by the County Employees’ Retirement Law of 1937 (California Government Code Section 31450 et. seq.). OCERS is a cost-sharing multiple employer public employee retirement system whose main function is to provide service retirement, disability, death and survivor benefits to the Safety and General members employed by the County of Orange. OCERS also provides retirement benefits to the employee members of the Orange County Courts, the Orange County Retirement System, two cities and twelve special districts.

The management of OCERS is vested with the Orange County Board of Retirement. The Board consists of nine members and one alternate. The County Treasurer is a member of the Board of Retirement by law. Four members are appointed by the Board of Supervisors, one of whom may be a County Supervisor. Two members are elected by the General membership; one member and one alternate are elected by the Safety membership, one member is elected by the retired members of the System. All members of the Board of Retirement serve terms of three years except for the County Treasurer whose term runs concurrent with the County Treasurer term.

Plan membership. At December 31, 2016, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	16,369
Vested terminated members entitled to, but not yet receiving benefits	5,370
Active members	<u>21,746</u>
Total	43,485

Benefits provided. OCERS provides service retirement, disability, death and survivor benefits to eligible employees. All regular full-time employees of the County of Orange or contracting agencies who work a minimum of 20 hours per week become members of OCERS effective on the first day of employment in an eligible position. There are separate retirement plans for General and Safety member employees. Safety membership is extended to those involved in active law enforcement, fire suppression, and certain probation officers. Any new Safety member who becomes a member on or after January 1, 2013 is designated PEPRA Safety and is subject to the provisions of California Public Employees’ Pension Reform Act of 2013 (PEPRA), California Government Code 7522 et seq. All other employees are classified as General members. New General members employed after January 1, 2013 are designated as PEPRA General subject to the provisions of California Government Code 7522 et seq.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

General members hired prior to January 1, 2013, including all members of Plan T and Plan W hired on or after January 1, 2013, are eligible to retire once they attain the age of 50 and have acquired ten or more years of retirement service credit. A member with thirty years of service is eligible to retire regardless of age. General members who are first hired on or after January 1, 2013, excluding members of Plan T and Plan W, are eligible to retire once they have attained the age of 52, and have acquired five years of retirement service credit.

Safety members hired prior to January 1, 2013, are eligible to retire once they attain the age of 50 and have acquired ten or more years of retirement service credit. A member with twenty years of service is eligible to retire regardless of age. Safety members who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 50, and have acquired five years of retirement service credit.

All General and Safety members can also retire at the age of 70 regardless of service.

The retirement benefit the member will receive is based upon age at retirement, final average compensation, years of retirement service credit and retirement plan and tier.

General member benefits are calculated pursuant to the provisions of Sections 31676.01, 31676.1, 31676.12, 31676.16, 31676.18 or 31676.19. For Section 31676.01, the monthly allowance is equal to 1/90th of final compensation times years of accrued retirement service credit times age factor from that Section. For Section 31676.1, the monthly allowance is equal to 1/60th of final compensation times years of accrued retirement service credit times age factor from that Section. For Sections 31676.12, 31676.16, 31676.18 or 31676.19, the monthly allowance is equal to 1/50th of final compensation times years of accrued retirement service credit times age factor from the corresponding Section. General member benefits for those who are first hired on or after January 1, 2013, excluding members of Plan T and Plan W, are calculated pursuant to the provision of California Government Code Section 7522.20(a). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.20(a).

Safety member benefits are calculated pursuant to the provisions of California Government Code Sections 31664.1 and 31664.2. The monthly allowance is equal to 3% of final compensation times years of accrued retirement service credit times age factor from the corresponding Section. Safety member benefits for those who are first hired on or after January 1, 2013, are calculated pursuant to the provision of California Government Code Section 7522.25(d). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section 7522.25(d).

For members with membership dates before January 1, 2013, including all members of Plan T and Plan W hired on or after January 1, 2013, the maximum monthly retirement allowance is 100% of final compensation. There is no maximum for members with membership dates on or after January 1, 2013, excluding members of Plan T and Plan W.

Final average compensation consists of the highest 12 consecutive months for a General Tier 1 or Safety Tier 1 member and the highest 36 consecutive months for a General Tier 2, General PEPRA, Safety Tier 2 or Safety PEPRA member.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

The member may elect an unmodified retirement allowance, or choose an optional retirement allowance. The unmodified retirement allowance provides the highest monthly benefit and a 60% continuance to an eligible surviving spouse or domestic partner. An eligible surviving spouse or domestic partner is one 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. There are four optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the unmodified retirement allowance in order to allow the member the ability to provide certain benefits to a surviving spouse, domestic partner, or named beneficiary having an insurable interest in the life of the member.

OCERS provides an annual cost-of-living benefit to all retirees. The cost-of-living adjustment, based upon the Consumer Price Index for All Urban Consumers for the Los Angeles-Riverside-Orange County Area, is capped at 3.0%.

The County of Orange and contracting agencies contribute to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Retirement. Employer contribution rates are adopted annually based upon recommendations received from OCERS' actuary after the completion of the annual actuarial valuation. The average employer contribution rate for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 (based on the December 31, 2013 valuation) was 39.05%^{2,3} of compensation. The average employer contribution rate for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 (based on the December 31, 2014 valuation) was 37.41%^{2,3} of compensation.

All members are required to make contributions to OCERS regardless of the retirement plan or tier in which they are included. The average member contribution rate for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 (based on the December 31, 2013 valuation) was 12.77%³ of compensation. The average member contribution rate for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 (based on the December 31, 2014 valuation) was 12.42%³ of compensation.

² These contribution rates are higher than the composite rate for 2016 as shown on page 10 of this report because these rates do not reflect the shift in payroll to the lower cost plans from the valuation date to the date of rate implementation.

³ It should be noted that the contribution rates provided above have not been adjusted to reflect any pick-ups or reverse pick-ups.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 2

Net Pension Liability

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
The components of the Net Pension Liability are as follows:		
Total Pension Liability	\$18,000,424,603	\$17,373,922,741
Plan Fiduciary Net Position	<u>(12,809,208,000)</u>	<u>(11,657,318,000)</u>
Net Pension Liability	\$5,191,216,603	\$5,716,604,741
Plan Fiduciary Net Position as a percentage of the Total Pension Liability	71.16%	67.10%

The Net Pension Liability (NPL) was measured as of December 31, 2016 and 2015. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement date while the Total Pension Liability (TPL) was determined based upon rolling forward the TPL from actuarial valuations as of December 31, 2015 and 2014, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of December 31, 2016 and 2015 are the same as those used in the OCERS actuarial valuation as of December 31, 2016 and 2015, respectively.

Actuarial assumptions. The TPL's as of December 31, 2016 and 2015 were determined by actuarial valuations as of December 31, 2015 and 2014, respectively. The actuarial assumptions used were based on the results of an experience study for the period from January 1, 2011 through December 31, 2013. They are the same assumptions used in the December 31, 2016 funding valuation for OCERS. The assumptions are outlined on page 114 of this report. In particular, the following actuarial assumptions were applied to all periods included in the measurement:

Inflation	3.00%
Salary increases	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%, vary by service, including inflation
Investment rate of return	7.25%, net of pension plan investment expense, including inflation
Other assumptions	See analysis of actuarial experience during the period January 1, 2011 through December 31, 2013

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 3

Target Asset Allocation

The long-term expected rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These 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 deducting 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, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap U.S. Equity	14.90%	5.92%
Small/Mid Cap U.S. Equity	2.73%	6.49%
Developed International Equity	10.88%	6.90%
Emerging International Equity	6.49%	8.34%
Core Bonds	10.00%	0.73%
Global Bonds	2.00%	0.30%
Emerging Market Debt	3.00%	4.00%
Real Estate	10.00%	4.96%
Diversified Credit (US Credit)	8.00%	4.97%
Diversified Credit (Non-US Credit)	2.00%	6.76%
Hedge Funds	7.00%	4.13%
GTAA	7.00%	4.22%
Real Return	10.00%	5.86%
Private Equity	<u>6.00%</u>	9.60%
Total	100.00%	

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

Discount rate: The discount rate used to measure the TPL was 7.25% as of both December 31, 2016 and 2015. 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's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both December 31, 2016 and 2015.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 4

Discount Rate Sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the NPL as of December 31, 2016, calculated using the discount rate of 7.25%, as well as what the NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate:

Employer	1% Decrease (6.25%)	Current Discount Rate (7.25%)	1% Increase (8.25%)
Orange County	\$5,872,594,838	\$4,043,855,643	\$2,538,779,781
O.C. Cemetery District	1,431,770	222,409	(772,911)
O.C. Law Library	3,049,905	1,770,282	717,136
O.C. Vector Control District	5,364,042	1,669,793	(1,370,622)
O.C. Retirement System	31,508,013	21,886,393	13,967,676
O.C. Fire Authority	709,796,767	469,430,660	271,606,264
Department of Education	6,325,632	4,415,517	2,843,468
Transportation Corridor Agency	18,110,922	12,423,364	7,742,431
City of San Juan Capistrano	36,118,552	25,089,009	16,011,553
O.C. Sanitation District	73,906,089	(10,384,510)	(79,756,756)
O.C. Transportation Authority	348,386,225	230,260,478	133,041,470
U.C.I.	52,130,271	36,113,699	22,931,855
O.C. Children and Families Comm.	4,546,726	3,158,290	2,015,589
Local Agency Formation Comm.	1,930,365	1,340,888	855,741
Rancho Santa Margarita	16,867	9,332	3,131
O.C. Superior Court	502,676,449	349,173,850	222,839,238
O.C. IHSS Public Authority	<u>1,301,134</u>	<u>781,506</u>	<u>353,845</u>
Total for all Employers	\$7,669,194,567	\$5,191,216,603	\$3,151,808,889

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 5

Schedule of Changes in Net Pension Liability – Last Two Plan Years

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Total Pension Liability		
1. Service cost	\$427,473,217	\$439,453,529
2. Interest	1,241,079,174	1,197,308,212
3. Change of benefit terms	0	0
4. Differences between expected and actual experience	(323,565,741)	(205,462,673)
5. Changes of assumptions	0	0
6. Benefit payments, including refunds of member contributions	(717,976,000)	(675,963,000)
7. Transfer of members among Rate Groups	0	0
8. Other ⁽¹⁾	<u>(508,788)</u>	<u>0</u>
9. Net change in Total Pension Liability	\$626,501,862	\$755,336,068
10. Total Pension Liability – beginning	<u>17,373,922,741</u>	<u>16,618,586,673</u>
11. Total Pension Liability – ending	<u>\$18,000,424,603</u>	<u>\$17,373,922,741</u>
Plan Fiduciary Net Position		
12. Contributions – employer ⁽²⁾	\$567,196,000	\$571,298,000
13. Contributions – plan members	258,297,000	249,271,000
14. Net investment income	1,061,243,000	(10,873,000)
15. Benefit payments, including refunds of member contributions	(717,976,000)	(675,963,000)
16. Transfer of members among Rate Groups	0	0
17. Administrative expense	(16,870,000)	(12,521,000)
18. Other	<u>0</u>	<u>0</u>
19. Net change in Plan Fiduciary Net Position	\$1,151,890,000	\$121,212,000
20. Plan Fiduciary Net Position – beginning	<u>11,657,318,000</u>	<u>11,536,106,000</u>
21. Plan Fiduciary Net Position – ending	\$12,809,208,000	\$11,657,318,000
22. Net Pension Liability – ending (11) – (21)	<u>\$5,191,216,603</u>	<u>\$5,716,604,741</u>
23. Plan Fiduciary Net Position as a percentage of the Total Pension Liability	71.16%	67.10%
24. Covered payroll ⁽³⁾	\$1,602,675,000	\$1,521,036,000
25. Plan Net Pension Liability as percentage of covered payroll	323.91%	375.84%

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 5 (continued)

Schedule of Changes in Net Pension Liability – Last Two Plan Years

- ⁽¹⁾ *O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit of \$509,000 given to O.C. 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⁾ *Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.*

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 6

Schedule of OCERS' Contributions – Last Ten Plan Years

Year Ended December 31	Actuarially Determined Contributions⁽¹⁾⁽²⁾	Contributions in Relation to the Actuarially Determined Contributions⁽¹⁾⁽²⁾	Contribution Deficiency (Excess)	Covered Payroll⁽³⁾	Contributions as a Percentage of Covered Payroll⁽¹⁾⁽²⁾
2007	\$326,736,000	\$326,736,000	\$0	\$1,410,559,000	23.16%
2008	359,673,000	360,365,000 ⁽⁴⁾	(692,000)	1,526,113,000	23.61%
2009	337,496,000	338,387,000 ⁽⁵⁾	(891,000)	1,598,888,000	21.16%
2010	372,437,000	372,437,000	0	1,511,569,000	24.64%
2011	387,585,000	387,585,000	0	1,498,914,000	25.86%
2012	406,521,000	406,521,000	0	1,497,475,000	27.15%
2013	426,020,000	427,095,000 ⁽⁶⁾	(1,075,000)	1,494,745,000	28.57%
2014	476,320,000	625,520,000 ⁽⁷⁾	(149,200,000)	1,513,206,000	41.34%
2015	502,886,000	571,298,000 ⁽⁸⁾	(68,412,000)	1,521,036,000	37.56%
2016	521,447,000	567,196,000 ⁽⁹⁾	(45,749,000)	1,602,675,000	35.40%

⁽¹⁾ Reduced by transfers from County Investment Account (funded by pension obligation proceeds held by OCERS). Those transfers are as follows:

<i>Plan Year Ended December 31</i>	<i>Transfers from County Investment Account</i>	<i>Plan Year Ended December 31</i>	<i>Transfers from County Investment Account</i>
2007	\$0	2012	\$5,500,000
2008	0	2013	5,000,000
2009	34,900,000	2014	5,000,000
2010	11,000,000	2015	0
2011	11,000,000	2016	0

⁽²⁾ Reduced by discount for prepaid contributions.

⁽³⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

⁽⁴⁾ Includes additional contributions of \$692,000 made by O.C. Fire Authority towards the reduction of their UAAL.

⁽⁵⁾ Includes additional contributions of \$891,000 made by O.C. Fire Authority towards the reduction of their UAAL.

⁽⁶⁾ Includes additional contributions of \$1,075,000 made by O.C. Fire Authority towards the reduction of their UAAL.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 6 (continued)

Schedule of OCERS' Contributions – Last Ten Plan Years

- ⁽⁷⁾ Includes additional contributions of \$1,663,000 made by O.C. Cemetery District, \$22,537,000 made by O.C. Fire Authority and \$125,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.
- ⁽⁸⁾ Includes additional contributions of \$18,412,000 made by O.C. Fire Authority and \$50,000,000 made by O.C. Sanitation District towards the reduction of their UAAL.
- ⁽⁹⁾ Includes additional contributions of \$5,133,000 made by O.C. Fire Authority, \$1,500,000 made by Law Library and \$5,587,000 made by O.C. Sanitation District towards the reduction of their UAAL as well as \$33,529,000 made by O.C. Sanitation District to their UAAL Deferred Account.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

Notes to Exhibit 6

Methods and assumptions used to establish “actuarially determined contribution” rates:

Valuation date	Actuarially determined contribution rates for the first six months of calendar year 2016 or the second half of fiscal year 2015-2016 are calculated based on the December 31, 2013 valuation. Actuarially determined contribution rates for the last six months of calendar year 2016 or the first half of fiscal year 2016-2017 are calculated based on the December 31, 2014 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	<p>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.</p> <p>For valuation purposes, the Valuation Value of Assets is reduced by the value of the non-valuation reserves.</p>

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

Notes to Exhibit 6 – continued

Actuarial assumptions:

December 31, 2013 valuation

<i>Investment rate of return</i>	7.25%, net of pension plan investment expense, including inflation
<i>Inflation rate</i>	3.25%
<i>Real across-the-board salary increase</i>	0.50%
<i>Projected salary increases</i>	General: 4.75% to 13.75% and Safety: 4.75% to 17.75%, vary by service, including inflation
<i>Cost of living adjustments</i>	3.00% of retirement income
<i>Other assumptions</i>	Same as those used in the December 31, 2013 funding actuarial valuation

December 31, 2014 valuation

<i>Investment rate of return</i>	7.25%, net of pension plan investment expense, including inflation
<i>Inflation rate</i>	3.00%
<i>Real across-the-board salary increase</i>	0.50%
<i>Projected salary increases</i>	General: 4.25% to 13.50% and Safety: 5.00% to 17.50%, vary by service, including inflation
<i>Cost of living adjustments</i>	3.00% of retirement income
<i>Other assumptions</i>	Same as those used in the December 31, 2014 funding actuarial valuation

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2015 to December 31, 2015						
Employer	Rate Group #1		Rate Group #2		Rate Group #3	
	Rate Group #1	Percentage	Rate Group #2	Percentage	Rate Group #3	Percentage
Orange County	\$14,447,000	98.783%	\$239,872,000	86.761%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	346,000	2.613%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	1,990,000	0.720%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	2,352,000	0.851%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	12,894,000	97.387%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	327,000	0.118%	0	0.000%
Local Agency Formation Comm.	0	0.000%	93,000	0.034%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	31,840,000	11.516%	0	0.000%
O.C. IHSS Public Authority	<u>178,000</u>	<u>1.217%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$14,625,000	100.000%	\$276,474,000	100.000%	\$13,240,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group						
January 1, 2015 to December 31, 2015						
Employer	Rate Group #4		Rate Group #5		Rate Group #9	Rate Group #9
	Rate Group #4	Percentage	Rate Group #5	Percentage		
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	1,507,000	100.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	25,056,000	100.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	100.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$0	100.000%	\$25,056,000	100.000%	\$1,507,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2015 to December 31, 2015						
Employer	Rate Group #10		Rate Group #11		Rate Group #6	Rate Group #6 Percentage
	Rate Group #10	Percentage	Rate Group #11	Percentage		
Orange County	\$0	0.000%	\$0	0.000%	\$23,816,000	100.000%
O.C. Cemetery District	0	0.000%	153,000	100.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	8,006,000	100.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$8,006,000	100.000%	\$153,000	100.000%	\$23,816,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2015 to December 31, 2015						
Employer	Rate Group #7	Rate Group #7 Percentage	Rate Group #8	Rate Group #8 Percentage	Total Contributions⁽¹⁾	Total Percentage
Orange County	\$102,571,000	100.000%	\$0	0.000%	\$380,706,000	73.373%
O.C. Cemetery District	0	0.000%	0	0.000%	153,000	0.029%
O.C. Law Library	0	0.000%	0	0.000%	346,000	0.067%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	1,990,000	0.384%
O.C. Fire Authority	0	0.000%	53,426,000	100.000%	61,432,000	11.839%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	1,507,000	0.290%
City of San Juan Capistrano	0	0.000%	0	0.000%	2,352,000	0.453%
O.C. Sanitation District	0	0.000%	0	0.000%	12,894,000	2.485%
O.C. Transportation Authority	0	0.000%	0	0.000%	25,056,000	4.829%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	327,000	0.063%
Local Agency Formation Comm.	0	0.000%	0	0.000%	93,000	0.018%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	31,840,000	6.136%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>178,000</u>	<u>0.034%</u>
Total for all Employers	\$102,571,000	100.000%	\$53,426,000	100.000%	\$518,874,000	100.000%

⁽¹⁾ Excludes combined additional contributions of \$68,726,000 made by O.C. Vector Control District, O.C. Fire Authority and O.C. Sanitation District towards the reduction of their Unfunded Actuarial Accrued Liabilities (UAALs), and contributions of \$62,000 made by U.C.I.. We have also excluded the employer paid member contributions of \$10,937,000.

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #1		Rate Group #2		Rate Group #3	
	Rate Group #1	Percentage	Rate Group #2	Percentage	Rate Group #3	Percentage
Orange County	\$68,698,986	61.324%	\$2,916,151,896	86.498%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	3,472,003	7.562%
O.C. Vector Control District ⁽²⁾	1,941,891	1.733%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	24,747,342	0.734%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	4,306,689	3.844%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	29,249,120	0.868%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	42,439,759	92.438%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I. ⁽²⁾	36,184,065	32.299%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	4,066,523	0.121%	0	0.000%
Local Agency Formation Comm.	0	0.000%	1,156,534	0.034%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	395,957,480	11.745%	0	0.000%
O.C. IHSS Public Authority	<u>895,964</u>	<u>0.800%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$112,027,595	100.000%	\$3,371,328,895	100.000%	\$45,911,762	100.000%

⁽²⁾ In determining the NPLs for the O.C. Vector Control District, Department of Education and U.C.I., we start by rolling forward the Valuation Value of Assets (VVAs) of these employers as of December 31, 2014 to December 2015 for the actual contributions, benefit payments and return on their VVAs during 2015. Those VVAs are then marked to the Plan Fiduciary Net Positions as of December 31, 2015. The TPLs for these employers are obtained from internal valuation results (by rolling forward their TPLs from December 31, 2014).

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #4		Rate Group #5		Rate Group #9	
	Rate Group #4	Percentage	Rate Group #5	Percentage	Rate Group #9	Percentage
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	12,713,136	100.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	250,192,983	100.000%	0	0.000%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	6,660	100.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$6,660	100.000%	\$250,192,983	100.000%	\$12,713,136	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #10		Rate Group #11		Rate Group #6	
	Rate Group #10	Percentage	Rate Group #11	Percentage	Rate Group #6	Percentage
Orange County	\$0	0.000%	\$0	0.000%	\$247,465,179	100.000%
O.C. Cemetery District	0	0.000%	533,906	100.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	68,197,783	100.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	0	0.000%	0	0.000%	0	0.000%
Total for all Employers	\$68,197,783	100.000%	\$533,906	100.000%	\$247,465,179	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #7		Rate Group #8		Total NPL	Total Percentage
	Rate Group #7	Percentage	Rate Group #8	Percentage		
Orange County	\$1,158,754,819	100.000%	\$0	0.000%	\$4,391,070,880	76.813%
O.C. Cemetery District	0	0.000%	0	0.000%	533,906	0.009%
O.C. Law Library	0	0.000%	0	0.000%	3,472,003	0.061%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	1,941,891	0.034%
O.C. Retirement System	0	0.000%	0	0.000%	24,747,342	0.433%
O.C. Fire Authority	0	0.000%	449,472,023	100.000%	517,669,806	9.056%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	4,306,689	0.075%
Transportation Corridor Agency	0	0.000%	0	0.000%	12,713,136	0.222%
City of San Juan Capistrano	0	0.000%	0	0.000%	29,249,120	0.512%
O.C. Sanitation District	0	0.000%	0	0.000%	42,439,759	0.742%
O.C. Transportation Authority	0	0.000%	0	0.000%	250,192,983	4.377%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	36,184,065	0.633%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	4,066,523	0.071%
Local Agency Formation Comm.	0	0.000%	0	0.000%	1,156,534	0.020%
Rancho Santa Margarita	0	0.000%	0	0.000%	6,660	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	395,957,480	6.926%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>895,964</u>	<u>0.016%</u>
Total for all Employers	\$1,158,754,819	100.000%	\$449,472,023	100.000%	\$5,716,604,741	100.000%

⁽²⁾ In determining the NPLs for the O.C. Vector Control District, Department of Education and U.C.I., we first start by rolling forward the VVAs of these employers as of December 31, 2014 to December 31, 2015 for the actual contributions, benefit payments and return on their VVAs during 2015. Those VVAs are then marked to the Plan Fiduciary Net Positions as of December 31, 2015. The TPLs for these employers are obtained from internal valuation results (by rolling forward their TPLs from December 31, 2014).

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

1. Based on the January 1, 2015 through December 31, 2015 employer contributions as provided by OCERS. These contributions have been adjusted to exclude employer paid member contributions and they have not been reduced for discount due to prepaid contributions. (It should be noted that we would also have included transfers made from the County Investment Account had those transfers been made in 2015.)
- 2a. The Net Pension Liability (NPL) for each Rate Group is the Total Pension Liability (TPL) minus the Plan Fiduciary Net Position (plan assets). The TPL for each Rate Group is obtained from internal valuation results. The Plan Fiduciary Net Position for each Rate Group is estimated by adjusting the Valuation Value of Assets (VVA) for each membership class by the ratio of the total OCERS Plan Fiduciary Net Position (excluding the balance of the County Investment Account) to total OCERS VVA. As previously directed by OCERS, the County Investment Account is then allocated among the four County Rate Groups using the proportions of County POB contributions made during 2015. Again, as there were no such County POB contributions made during 2015, we have continued to apply the same proportions determined in 2014 for each of the four County Rate Groups to allocate the \$108,789,000 in the County Investment Account as of December 31, 2015. These amounts are provided in item 3.
- b. Each of General Rate Groups #4, #5, #9, #10 and #11 and Safety Rate Groups #6, #7 and #8 have only one active employer, so all of the NPL for that Rate Group is allocated to the corresponding employer.
- c. For General Rate Groups #1, #2 and #3, the NPL is allocated based on the actual employer contributions within the General Rate Group.
 - Calculate ratio of employer's contributions to the total contributions for the Rate Group. For this purpose, the employer contributions exclude the following amounts:

Rate Group #1 (O.C. Vector Control District):	\$314,000
Rate Group #1 (U.C.I.):	62,000
Rate Group #3 (O.C. Sanitation District):	<u>50,000,000</u>
Total:	\$50,376,000
 - Multiply this ratio (unrounded) by the NPL for the Rate Group to determine the employer's proportionate share of the NPL for the Rate Group.
3. The percentages of contributions by employer are not exactly equal to the percentages we use to allocate the NPL by employer because the NPL for the County has been reduced to reflect the portion of the County Investment Account that has been allocated among the four County Rate Groups. The amounts of the County Investment Account that have been allocated to those Rate Groups are as follows:

Rate Group #1:	\$4,020,109
Rate Group #2:	66,860,434
Rate Group #6:	6,948,751
Rate Group #7:	<u>30,959,706</u>
Total:	\$108,789,000

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

4. The NPL for Rate Group #3 was allocated prior to reducing the NPL for the adjusted balances of the \$50,000,000 and \$125,000,000 in additional UAAL contributions made by O.C. Sanitation District on September 3, 2015 and on November 17, 2014, respectively. The adjusted balances are equal to \$51,154,089 (\$50,000,000 adjusted with interest to the end of 2015) and \$126,206,000, respectively, both as of December 31, 2015. As of December 31, 2014, the \$126,350,000 (\$125,000,000 adjusted with interest to the end of 2014) was amortized as a level percent of pay over twenty years using the actuarial assumptions in the December 31, 2014 valuation. The outstanding balance of the amount as of December 31, 2015 that would be amortized as a level percent of pay over the remaining nineteen years is \$126,206,000.

In addition, in determining the allocation percentage for each of O.C. Law Library and O.C. Sanitation District, we have added the \$9,010,000 from amortizing the \$126,350,000 (\$125,000,000 adjusted with interest to the end of 2014) as described above to the actual employer contributions for O.C. Sanitation District to estimate what their contributions would have been during 2015 without the additional UAAL contributions.

We choose this methodology in allocating the NPL for Rate Group #3 so as to match as closely as possible the methodology we use in allocating the payment towards the remaining UAAL for O.C. Sanitation District in the funding valuation that is not offset by the additional UAAL contribution. The only major difference is that for allocating the NPL, we use the proportions of the contributions made by these two employers (O.C. Law Library and O.C. Sanitation District), whereas for allocating the UAAL in the funding valuation, we use the proportions of their payrolls.

5. If the employer is in several Rate Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Rate Group. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2016 to December 31, 2016						
Employer	Rate Group #1		Rate Group #2		Rate Group #3	
	Rate Group #1	Percentage	Rate Group #2	Percentage	Rate Group #3	Percentage
Orange County	\$14,670,000	98.721%	\$247,553,000	87.257%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	1,975,000	0.696%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	2,264,000	0.798%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	9,764,000	100.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	285,000	0.100%	0	0.000%
Local Agency Formation Comm.	0	0.000%	121,000	0.043%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	31,509,000	11.106%	0	0.000%
O.C. IHSS Public Authority	<u>190,000</u>	<u>1.279%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$14,860,000	100.000%	\$283,707,000	100.000%	\$9,764,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2016 to December 31, 2016						
Employer	Rate Group #4		Rate Group #5		Rate Group #9	Rate Group #9 Percentage
	Rate Group #4	Percentage	Rate Group #5	Percentage		
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	1,799,000	100.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	24,584,000	100.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	100.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$0	100.000%	\$24,584,000	100.000%	\$1,799,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2016 to December 31, 2016						
Employer	Rate Group #10		Rate Group #11		Rate Group #12	
	Rate Group #10	Percentage	Rate Group #11	Percentage	Rate Group #12	Percentage
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	160,000	100.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	316,000	100.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	8,105,000	100.000%	0	0.000%	0	0.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$8,105,000	100.000%	\$160,000	100.000%	\$316,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2016 to December 31, 2016						
Employer	Rate Group #6		Rate Group #7		Rate Group #8	Rate Group #8
	Rate Group #6	Percentage	Rate Group #7	Percentage		
Orange County	\$25,628,000	100.000%	\$118,592,000	100.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	54,594,000	100.000%
Department of Education	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I.	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$25,628,000	100.000%	\$118,592,000	100.000%	\$54,594,000	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Contributions (Excluding Employer Paid Member Contributions and not Reduced for Discount due to Prepaid Contributions) by Employer and Rate Group January 1, 2016 to December 31, 2016		
Employer	Total Contributions⁽¹⁾	Total Percentage
Orange County	\$406,443,000	74.974%
O.C. Cemetery District	160,000	0.030%
O.C. Law Library	316,000	0.058%
O.C. Vector Control District	0	0.000%
O.C. Retirement System	1,975,000	0.364%
O.C. Fire Authority	62,699,000	11.566%
Department of Education	0	0.000%
Transportation Corridor Agency	1,799,000	0.332%
City of San Juan Capistrano	2,264,000	0.418%
O.C. Sanitation District	9,764,000	1.801%
O.C. Transportation Authority	24,584,000	4.535%
U.C.I.	0	0.000%
O.C. Children and Families Comm.	285,000	0.053%
Local Agency Formation Comm.	121,000	0.022%
Rancho Santa Margarita	0	0.000%
O.C. Superior Court	31,509,000	5.812%
O.C. IHSS Public Authority	<u>190,000</u>	<u>0.035%</u>
Total for all Employers	\$542,109,000	100.000%

⁽¹⁾ Excludes combined additional contributions of \$12,220,000 made by O.C. Law Library, O.C. Fire Authority and O.C. Sanitation District towards the reduction of their UAALs, \$33,529,000 made by O.C. Sanitation District towards their UAAL Deferred Account, combined contributions of \$1,315,000 made by U.C.I. and combined employer pick-up contributions of \$2,376,000.

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #1		Rate Group #2		Rate Group #3	
	Rate Group #1	Percentage	Rate Group #2	Percentage	Rate Group #3	Percentage
Orange County	\$55,990,224	56.573%	\$2,670,961,353	86.955%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District ⁽²⁾	1,669,793	1.687%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	21,886,393	0.713%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	4,415,517	4.461%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	25,089,009	0.817%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	(10,384,510)	100.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I. ⁽²⁾	36,113,699	36.489%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	3,158,290	0.103%	0	0.000%
Local Agency Formation Comm.	0	0.000%	1,340,888	0.044%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	349,173,850	11.368%	0	0.000%
O.C. IHSS Public Authority	<u>781,506</u>	<u>0.790%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$98,970,739	100.000%	\$3,071,609,783	100.000%	\$(10,384,510)	100.000%

⁽²⁾ In determining the NPLs for the O.C. Vector Control District, Department of Education and U.C.I., we first start by rolling forward the VVAs of these employers as of December 31, 2015 to December 31, 2016 for the actual contributions, benefit payments and return on their VVAs during 2016. Those VVAs are then marked to the Plan Fiduciary Net Positions as of December 31, 2016. The TPLs for these employers are obtained from internal valuation results (by rolling forward their TPLs from December 31, 2015).

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #4		Rate Group #5		Rate Group #9	
	Rate Group #4	Percentage	Rate Group #5	Percentage	Rate Group #9	Percentage
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	12,423,364	100.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	230,260,478	100.000%	0	0.000%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	9,332	100.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total for all Employers	\$9,332	100.000%	\$230,260,478	100.000%	\$12,423,364	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #10		Rate Group #11		Rate Group #12	
	Rate Group #10	Percentage	Rate Group #11	Percentage	Rate Group #12	Percentage
Orange County	\$0	0.000%	\$0	0.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	222,409	100.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	1,770,282	100.000%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	66,956,418	100.000%	0	0.000%	0	0.000%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	0	0.000%	0	0.000%	0	0.000%
Total for all Employers	\$66,956,418	100.000%	\$222,409	100.000%	\$1,770,282	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #6		Rate Group #7		Rate Group #8	
	Rate Group #6	Percentage	Rate Group #7	Percentage	Rate Group #8	Percentage
Orange County	\$217,761,584	100.000%	\$1,099,142,482	100.000%	\$0	0.000%
O.C. Cemetery District	0	0.000%	0	0.000%	0	0.000%
O.C. Law Library	0	0.000%	0	0.000%	0	0.000%
O.C. Vector Control District ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Retirement System	0	0.000%	0	0.000%	0	0.000%
O.C. Fire Authority	0	0.000%	0	0.000%	402,474,242	100.000%
Department of Education ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
Transportation Corridor Agency	0	0.000%	0	0.000%	0	0.000%
City of San Juan Capistrano	0	0.000%	0	0.000%	0	0.000%
O.C. Sanitation District	0	0.000%	0	0.000%	0	0.000%
O.C. Transportation Authority	0	0.000%	0	0.000%	0	0.000%
U.C.I. ⁽²⁾	0	0.000%	0	0.000%	0	0.000%
O.C. Children and Families Comm.	0	0.000%	0	0.000%	0	0.000%
Local Agency Formation Comm.	0	0.000%	0	0.000%	0	0.000%
Rancho Santa Margarita	0	0.000%	0	0.000%	0	0.000%
O.C. Superior Court	0	0.000%	0	0.000%	0	0.000%
O.C. IHSS Public Authority	0	0.000%	0	0.000%	0	0.000%
Total for all Employers	\$217,761,584	100.000%	\$1,099,142,482	100.000%	\$402,474,242	100.000%

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability		
Employer	Total NPL	Total Percentage
Orange County	\$4,043,855,643	77.898%
O.C. Cemetery District	222,409	0.004%
O.C. Law Library	1,770,282	0.034%
O.C. Vector Control District ⁽²⁾	1,669,793	0.032%
O.C. Retirement System	21,886,393	0.422%
O.C. Fire Authority	469,430,660	9.043%
Department of Education ⁽²⁾	4,415,517	0.085%
Transportation Corridor Agency	12,423,364	0.239%
City of San Juan Capistrano	25,089,009	0.483%
O.C. Sanitation District	(10,384,510)	(0.200%)
O.C. Transportation Authority	230,260,478	4.436%
U.C.I. ⁽²⁾	36,113,699	0.696%
O.C. Children and Families Comm.	3,158,290	0.061%
Local Agency Formation Comm.	1,340,888	0.026%
Rancho Santa Margarita	9,332	0.000%
O.C. Superior Court	349,173,850	6.726%
O.C. IHSS Public Authority	<u>781,506</u>	<u>0.015%</u>
Total for all Employers	\$5,191,216,603	100.000%

⁽²⁾ In determining the NPLs for the O.C. Vector Control District, Department of Education and U.C.I., we first start by rolling forward the VVAs of these employers as of December 31, 2015 to December 31, 2016 for the actual contributions, benefit payments and return on their VVAs during 2016. Those VVAs are then marked to the Plan Fiduciary Net Positions as of December 31, 2016. The TPLs for these employers are obtained from internal valuation results (by rolling forward their TPLs from December 31, 2015).

Note: Results may not total due to rounding.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

1. Based on the January 1, 2016 through December 31, 2016 employer contributions as provided by OCERS. These contributions have been adjusted to exclude employer paid member contributions and they have not been reduced for discount due to prepaid contributions. (It should be noted that we would also have included transfers made from the County Investment Account had those transfers been made in 2016.)
- 2a. The Net Pension Liability (NPL) for each Rate Group is the Total Pension Liability (TPL) minus the Plan Fiduciary Net Position (plan assets). The TPL for each Rate Group is obtained from internal valuation results. The Plan Fiduciary Net Position for each Rate Group is estimated by adjusting the Valuation Value of Assets (VVA) for each membership class by the ratio of the total OCERS Plan Fiduciary Net Position (excluding the balance of the County Investment Account and the O.C. Sanitation District UAAL Deferred Account) to total OCERS VVA. As previously directed by OCERS, the County Investment Account is then allocated among the four County Rate Groups using the proportions of County POB contributions made during 2016. Again, as there were no such County POB contributions made during 2016, we have continued to apply the same proportions determined in 2014 for each of the four County Rate Groups to allocate the \$117,723,000 in the County Investment Account as of December 31, 2016. These amounts are provided in item 3. The O.C. Sanitation District UAAL Deferred Account is allocated entirely to Rate Group #3.
- b. Each of General Rate Groups #3, #4, #5, #9, #10, #11 and #12 and Safety Rate Groups #6, #7 and #8 have only one active employer, so all of the NPL for that Rate Group is allocated to the corresponding employer.
- c. For General Rate Groups #1 and #2, the NPL is allocated based on the actual employer contributions within the General Rate Group.
 - Calculate ratio of employer's contributions to the total contributions for the Rate Group. For this purpose, the employer contributions exclude the following amounts:

Rate Group #1 (U.C.I):	\$1,315,000
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 - Multiply this ratio (unrounded) by the NPL for the Rate Group to determine the employer's proportionate share of the NPL for the Rate Group.
3. The percentages of contributions by employer are not exactly equal to the percentages we use to allocate the NPL by employer because the NPL for the County has been reduced to reflect the portion of the County Investment Account that has been allocated among the four County Rate Groups. The amounts of the County Investment Account that have been allocated to those Rate Groups are as follows:

Rate Group #1:	\$4,350,249
Rate Group #2:	72,351,166
Rate Group #6:	7,519,398
Rate Group #7:	<u>33,502,187</u>
Total:	\$117,723,000

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes:

4. If the employer is in several Rate Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Rate Group. Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers.

For the active employers, the following items are allocated based on the corresponding proportionate share within each Rate Group:

- 1) Net Pension Liability
- 2) Service cost
- 3) Interest on the Total Pension Liability
- 4) Expensed portion of current-period benefit changes
- 5) Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability
- 6) Member contributions
- 7) Projected earnings on plan investments
- 8) Expensed portion of current-period differences between actual and projected earnings on plan investments
- 9) Administrative expense
- 10) Recognition of beginning of year deferred outflows of resources as pension expense
- 11) Recognition of beginning of year deferred inflows of resources as pension expense

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8

Pension Expense: Total for all Employers

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$427,473,217	\$439,453,529
2. Interest on the Total Pension Liability	1,241,079,174	1,197,308,212
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(54,472,347)	(33,904,732)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(260,673,000)	(260,208,000)
8. Projected earnings on plan investments	(847,260,430)	(840,134,781)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(42,796,514)	170,201,555
10. Administrative expense	16,870,000	12,521,000
11. Other ⁽²⁾	(508,788)	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	257,782,993	87,160,041
13. Recognition of beginning of year deferred inflows of resources as pension expense	(137,122,998)	(102,796,869)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$600,371,307	\$669,599,955

⁽¹⁾ Member contributions include employer paid member contributions, if any.

⁽²⁾ O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit or a reduction in pension expense of \$509,000 (or \$508,788 before the credit was rounded to the nearest \$1,000) given to O.C. Law Library to reflect that their future service enhancement did not increase the UAAL.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: Orange County

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$310,677,756	\$318,491,501
2. Interest on the Total Pension Liability	913,821,313	879,509,254
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	2,433,278	451,552
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(41,565,082)	(26,824,487)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(199,977,528)	(199,910,480)
8. Projected earnings on plan investments	(610,558,840)	(605,353,034)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(31,008,753)	122,123,267
10. Administrative expense	11,987,403	8,527,621
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	189,096,136	66,400,804
13. Recognition of beginning of year deferred inflows of resources as pension expense	(103,441,319)	(76,189,358)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>1,233,839</u>	<u>782,287</u>
Pension Expense	\$442,698,203	\$488,008,927

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Cemetery District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$252,024	\$256,852
2. Interest on the Total Pension Liability	601,969	573,066
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(33,320)	6,273
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(122,000)	(117,000)
8. Projected earnings on plan investments	(569,032)	(567,917)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(26,224)	117,252
10. Administrative expense	5,579	3,983
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	151,243	27,718
13. Recognition of beginning of year deferred inflows of resources as pension expense	(74,480)	(74,480)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$185,759	\$225,747

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Law Library

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$279,061	\$1,151,201
2. Interest on the Total Pension Liability	637,114	3,088,308
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	(423,714)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(27,568)	(47,560)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(168,000)	(578,065)
8. Projected earnings on plan investments	(400,416)	(2,834,746)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(15,858)	597,615
10. Administrative expense	40,198	80,862
11. Other ⁽²⁾	(47,635)	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	711,421	113,806
13. Recognition of beginning of year deferred inflows of resources as pension expense	(436,723)	(389,163)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(372,508)</u>	<u>51,206</u>
Pension Expense	\$199,086	\$809,750

⁽¹⁾ Member contributions include employer paid member contributions, if any.

⁽²⁾ O.C. Law Library was separated out from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015. As we previously described in our October 2016 letters to OCERS for these two employers, there was an adjustment to the UAAL for Rate Group #3 that we originally included in our December 31, 2015 valuation. This was a credit or a reduction in pension expense of \$509,000 (or \$508,788 before the credit was rounded to the nearest \$1,000) given to O.C. Law Library to reflect that their future service enhancement did not increase the UAAL. In addition, there was an adjustment of \$461,153 (which increase the pension expense) to true up the TPL and Plan Fiduciary Position for O.C. Sanitation District to account for the separation of O.C. Law Library from O.C. Sanitation District in Rate Group #3 into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Vector Control District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$0	\$0
2. Interest on the Total Pension Liability	1,865,032	1,837,838
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	2,615	(411,244)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	0	0
8. Projected earnings on plan investments	(1,723,119)	(1,810,362)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(85,909)	363,079
10. Administrative expense	0	4,791
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	518,991	155,912
13. Recognition of beginning of year deferred inflows of resources as pension expense	(411,244)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$166,366	\$140,014

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Retirement System

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$1,600,895	\$1,709,170
2. Interest on the Total Pension Liability	4,937,984	4,936,990
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(112,549)	265,257
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(243,301)	(146,712)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(1,231,971)	(1,250,650)
8. Projected earnings on plan investments	(3,297,426)	(3,390,176)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(166,647)	685,759
10. Administrative expense	64,645	48,458
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	897,655	239,001
13. Recognition of beginning of year deferred inflows of resources as pension expense	(669,760)	(543,271)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>439,607</u>	<u>174,350</u>
Pension Expense	\$2,219,132	\$2,728,176

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Fire Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$51,569,319	\$52,315,736
2. Interest on the Total Pension Liability	120,041,748	114,370,387
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(5,249,320)	(3,700,296)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(20,637,000)	(19,652,000)
8. Projected earnings on plan investments	(83,957,811)	(81,450,036)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(3,959,396)	16,795,848
10. Administrative expense	1,771,539	1,488,950
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	28,178,179	11,382,331
13. Recognition of beginning of year deferred inflows of resources as pension expense	(7,790,233)	(4,089,937)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$79,967,025	\$87,460,983

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: Department of Education

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$0	\$0
2. Interest on the Total Pension Liability	979,191	997,724
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(1,101)	(54,894)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	0	0
8. Projected earnings on plan investments	(667,430)	(758,115)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(39,279)	152,424
10. Administrative expense	0	0
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	323,520	171,096
13. Recognition of beginning of year deferred inflows of resources as pension expense	(118,222)	(63,328)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$476,679	\$444,907

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: Transportation Corridor Agency

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$1,410,755	\$1,386,615
2. Interest on the Total Pension Liability	2,837,696	2,606,202
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	32,522	9,287
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(724,000)	(631,000)
8. Projected earnings on plan investments	(1,886,066)	(1,800,160)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(92,608)	359,431
10. Administrative expense	49,701	31,235
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	481,967	113,249
13. Recognition of beginning of year deferred inflows of resources as pension expense	(278,625)	(278,625)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$1,831,342	\$1,796,234

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: City of San Juan Capistrano

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$1,835,153	\$2,020,086
2. Interest on the Total Pension Liability	5,660,555	5,835,075
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(295,453)	(327,959)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(278,903)	(173,401)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(1,412,245)	(1,478,155)
8. Projected earnings on plan investments	(3,779,936)	(4,006,881)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(191,032)	810,505
10. Administrative expense	74,105	57,273
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	1,029,009	282,477
13. Recognition of beginning of year deferred inflows of resources as pension expense	(767,766)	(642,097)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(59,873)</u>	<u>268,086</u>
Pension Expense	\$1,813,614	\$2,645,009

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Sanitation District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$14,366,332	\$14,071,626
2. Interest on the Total Pension Liability	42,188,934	37,749,697
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	423,714
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(809,609)	(581,352)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(7,328,000)	(7,065,935)
8. Projected earnings on plan investments	(39,478,918)	(34,650,300)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(2,005,313)	7,304,901
10. Administrative expense	1,139,179	988,407
11. Other ⁽²⁾	(461,153)	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	8,696,006	1,391,105
13. Recognition of beginning of year deferred inflows of resources as pension expense	(5,338,250)	(4,756,898)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>372,508</u>	<u>(51,206)</u>
Pension Expense	\$11,341,716	\$14,823,759

⁽¹⁾ Member contributions include employer paid member contributions, if any.

⁽²⁾ There was an adjustment of \$(461,153) (which decrease the pension expense) to true up the TPL and Plan Fiduciary Position for O.C. Sanitation District to account for the separation of O.C. Law Library from O.C. Sanitation District in Rate Group #3 into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Transportation Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$19,401,018	\$20,106,878
2. Interest on the Total Pension Liability	59,200,130	57,134,829
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(2,389,215)	208,572
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(9,069,000)	(9,155,000)
8. Projected earnings on plan investments	(41,830,640)	(41,991,815)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(2,173,058)	8,454,888
10. Administrative expense	660,214	498,753
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	11,640,577	2,977,117
13. Recognition of beginning of year deferred inflows of resources as pension expense	(5,533,483)	(5,533,483)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$29,906,543	\$32,700,739

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: U.C.I.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$32,564	\$69,239
2. Interest on the Total Pension Liability	8,229,536	8,385,758
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	36,729	197,265
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(2,000)	(16,000)
8. Projected earnings on plan investments	(5,609,543)	(6,369,921)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(330,201)	1,280,396
10. Administrative expense	26,915	1,190
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	1,477,661	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(1,395,415)	(1,395,415)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$2,466,246	\$2,152,512

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Children and Families Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$231,015	\$280,853
2. Interest on the Total Pension Liability	712,570	811,254
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(100,828)	(60,468)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(35,109)	(24,108)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(177,778)	(205,509)
8. Projected earnings on plan investments	(475,831)	(557,079)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(24,048)	112,685
10. Administrative expense	9,329	7,963
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	129,535	39,273
13. Recognition of beginning of year deferred inflows of resources as pension expense	(96,649)	(89,271)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(114,243)</u>	<u>(53,775)</u>
Pension Expense	\$57,963	\$261,818

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: Local Agency Formation Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$98,081	\$79,874
2. Interest on the Total Pension Liability	302,530	230,724
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	51,545	(48,925)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(14,906)	(6,856)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(75,478)	(58,447)
8. Projected earnings on plan investments	(202,020)	(158,435)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(10,210)	32,048
10. Administrative expense	3,961	2,265
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	54,996	11,169
13. Recognition of beginning of year deferred inflows of resources as pension expense	(41,033)	(25,389)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(14,130)</u>	<u>34,795</u>
Pension Expense	\$153,336	\$92,823

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: Rancho Santa Margarita

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$0	\$0
2. Interest on the Total Pension Liability	3,734	3,770
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(635)	(268)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	0	0
8. Projected earnings on plan investments	(3,524)	(3,762)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	1,246	1,310
10. Administrative expense	0	0
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	2,623	1,313
13. Recognition of beginning of year deferred inflows of resources as pension expense	(442)	(174)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$3,002	\$2,189

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. Superior Court

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$25,540,564	\$27,346,733
2. Interest on the Total Pension Liability	78,780,220	78,991,834
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(1,984,092)	(298,013)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(3,881,603)	(2,347,397)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(19,654,778)	(20,010,404)
8. Projected earnings on plan investments	(52,606,887)	(54,242,813)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(2,658,671)	10,972,148
10. Administrative expense	1,031,349	775,329
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	14,321,126	3,824,008
13. Recognition of beginning of year deferred inflows of resources as pension expense	(10,685,305)	(8,692,339)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(1,506,768)</u>	<u>(1,208,755)</u>
Pension Expense	\$26,695,155	\$35,110,331

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 8 (continued)

Pension Expense: O.C. IHSS Public Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Components of Pension Expense		
1. Service cost	\$178,680	\$167,165
2. Interest on the Total Pension Liability	278,918	245,502
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	8,099	18,556
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(14,541)	(7,554)
6. Expensed portion of current-period changes of assumptions or other inputs	0	0
7. Member contributions ⁽¹⁾	(93,222)	(79,355)
8. Projected earnings on plan investments	(212,991)	(189,229)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	(10,553)	37,999
10. Administrative expense	5,883	3,920
11. Other	0	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	72,348	29,662
13. Recognition of beginning of year deferred inflows of resources as pension expense	(44,049)	(33,641)
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>21,568</u>	<u>3,012</u>
Pension Expense	\$190,140	\$196,037

⁽¹⁾ Member contributions include employer paid member contributions, if any.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9

Deferred Outflows of Resources and Deferred Inflows of Resources: Total for all Employers

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$21,323,498	\$11,462,838
2. Changes of assumptions or other inputs	89,986,612	118,284,287
3. Net difference between projected and actual earnings on pension plan investments	627,991,311	856,878,707
4. Difference between expected and actual experience in the Total Pension Liability	<u>3,792,676</u>	<u>2,849,306</u>
5. Total Deferred Outflows of Resources	\$743,094,097	\$989,475,138
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$21,323,498	\$11,462,838
7. Changes of assumptions or other inputs	155,711,355	204,677,189
8. Net difference between projected and actual earnings on pension plan investments	172,554,667	2,045,437
9. Difference between expected and actual experience in the Total Pension Liability	<u>579,008,315</u>	<u>395,853,967</u>
10. Total Deferred Inflows of Resources	\$928,597,835	\$614,039,431

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$120,659,995
2018	\$23,391,134	120,659,995
2019	23,391,133	120,659,994
2020	(34,617,875)	62,650,986
2021	(144,429,843)	(47,160,982)
2022	(53,238,287)	(2,034,281)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: Orange County

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$16,466,285	\$5,661,296
2. Changes of assumptions or other inputs	71,482,998	93,961,927
3. Net difference between projected and actual earnings on pension plan investments	455,782,748	620,258,690
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$543,732,031	\$719,881,913
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$124,932	\$106,488
7. Changes of assumptions or other inputs	116,628,948	152,530,977
8. Net difference between projected and actual earnings on pension plan investments	124,035,010	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>441,331,575</u>	<u>301,672,441</u>
10. Total Deferred Inflows of Resources	\$682,120,465	\$454,309,906

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$86,744,065
2018	\$16,748,100	86,744,065
2019	16,748,104	86,744,069
2020	(27,320,778)	42,822,192
2021	(106,192,104)	(35,900,002)
2022	(38,371,756)	(1,582,382)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Cemetery District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	407,188	552,158
4. Difference between expected and actual experience in the Total Pension Liability	<u>25,468</u>	<u>31,741</u>
5. Total Deferred Outflows of Resources	\$432,656	\$583,899
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	104,151	136,903
8. Net difference between projected and actual earnings on pension plan investments	104,895	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>297,296</u>	<u>174,426</u>
10. Total Deferred Inflows of Resources	\$506,342	\$311,329

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$76,763
2018	\$17,219	76,763
2019	17,217	76,761
2020	(10,501)	49,043
2021	(66,679)	(7,136)
2022	(30,942)	376
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Law Library

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$162,832	\$214,038
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	2,020,458	2,731,880
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$2,183,290	\$2,945,918
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,720,279	\$2,143,993
7. Changes of assumptions or other inputs	539,068	708,587
8. Net difference between projected and actual earnings on pension plan investments	63,430	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>1,027,751</u>	<u>1,158,768</u>
10. Total Deferred Inflows of Resources	\$3,350,528	\$4,011,348

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$(97,810)
2018	\$(141,236)	(97,810)
2019	(141,235)	(97,809)
2020	(255,042)	(211,616)
2021	(575,534)	(532,110)
2022	(54,191)	(28,275)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Vector Control District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	1,401,060	1,920,051
4. Difference between expected and actual experience in the Total Pension Liability	<u>12,918</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$1,413,978	\$1,920,051
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	0	0
8. Net difference between projected and actual earnings on pension plan investments	343,635	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>1,669,650</u>	<u>2,080,894</u>
10. Total Deferred Inflows of Resources	\$2,013,285	\$2,080,894

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$107,747
2018	\$24,453	107,747
2019	24,452	107,746
2020	(131,459)	(48,165)
2021	(494,537)	(411,244)
2022	(22,216)	(24,674)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Retirement System

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,631,373	\$2,070,980
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	2,460,971	3,460,039
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$4,092,344	\$5,531,019
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$555,990	\$0
7. Changes of assumptions or other inputs	921,940	1,248,450
8. Net difference between projected and actual earnings on pension plan investments	666,587	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>2,535,127</u>	<u>1,764,788</u>
10. Total Deferred Inflows of Resources	\$4,679,644	\$3,013,238

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$674,383
2018	\$145,005	674,383
2019	145,005	674,383
2020	(86,990)	435,383
2021	(463,194)	52,137
2022	(327,126)	7,112
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Fire Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	18,503,614	24,322,360
3. Net difference between projected and actual earnings on pension plan investments	61,514,711	83,874,144
4. Difference between expected and actual experience in the Total Pension Liability	<u>1,181,288</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$81,199,613	\$108,196,504
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	2,314,092	3,041,794
8. Net difference between projected and actual earnings on pension plan investments	15,837,586	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>52,828,035</u>	<u>32,777,639</u>
10. Total Deferred Inflows of Resources	\$70,979,713	\$35,819,433

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$20,387,946
2018	\$11,179,230	20,387,946
2019	11,179,227	20,387,943
2020	5,615,645	14,824,361
2021	(12,597,825)	(3,389,107)
2022	(5,156,377)	(222,018)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: Department of Education

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	457,274	609,698
4. Difference between expected and actual experience in the Total Pension Liability	<u>544,088</u>	<u>715,184</u>
5. Total Deferred Outflows of Resources	\$1,001,362	\$1,324,882
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	178,187	234,221
8. Net difference between projected and actual earnings on pension plan investments	171,705	21,882
9. Difference between expected and actual experience in the Total Pension Liability	<u>228,305</u>	<u>277,763</u>
10. Total Deferred Inflows of Resources	\$578,197	\$533,866

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$205,298
2018	\$164,918	205,298
2019	164,918	205,298
2020	172,214	212,594
2021	(74,560)	(34,179)
2022	(4,325)	(3,293)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: Transportation Corridor Agency

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	1,304,793	1,777,473
4. Difference between expected and actual experience in the Total Pension Liability	<u>198,368</u>	<u>46,994</u>
5. Total Deferred Outflows of Resources	\$1,503,161	\$1,824,467
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	496,686	652,876
8. Net difference between projected and actual earnings on pension plan investments	370,433	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>389,345</u>	<u>511,780</u>
10. Total Deferred Inflows of Resources	\$1,256,464	\$1,164,656

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$203,342
2018	\$143,256	203,342
2019	143,257	203,343
2020	30,008	90,094
2021	(100,956)	(40,869)
2022	31,132	559
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: City of San Juan Capistrano

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$852,511	\$1,120,597
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	2,821,082	4,089,453
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$3,673,593	\$5,210,050
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$2,791,050	\$1,659,471
7. Changes of assumptions or other inputs	1,056,846	1,475,554
8. Net difference between projected and actual earnings on pension plan investments	764,129	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>2,906,090</u>	<u>2,085,820</u>
10. Total Deferred Inflows of Resources	\$7,518,115	\$5,220,845

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$217,611
2018	\$(564,018)	217,611
2019	(564,018)	217,611
2020	(829,961)	(64,866)
2021	(1,317,158)	(568,684)
2022	(569,367)	(30,078)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Sanitation District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,720,279	\$2,143,993
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	24,696,915	33,392,920
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$26,417,194	\$35,536,913
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$162,832	\$214,038
7. Changes of assumptions or other inputs	6,589,263	8,661,357
8. Net difference between projected and actual earnings on pension plan investments	8,021,253	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>14,897,427</u>	<u>14,164,115</u>
10. Total Deferred Inflows of Resources	\$29,670,775	\$23,039,510

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$3,730,264
2018	\$915,342	3,730,264
2019	915,342	3,730,264
2020	(475,761)	2,339,161
2021	(3,838,015)	(1,023,092)
2022	(770,489)	(9,458)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Transportation Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	31,318,900	42,750,905
4. Difference between expected and actual experience in the Total Pension Liability	<u>846,803</u>	<u>1,055,375</u>
5. Total Deferred Outflows of Resources	\$32,165,703	\$43,806,280
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	10,519,667	13,827,738
8. Net difference between projected and actual earnings on pension plan investments	8,692,234	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>18,879,529</u>	<u>9,302,221</u>
10. Total Deferred Inflows of Resources	\$38,091,430	\$23,129,959

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$6,107,094
2018	\$1,544,821	6,107,094
2019	1,544,822	6,107,095
2020	(1,432,295)	3,129,978
2021	(5,349,730)	(787,455)
2022	(2,233,345)	12,515
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: U.C.I.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	3,841,190	5,121,586
4. Difference between expected and actual experience in the Total Pension Liability	<u>982,335</u>	<u>998,161</u>
5. Total Deferred Outflows of Resources	\$4,823,525	\$6,119,747
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	1,406,403	1,848,668
8. Net difference between projected and actual earnings on pension plan investments	2,669,842	2,023,555
9. Difference between expected and actual experience in the Total Pension Liability	<u>886,050</u>	<u>1,164,682</u>
10. Total Deferred Inflows of Resources	\$4,962,295	\$5,036,905

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$82,246
2018	\$(211,226)	82,246
2019	(211,227)	82,245
2020	463,294	756,766
2021	(225,970)	67,503
2022	46,359	11,836
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Children and Families Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	355,127	568,559
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$355,127	\$568,559
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$914,592	\$530,747
7. Changes of assumptions or other inputs	133,039	205,147
8. Net difference between projected and actual earnings on pension plan investments	96,191	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>365,828</u>	<u>289,993</u>
10. Total Deferred Inflows of Resources	\$1,509,650	\$1,025,887

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$(75,664)
2018	\$(241,342)	(75,664)
2019	(241,342)	(75,664)
2020	(274,820)	(114,937)
2021	(264,380)	(110,324)
2022	(132,639)	(5,075)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: Local Agency Formation Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$365,286	\$145,446
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	150,773	161,700
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$516,059	\$307,146
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$198,634	\$247,559
7. Changes of assumptions or other inputs	56,483	58,345
8. Net difference between projected and actual earnings on pension plan investments	40,839	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>155,317</u>	<u>82,475</u>
10. Total Deferred Inflows of Resources	\$451,273	\$388,379

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$(3,158)
2018	\$26,261	(3,158)
2019	26,261	(3,158)
2020	12,048	(14,327)
2021	(30,770)	(54,085)
2022	30,986	(3,347)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: Rancho Santa Margarita

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	10,654	7,848
4. Difference between expected and actual experience in the Total Pension Liability	<u>1,408</u>	<u>1,851</u>
5. Total Deferred Outflows of Resources	\$12,062	\$9,699
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	551	725
8. Net difference between projected and actual earnings on pension plan investments	0	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>4,224</u>	<u>1,357</u>
10. Total Deferred Inflows of Resources	\$4,775	\$2,082

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$2,181
2018	\$2,792	2,181
2019	2,792	2,181
2020	1,920	1,309
2021	395	(218)
2022	(612)	(17)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Superior Court

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	39,262,139	55,360,619
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$39,262,139	\$55,360,619
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$14,855,189	\$6,560,542
7. Changes of assumptions or other inputs	14,708,557	19,975,193
8. Net difference between projected and actual earnings on pension plan investments	10,634,686	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>40,445,221</u>	<u>28,236,614</u>
10. Total Deferred Inflows of Resources	\$80,643,653	\$54,772,349

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$2,249,653
2018	\$(6,395,313)	2,249,653
2019	(6,395,314)	2,249,652
2020	(10,096,552)	(1,574,356)
2021	(12,826,378)	(4,427,607)
2022	(5,667,957)	(158,725)
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. IHSS Public Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$124,932	\$106,488
2. Changes of assumptions or other inputs	0	0
3. Net difference between projected and actual earnings on pension plan investments	185,328	240,984
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$310,260	\$347,472
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	57,474	70,654
8. Net difference between projected and actual earnings on pension plan investments	42,212	0
9. Difference between expected and actual experience in the Total Pension Liability	<u>161,545</u>	<u>108,191</u>
10. Total Deferred Inflows of Resources	\$261,231	\$178,845

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GASB 68 Year Ended June 30:

2017	N/A	\$48,034
2018	\$32,872	48,034
2019	32,872	48,034
2020	1,155	18,372
2021	(12,448)	5,490
2022	(5,422)	663
2023	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GASB 68.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources

There are changes in each employer's proportionate share of the total NPL during the measurement period ended December 31, 2016. The net effect of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources for the current period (i.e., 2016) is recognized over the average of the expected remaining service lives of all employees that are provided with pensions through OCERS which is 5.94 years determined as of December 31, 2015 (the beginning of the measurement period ended December 31, 2016). This is described in Paragraph 33a. of GASB 68.

In addition, the difference between the actual employer contributions and the proportionate share of the employer contributions during the measurement period ended December 31, 2016 is recognized over the same period.

The net effects of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources for prior periods are continued to be recognized based on the expected remaining service lives of all employees calculated as of those prior measurement dates.

The average of the expected service lives of all employees is determined by:

- Calculating each active employees' expected remaining service life as the present value of \$1 per year of future service at zero percent interest.
- Setting the remaining service life to zero for each nonactive or retired member.
- Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10

Schedule of Proportionate Share of the Net Pension Liability: Total for all Employers

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	100.000%	\$5,291,126,088	\$1,494,745,333	353.98%	67.16%
2015	100.000%	5,082,480,673	1,513,206,357	335.87%	69.42%
2016	100.000%	5,716,604,741	1,521,035,820	375.84%	67.10%
2017	100.000%	5,191,216,603	1,602,675,426	323.91%	71.16%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: Orange County

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	74.198%	\$3,925,918,613	\$1,086,993,804	361.17%	66.88%
2015	76.680%	3,897,232,634	1,107,550,873	351.88%	68.16%
2016	76.813%	4,391,070,880	1,117,547,827	392.92%	65.66%
2017	77.898%	4,043,855,643	1,199,272,843	337.19%	69.56%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Cemetery District

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.034%	\$1,820,018	\$1,183,960	153.72%	76.02%
2015	(0.002%)	(95,350)	1,202,916	(7.93%)	101.24%
2016	0.009%	533,906	1,247,006	42.82%	93.62%
2017	0.004%	222,409	1,288,388	17.26%	97.47%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Law Library

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.063%	\$3,314,766	\$1,191,662	278.16%	63.14%
2015	0.063%	3,221,570	1,193,852	269.85%	66.76%
2016	0.061%	3,472,003	1,153,022	301.12%	62.38%
2017	0.034%	1,770,282	1,106,587	159.98%	80.96%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Vector Control District

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.047%	\$2,464,723	\$0	N/A	91.24%
2015	0.057%	2,900,367	0	N/A	89.85%
2016	0.034%	1,941,891	0	N/A	92.66%
2017	0.032%	1,669,793	0	N/A	93.78%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Retirement System

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.402%	\$21,259,813	\$5,368,550	396.01%	64.40%
2015	0.406%	20,656,114	5,655,725	365.22%	67.15%
2016	0.433%	24,747,342	6,063,327	408.15%	64.73%
2017	0.422%	21,886,393	6,190,905	353.52%	68.69%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Fire Authority

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	8.366%	\$442,651,348	\$129,689,221	341.32%	69.66%
2015	9.188%	466,968,323	129,187,729	361.46%	70.35%
2016	9.056%	517,669,806	129,452,647	399.89%	68.90%
2017	9.043%	469,430,660	124,514,004	377.01%	73.11%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: Department of Education

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.051%	\$2,691,224	\$62,538	4303.34%	81.08%
2015	0.072%	3,637,615	0	N/A	75.31%
2016	0.075%	4,306,689	0	N/A	69.50%
2017	0.085%	4,415,517	0	N/A	68.18%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: Transportation Corridor Agency

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.215%	\$11,359,334	\$6,054,822	187.61%	66.44%
2015	0.210%	10,682,807	6,118,067	174.61%	69.62%
2016	0.222%	12,713,136	6,088,331	208.81%	66.45%
2017	0.239%	12,423,364	6,431,272	193.17%	69.93%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: City of San Juan Capistrano

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.535%	\$28,312,625	\$6,324,207	447.69%	64.40%
2015	0.548%	27,866,378	6,863,345	406.02%	67.15%
2016	0.512%	29,249,120	6,464,876	452.43%	64.73%
2017	0.483%	25,089,009	6,636,488	378.05%	68.69%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Sanitation District

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	3.832%	\$202,747,516	\$58,954,754	343.90%	63.14%
2015	1.130%	57,418,760	58,641,163	97.92%	89.61%
2016	0.742%	42,439,759	59,789,927	70.98%	92.74%
2017	(0.200%)	-10,384,510	60,000,017	(17.31%)	101.70%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Transportation Authority

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	4.112%	\$217,568,793	\$92,199,745	235.98%	71.77%
2015	4.006%	203,591,950	95,061,437	214.17%	74.00%
2016	4.377%	250,192,983	93,109,984	268.71%	69.82%
2017	4.436%	230,260,478	94,507,309	243.64%	73.17%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: U.C.I.

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.609%	\$32,214,491	\$643,375	5007.11%	74.44%
2015	0.523%	26,578,391	574,780	4624.10%	77.81%
2016	0.633%	36,184,065	285,025	12695.05%	69.50%
2017	0.696%	36,113,699	43,707	82626.81%	68.96%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Children and Families Comm.

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.087%	\$4,590,845	\$1,116,074	411.34%	64.40%
2015	0.078%	3,957,425	1,043,030	379.42%	67.15%
2016	0.071%	4,066,523	1,042,786	389.97%	64.73%
2017	0.061%	3,158,290	925,031	341.43%	68.69%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: Local Agency Formation Comm.

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.022%	\$1,187,537	\$273,719	433.85%	64.40%
2015	0.026%	1,303,484	334,804	389.33%	67.15%
2016	0.020%	1,156,534	287,698	402.00%	64.73%
2017	0.026%	1,340,888	374,792	357.77%	68.69%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: Rancho Santa Margarita

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	(0.000%)	\$(4,181)	\$0	N/A	108.66%
2015	0.000%	1,729	0	N/A	96.78%
2016	0.000%	6,660	0	N/A	88.06%
2017	0.000%	9,332	0	N/A	82.95%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. Superior Court

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	7.415%	\$392,321,750	\$103,987,082	377.28%	64.40%
2015	7.002%	355,886,410	99,034,265	359.36%	67.15%
2016	6.926%	395,957,480	97,656,241	405.46%	64.73%
2017	6.726%	349,173,850	100,413,439	347.74%	68.69%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: O.C. IHSS Public Authority

Reporting Date for Employer under GASB 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered payroll	Plan Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.013%	\$706,873	\$701,820	100.72%	73.15%
2015	0.013%	672,066	744,371	90.29%	75.26%
2016	0.016%	895,964	847,123	105.77%	73.52%
2017	0.015%	781,506	970,644	80.51%	79.30%

⁽¹⁾ Covered payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11

Schedule of Reconciliation of Net Pension Liability: Total for all Employers

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$5,716,604,741	\$5,082,480,673
2. Pension Expense	600,371,307	669,599,955
3. Employer Contributions	(564,820,000)	(560,361,000)
4. New Net Deferred Inflows/Outflows	(440,279,450)	509,248,285
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(120,659,995)	15,636,828
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$5,191,216,603	\$5,716,604,741

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: Orange County

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$4,391,070,880	\$3,897,232,634
2. Pension Expense	442,698,203	488,008,927
3. Employer Contributions	(385,953,000)	(357,930,000)
4. New Net Deferred Inflows/Outflows	(329,366,525)	352,761,164
5. Change in Allocation of Prior Deferred Inflows/Outflows	274,357	(292,961)
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	12,020,384	2,284,849
7. Recognition of Prior Deferred Inflows/Outflows	(85,654,817)	9,788,554
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(1,233,839)</u>	<u>(782,287)</u>
9. Ending Net Pension Liability	\$4,043,855,643	\$4,391,070,880

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Cemetery District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$533,906	\$(95,350)
2. Pension Expense	185,759	225,747
3. Employer Contributions	(151,000)	(144,000)
4. New Net Deferred Inflows/Outflows	(269,493)	500,747
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(76,763)	46,762
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$222,409	\$533,906

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Law Library

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$3,472,003	\$3,221,570
2. Pension Expense	199,086	809,750
3. Employer Contributions	(1,799,000)	(325,000)
4. New Net Deferred Inflows/Outflows	(199,617)	2,149,805
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	(464,280)
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	(2,143,993)
7. Recognition of Prior Deferred Inflows/Outflows	(274,698)	275,357
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>372,508</u>	<u>(51,206)</u>
9. Ending Net Pension Liability	\$1,770,282	\$3,472,003

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Vector Control District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,941,891	\$2,900,367
2. Pension Expense	166,366	140,014
3. Employer Contributions	0	(314,000)
4. New Net Deferred Inflows/Outflows	(330,717)	(628,578)
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(107,747)	(155,912)
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,669,793	\$1,941,891

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Retirement System

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$24,747,342	\$20,656,114
2. Pension Expense	2,219,132	2,728,176
3. Employer Contributions	(1,975,000)	(1,990,000)
4. New Net Deferred Inflows/Outflows	(1,868,493)	2,000,673
5. Change in Allocation of Prior Deferred Inflows/Outflows	(13,096)	(119,740)
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(555,990)	1,342,199
7. Recognition of Prior Deferred Inflows/Outflows	(227,895)	304,270
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(439,607)</u>	<u>(174,350)</u>
9. Ending Net Pension Liability	\$21,886,393	\$24,747,342

⁽¹⁾ *Include differences between employer contributions and proportionate share of contributions.*

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Fire Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$517,669,806	\$466,968,323
2. Pension Expense	79,967,025	87,460,983
3. Employer Contributions	(66,049,000)	(77,927,000)
4. New Net Deferred Inflows/Outflows	(41,769,225)	48,459,894
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(20,387,946)	(7,292,394)
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$469,430,660	\$517,669,806

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: Department of Education

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$4,306,689	\$3,637,615
2. Pension Expense	476,679	444,907
3. Employer Contributions	0	0
4. New Net Deferred Inflows/Outflows	(162,553)	331,935
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(205,298)	(107,768)
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$4,415,517	\$4,306,689

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: Transportation Corridor Agency

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$12,713,136	\$10,682,807
2. Pension Expense	1,831,342	1,796,234
3. Employer Contributions	(1,708,000)	(1,416,000)
4. New Net Deferred Inflows/Outflows	(209,772)	1,484,719
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(203,342)	165,376
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$12,423,364	\$12,713,136

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: City of San Juan Capistrano

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$29,249,120	\$27,866,378
2. Pension Expense	1,813,614	2,645,009
3. Employer Contributions	(2,140,000)	(2,208,000)
4. New Net Deferred Inflows/Outflows	(2,141,908)	2,364,614
5. Change in Allocation of Prior Deferred Inflows/Outflows	(30,909)	149,056
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(1,459,538)	(1,659,471)
7. Recognition of Prior Deferred Inflows/Outflows	(261,243)	359,620
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>59,873</u>	<u>(268,086)</u>
9. Ending Net Pension Liability	\$25,089,009	\$29,249,120

⁽¹⁾ *Include differences between employer contributions and proportionate share of contributions.*

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Sanitation District

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$42,439,759	\$57,418,760
2. Pension Expense	11,341,716	14,823,759
3. Employer Contributions	(48,415,000)	(62,106,000)
4. New Net Deferred Inflows/Outflows	(12,020,721)	26,277,968
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	464,280
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	2,143,993
7. Recognition of Prior Deferred Inflows/Outflows	(3,357,756)	3,365,793
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(372,508)</u>	<u>51,206</u>
9. Ending Net Pension Liability	\$(10,384,510)	\$42,439,759

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Transportation Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$250,192,983	\$203,591,950
2. Pension Expense	29,906,543	32,700,739
3. Employer Contributions	(23,237,000)	(23,531,000)
4. New Net Deferred Inflows/Outflows	(20,494,954)	34,874,928
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(6,107,094)	2,556,366
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$230,260,478	\$250,192,983

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: U.C.I.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$36,184,065	\$26,578,391
2. Pension Expense	2,466,246	2,152,512
3. Employer Contributions	(1,315,000)	(62,000)
4. New Net Deferred Inflows/Outflows	(1,139,366)	6,119,747
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(82,246)	1,395,415
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$36,113,699	\$36,184,065

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Children and Families Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$4,066,523	\$3,957,425
2. Pension Expense	57,963	261,818
3. Employer Contributions	(269,000)	(307,000)
4. New Net Deferred Inflows/Outflows	(269,631)	328,754
5. Change in Allocation of Prior Deferred Inflows/Outflows	(10,834)	27,721
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(498,088)	(305,968)
7. Recognition of Prior Deferred Inflows/Outflows	(32,886)	49,998
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>114,243</u>	<u>53,775</u>
9. Ending Net Pension Liability	\$3,158,290	\$4,066,523

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: Local Agency Formation Comm.

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,156,534	\$1,303,484
2. Pension Expense	153,336	92,823
3. Employer Contributions	(115,000)	(88,000)
4. New Net Deferred Inflows/Outflows	(114,475)	93,499
5. Change in Allocation of Prior Deferred Inflows/Outflows	5,691	22,862
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	254,635	(247,559)
7. Recognition of Prior Deferred Inflows/Outflows	(13,963)	14,220
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>14,130</u>	<u>(34,795)</u>
9. Ending Net Pension Liability	\$1,340,888	\$1,156,534

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: Rancho Santa Margarita

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$6,660	\$1,729
2. Pension Expense	3,002	2,189
3. Employer Contributions	0	0
4. New Net Deferred Inflows/Outflows	1,851	3,881
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	(2,181)	(1,139)
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$9,332	\$6,660

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. Superior Court

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$395,957,480	\$355,886,410
2. Pension Expense	26,695,155	35,110,331
3. Employer Contributions	(31,509,000)	(31,840,000)
4. New Net Deferred Inflows/Outflows	(29,809,804)	32,010,763
5. Change in Allocation of Prior Deferred Inflows/Outflows	(229,513)	220,836
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(9,801,415)	(1,507,946)
7. Recognition of Prior Deferred Inflows/Outflows	(3,635,821)	4,868,331
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>1,506,768</u>	<u>1,208,755</u>
9. Ending Net Pension Liability	\$349,173,850	\$395,957,480

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: O.C. IHSS Public Authority

Reporting Date for Employer under GASB 68	June 30, 2017	June 30, 2016
Measurement Date for Employer under GASB 68	December 31, 2016	December 31, 2015
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$895,964	\$672,066
2. Pension Expense	190,140	196,037
3. Employer Contributions	(185,000)	(173,000)
4. New Net Deferred Inflows/Outflows	(114,047)	113,772
5. Change in Allocation of Prior Deferred Inflows/Outflows	4,304	(7,774)
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	40,012	93,896
7. Recognition of Prior Deferred Inflows/Outflows	(28,299)	3,979
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(21,568)</u>	<u>(3,012)</u>
9. Ending Net Pension Liability	\$781,506	\$895,964

⁽¹⁾ Include differences between employer contributions and proportionate share of contributions.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 12

Schedule of Recognition of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience on Total Pension Liability

Reporting Date for Employer under GASB 68 Year Ended June 30	Differences between Expected and Actual Experience	Recognition Period (Years)	Reporting Date for Employer under GASB 68 Year Ended June 30:								
			2015	2016	2017	2018	2019	2020	2021	2022	
2015	\$(327,402,088)	6.18	\$(52,977,684)	\$(52,977,684)	\$(52,977,684)	\$(52,977,684)	\$(52,977,684)	\$(52,977,684)	\$(52,977,684)	\$(9,535,984)	\$0
2016	(205,462,673)	6.06	N/A	(33,904,732)	(33,904,732)	(33,904,732)	(33,904,732)	(33,904,732)	(33,904,732)	(33,904,732)	(2,034,281)
2017	(323,565,741)	5.94	N/A	N/A	(54,472,347)	(54,472,347)	(54,472,347)	(54,472,347)	(54,472,347)	(54,472,347)	(51,204,006)
Net increase (decrease) in pension expense			\$(52,977,684)	\$(86,882,416)	\$(141,354,763)	\$(141,354,763)	\$(141,354,763)	\$(141,354,763)	\$(141,354,763)	\$(97,913,063)	\$(53,238,287)

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes

Reporting Date for Employer under GASB 68 Year Ended June 30	Effects of Assumption Changes	Recognition Period (Years)	Reporting Date for Employer under GASB 68 Year Ended June 30:								
			2015	2016	2017	2018	2019	2020	2021	2022	
2015	\$(127,729,220)	6.18	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(3,720,266)	\$0
2016	0	6.06	N/A	0	0	0	0	0	0	0	0
2017	0	5.94	N/A	N/A	0	0	0	0	0	0	0
Net increase (decrease) in pension expense			\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(20,668,159)	\$(3,720,266)	\$0

As described in Exhibit 9, for the current period, the average of the expected remaining service lives of all employees that are provided with pensions through OCERS (active and inactive employees) determined as of December 31, 2015 (the beginning of the measurement period ending December 31, 2016) is 5.94 years.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 12 (continued)

Schedule of Recognition of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Pension Plan Investments

Reporting Date for Employer under GASB 68 Year Ended June 30	Differences between Projected and Actual Earnings	Recognition Period (Years)	Reporting Date for Employer under GASB 68 Year Ended June 30:							
			2015	2016	2017	2018	2019	2020	2021	2022
2015	\$290,045,074	5.00	\$58,009,015	\$58,009,015	\$58,009,015	\$58,009,015	\$58,009,014	\$0	\$0	\$0
2016	851,007,781	5.00	N/A	170,201,555	170,201,555	170,201,555	170,201,555	170,201,561	0	0
2017	(213,982,570)	5.00	N/A	N/A	(42,796,514)	(42,796,514)	(42,796,514)	(42,796,514)	(42,796,514)	0
Net increase (decrease) in pension expense			\$58,009,015	\$228,210,570	\$185,414,056	\$185,414,056	\$185,414,055	\$127,405,047	\$(42,796,514)	\$0

The differences between projected and actual earnings on pension plan investments are recognized over a five-year period per Paragraph 33b. of GASB 68.

Total Increase (Decrease) in Pension Expense

Reporting Date for Employer under GASB 68 Year Ended June 30	Total Differences	Reporting Date for Employer under GASB 68 Year Ended June 30:								
		2015	2016	2017	2018	2019	2020	2021	2022	
2015	\$(165,086,234)	\$(15,636,828)	\$(15,636,828)	\$(15,636,828)	\$(15,636,828)	\$(15,636,829)	\$(73,645,843)	\$(13,256,250)	\$0	
2016	645,545,108	N/A	136,296,823	136,296,823	136,296,823	136,296,823	136,296,829	(33,904,732)	(2,034,281)	
2017	(537,548,311)	N/A	N/A	(97,268,861)	(97,268,861)	(97,268,861)	(97,268,861)	(97,268,861)	(51,204,006)	
Net increase (decrease) in pension expense		\$(15,636,828)	\$120,659,995	\$23,391,134	\$23,391,134	\$23,391,133	\$(34,617,875)	\$(144,429,843)	\$(53,238,287)	

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 13

Allocation of Changes in Total Net Pension Liability

In addition to the amounts shown in Exhibit 12, there are changes in each employer's proportionate share of the total Net Pension Liability (NPL) during the measurement period ending on December 31, 2016. The net effect of the change in the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources is also recognized over the average of the expected remaining service lives of all employees shown above. The difference between the actual employer contributions and the proportionate share of the employer contributions during the measurement period ending on December 31, 2016 is recognized over the same periods. These amounts are shown below. While these amounts are different for each employer, they sum to zero over the entire OCERS.

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 13 (continued)

Allocation of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of the Change in Proportion and Change in Employer Contributions for the Year Ended December 31, 2016

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GASB 68 Year Ended June 30:						Thereafter
			2017	2018	2019	2020	2021	2022	
Orange County	\$14,453,662	5.94	\$2,433,278	\$2,433,278	\$2,433,278	\$2,433,278	\$2,433,278	\$2,287,272	\$0
O.C. Cemetery District	0	5.94	0	0	0	0	0	0	0
O.C. Law Library	0	5.94	0	0	0	0	0	0	0
O.C. Vector Control District	0	5.94	0	0	0	0	0	0	0
O.C. Retirement System	(668,539)	5.94	(112,549)	(112,549)	(112,549)	(112,549)	(112,549)	(105,794)	0
O.C. Fire Authority	0	5.94	0	0	0	0	0	0	0
Department of Education	0	5.94	0	0	0	0	0	0	0
Transportation Corridor Agency	0	5.94	0	0	0	0	0	0	0
City of San Juan Capistrano	(1,754,991)	5.94	(295,453)	(295,453)	(295,453)	(295,453)	(295,453)	(277,726)	0
O.C. Sanitation District	0	5.94	0	0	0	0	0	0	0
O.C. Transportation Authority	0	5.94	0	0	0	0	0	0	0
U.C.I.	0	5.94	0	0	0	0	0	0	0
O.C. Children and Families Comm.	(598,916)	5.94	(100,828)	(100,828)	(100,828)	(100,828)	(100,828)	(94,776)	0
Local Agency Formation Comm.	306,180	5.94	51,545	51,545	51,545	51,545	51,545	48,455	0
Rancho Santa Margarita	0	5.94	0	0	0	0	0	0	0
O.C. Superior Court	(11,785,507)	5.94	(1,984,092)	(1,984,092)	(1,984,092)	(1,984,092)	(1,984,092)	(1,865,047)	0
O.C. IHSS Public Authority	<u>48,111</u>	5.94	<u>8,099</u>	<u>8,099</u>	<u>8,099</u>	<u>8,099</u>	<u>8,099</u>	<u>7,616</u>	<u>0</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0	\$0	\$0

SECTION 2: GASB 68 Information for the Orange County Employees Retirement System

EXHIBIT 13 (continued)

Allocation of Changes in Total Net Pension Liability

The amounts as of December 31, 2015 are as follows:

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GASB 68 Year Ended June 30:						
			2016	2017	2018	2019	2020	2021	Thereafter
Orange County	\$2,736,401	6.06	\$451,552	\$451,552	\$451,552	\$451,552	\$451,552	\$451,552	\$27,089
O.C. Cemetery District	0	6.06	0	0	0	0	0	0	0
O.C. Law Library	(2,567,707)	6.06	(423,714)	(423,714)	(423,714)	(423,714)	(423,714)	(423,714)	(25,423)
O.C. Vector Control District	0	6.06	0	0	0	0	0	0	0
O.C. Retirement System	1,607,456	6.06	265,257	265,257	265,257	265,257	265,257	265,257	15,914
O.C. Fire Authority	0	6.06	0	0	0	0	0	0	0
Department of Education	0	6.06	0	0	0	0	0	0	0
Transportation Corridor Agency	0	6.06	0	0	0	0	0	0	0
City of San Juan Capistrano	(1,987,430)	6.06	(327,959)	(327,959)	(327,959)	(327,959)	(327,959)	(327,959)	(19,676)
O.C. Sanitation District	2,567,707	6.06	423,714	423,714	423,714	423,714	423,714	423,714	25,423
O.C. Transportation Authority	0	6.06	0	0	0	0	0	0	0
U.C.I.	0	6.06	0	0	0	0	0	0	0
O.C. Children and Families Comm.	(366,436)	6.06	(60,468)	(60,468)	(60,468)	(60,468)	(60,468)	(60,468)	(3,628)
Local Agency Formation Comm.	(296,484)	6.06	(48,925)	(48,925)	(48,925)	(48,925)	(48,925)	(48,925)	(2,934)
Rancho Santa Margarita	0	6.06	0	0	0	0	0	0	0
O.C. Superior Court	(1,805,959)	6.06	(298,013)	(298,013)	(298,013)	(298,013)	(298,013)	(298,013)	(17,881)
O.C. IHSS Public Authority	<u>112,452</u>	6.06	<u>18,556</u>	<u>18,556</u>	<u>18,556</u>	<u>18,556</u>	<u>18,556</u>	<u>18,556</u>	<u>1,116</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0	\$0	\$0

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Actuarial Assumptions and Methods

For December 31, 2016 Measurement Date and Employer Reporting as of June 30, 2017

Rationale for 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, 2011 through December 31, 2013 Actuarial Experience Study and December 31, 2014 Economic Actuarial Assumptions Report both dated July 10, 2014. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers.

Economic Assumptions

Net Investment Return: 7.25%; net of investment expenses.

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

Consumer Price Index: Increase of 3.00% per year, retiree COLA increases due to CPI subject to a 3.0% maximum change per year.

Payroll Growth: Inflation of 3.00% per year plus “across the board” real salary increases of 0.50% per year.

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy: For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years.

Disabled: For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set forward six years for males and set forward three years for females.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.

Beneficiaries: Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who is receiving a service (non-disability) retirement.

The mortality tables shown above were determined to contain about a 10% margin to reflect future mortality improvement, based on a review of the mortality experience as of the measurement date.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

- Member Contribution Rates:* For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 40% male and 60% female.
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years weighted 80% male and 20% female.
- Optional Forms of Benefits:* For General Service Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 40% male and 60% female.
For Safety Service Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years weighted 80% male and 20% female.
For General Disabled Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set forward six years for males and set forward three years for females weighted 40% male and 60% female.
For Safety Disabled Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 80% male and 20% female.
For General Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 60% male and 40% female.
For Safety Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 20% male and 80% female.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Termination Rates Before Retirement:

Age	Rate (%) Mortality			
	General		Safety	
	Male	Female	Male	Female
25	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.02
35	0.07	0.04	0.06	0.04
40	0.10	0.07	0.09	0.06
45	0.14	0.11	0.12	0.09
50	0.20	0.16	0.18	0.14
55	0.34	0.25	0.27	0.21
60	0.59	0.41	0.48	0.33
65	1.00	0.76	0.82	0.60

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Termination Rates Before Retirement (Continued):

Age	Rate (%)			
	Disability			
	General All Other ⁽¹⁾	General OCTA ⁽²⁾	Safety - Law & Fire ⁽³⁾	Safety - Probation ⁽³⁾
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.01	0.03
30	0.01	0.03	0.04	0.08
35	0.03	0.20	0.14	0.10
40	0.08	0.36	0.26	0.10
45	0.11	0.43	0.42	0.16
50	0.14	0.48	0.92	0.20
55	0.18	0.74	1.98	0.23
60	0.29	1.41	5.20	0.10

- ⁽¹⁾ 55% of General All Other disabilities are assumed to be service connected disabilities. The other 45% are assumed to be non-service connected.
- ⁽²⁾ 65% of General - OCTA disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected.
- ⁽³⁾ 100% of Safety – Law Enforcement, Fire and Probation disabilities are assumed to be service connected disabilities.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Termination Rates Before Retirement (Continued):

Years of Service	Rate (%)			
	Termination			
	General All Other ⁽¹⁾	General OCTA ⁽²⁾	Safety – Law & Fire ⁽³⁾	Safety - Probation ⁽⁴⁾
0	11.00	17.50	4.00	16.00
1	8.00	13.50	3.00	13.00
2	7.00	10.50	2.00	10.00
3	5.00	10.00	1.00	6.00
4	4.00	9.00	1.00	4.00
5	3.75	7.00	1.00	3.50
6	3.50	5.00	0.95	3.00
7	3.00	5.00	0.90	2.50
8	2.75	4.00	0.85	2.25
9	2.50	3.50	0.80	2.00
10	2.25	3.50	0.75	1.75
11	2.00	3.50	0.65	1.75
12	2.00	3.00	0.60	1.50
13	1.75	3.00	0.50	1.25
14	1.75	3.00	0.50	1.00
15	1.75	3.00	0.50	1.00
16	1.50	3.00	0.50	1.00
17	1.50	2.75	0.50	0.50
18	1.50	2.75	0.50	0.50
19	1.50	2.75	0.50	0.50
20 +	1.25	1.75	0.25	0.50

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

- (1) 40% of all terminated members with less than 5 years of service and 25% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (2) 45% of all terminated members with less than 5 years of service and 35% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (3) 20% of all terminated members with less than 5 years of service and 20% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (4) 40% of all terminated members with less than 5 years of service and 30% of all terminated members with 5 or more years of service will choose a refund of contributions.*

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Retirement Rates:

Age	Rate (%)							
	General - Enhanced	General - Non-Enhanced ⁽¹⁾	General - SJC (31676.12)	Safety - Law (31664.1) ⁽²⁾	Safety - Law (31664.2) ⁽²⁾	Safety - Fire (31664.1) ⁽²⁾	Safety - Fire (31664.2) ⁽²⁾	Safety - Probation ⁽²⁾
49	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0
50	2.5	2.5	3.0	16.0	11.5	6.0	8.0	3.0
51	2.0	2.5	3.0	16.0	12.0	8.0	10.0	3.0
52	2.0	2.5	3.0	16.0	12.7	9.0	11.0	4.0
53	2.0	2.5	3.0	16.0	17.9	10.0	12.0	4.0
54	5.0	2.5	3.0	22.0	18.8	16.0	14.0	6.0
55	15.0	3.0	4.0	22.0	30.7	19.0	24.0	11.0
56	10.0	3.5	5.0	20.0	20.0	20.0	23.0	11.0
57	10.0	5.0	6.0	20.0	20.0	23.0	27.0	17.0
58	10.0	5.0	7.0	20.0	25.0	30.0	27.0	20.0
59	11.0	7.0	9.0	26.0	30.0	30.0	36.0	20.0
60	12.0	9.0	11.0	45.0	100.0	45.0	100.0	20.0
61	12.0	10.0	13.0	45.0	100.0	45.0	100.0	20.0
62	15.0	16.0	15.0	45.0	100.0	45.0	100.0	25.0
63	16.0	16.0	15.0	45.0	100.0	45.0	100.0	50.0
64	16.0	18.0	20.0	45.0	100.0	45.0	100.0	50.0
65	21.0	21.0	20.0	100.0	100.0	100.0	100.0	100.0
66	22.0	26.0	24.0	100.0	100.0	100.0	100.0	100.0
67	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
68	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
69	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
70	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
71	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
72	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
73	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
74	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
75	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

⁽¹⁾ These assumptions are also used for the CalPEPRA 1.62% @ 65 formula (Plan T and Plan W).

⁽²⁾ Retirement rate is 100% after a member accrues a benefit of 100% of final average earnings.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Retirement Rates (Continued):

Age	Rate (%)			
	CalPEPRA 2.5% @ 67 General Formula	CalPEPRA Safety - Probation Formula ⁽¹⁾	CalPEPRA Safety - Law Formula ⁽¹⁾	CalPEPRA Safety - Fire Formula ⁽¹⁾
50	0.0	2.5	11.0	6.5
51	0.0	2.5	11.5	8.0
52	4.0	3.0	12.0	9.0
53	1.5	3.0	16.0	10.0
54	1.5	5.5	17.0	12.0
55	2.5	10.0	28.0	21.0
56	3.5	10.0	18.0	20.0
57	5.5	15.0	17.5	22.0
58	7.5	20.0	22.0	25.0
59	7.5	20.0	26.0	31.5
60	7.5	100.0	100.0	100.0
61	7.5	100.0	100.0	100.0
62	14.0	100.0	100.0	100.0
63	14.0	100.0	100.0	100.0
64	14.0	100.0	100.0	100.0
65	18.0	100.0	100.0	100.0
66	22.0	100.0	100.0	100.0
67	23.0	100.0	100.0	100.0
68	23.0	100.0	100.0	100.0
69	23.0	100.0	100.0	100.0
70	30.0	100.0	100.0	100.0
71	30.0	100.0	100.0	100.0
72	30.0	100.0	100.0	100.0
73	30.0	100.0	100.0	100.0
74	30.0	100.0	100.0	100.0
75	100.0	100.0	100.0	100.0

⁽¹⁾ Retirement rate is 100% after a member accrues a benefit of 100% of final average earnings.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Retirement Age and Benefit for Deferred Vested Members:

For current deferred vested members, we make the following retirement age assumptions:

General Age: 58

Safety Age: 53

We assume that 20% of future General and 30% of future Safety deferred vested members will continue to work for a reciprocal employer. For these members, we assume 4.25% compensation increases for General and 5.00% for Safety per annum.

Liability Calculation for Current Deferred Vested Members:

Liability for a current deferred vested member is calculated based on salary, service, and eligibility for reciprocal benefit as provided by the Retirement System. For those members without salary information that have 3 or more years of service, we used an average salary. For those members without salary information that have less than 3 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:

75% of male members and 50% of female members are assumed to be married at retirement or time of pre-retirement death.

Age of Spouse:

Female (or male) three years younger (or older) than spouse.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Individual Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 3.00% per year, plus “across the board” real salary increases of 0.50% per year, plus the following merit and promotional increases:

Years of Service	General	Safety
Less than 1	10.00%	14.00%
1	7.25	10.00
2	6.00	8.50
3	4.75	6.75
4	4.00	5.25
5	3.25	4.50
6	2.25	3.50
7	2.00	3.25
8	1.50	2.25
9	1.25	2.25
10	1.25	1.75
11	1.25	1.75
12	1.25	1.75
13	1.25	1.75
14	1.25	1.75
15	1.25	1.75
16	0.75	1.50
17	0.75	1.50
18	0.75	1.50
19	0.75	1.50
20 & over	0.75	1.50

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

Additional Cashout Assumptions:

Non-CalPEPRA Formulas

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

	<u>Final One Year Salary</u>	<u>Final Three Year Salary</u>
General Members	3.50%	2.80%
Safety - Probation	3.80%	2.80%
Safety - Law	5.20%	4.70%
Safety - Fire	2.00%	2.00%

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

CalPEPRA Formulas

None

**Increase in Section 7522.10
Compensation Limit:**

Increase of 3.00% per year from the valuation date.

Actuarial Methods

Actuarial Cost Method:

Entry Age Actuarial Cost Method. Entry Age is the current age minus Vesting Credit. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salaries.

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.

Expected Remaining Service Lives:

The average of the expected service lives of all employees is determined by:

- Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

- Setting the remaining service life to zero for each nonactive or retired member.
 - Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.
-

Changes in Actuarial Assumptions and Methods:

None.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX A

**Calculation of Discount Rate as of December 31, 2016
Projection of Pension Plan Fiduciary Net Position (\$ in millions)**

Year Beginning January 1	Projected Beginning Plan's Fiduciary Net Position (a)	Projected Total Contributions * (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan's Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2016	\$11,657	\$825	\$718	\$17	\$1,061	\$12,809
2017	12,809	789	808	19	927	13,699
2018	13,699	806	863	20	990	14,612
2019	14,612	829	922	21	1,055	15,554
2020	15,554	849	982	23	1,122	16,520
2021	16,520	852	1,043	24	1,190	17,496
2022	17,496	860	1,108	25	1,259	18,482
2023	18,482	863	1,177	27	1,328	19,470
2024	19,470	870	1,247	28	1,397	20,462
2025	20,462	878	1,318	30	1,467	21,460
2041	30,586	157	2,442	44	2,135	30,391
2042	30,391	147	2,489	44	2,118	30,123
2043	30,123	139	2,525	44	2,097	29,791
2044	29,791	133	2,553	43	2,072	29,399
2045	29,399	126	2,577	43	2,043	28,949
2090	24,993	45	62	36	1,810	26,750
2091	26,750	46	48	39	1,938	28,648
2092	28,648	48	37	41	2,076	30,693
2093	30,693	50	29	44	2,224	32,895
2094	32,895	52	22	48	2,384	35,262
2131	437,709	633	0 **	633	31,734	469,442
2132	469,442					
2132 Discounted Value:	150 ***					

* Of all the projected total contributions, only the first year's (i.e., 2016) contribution has been reduced by discount for prepaid contributions, transfers from County Investment Account and O.C. Sanitation District UAAL Deferred Account, if any.

** Less than \$1 million, when rounded.

*** \$469,442 million when discounted with interest at the rate of 7.25% per annum has a value of \$150 million as of December 31, 2016. Of this amount, about \$117 million is the balance available in the County Investment Account and \$34 million is the O.C. Sanitation District UAAL Deferred Account as of December 31, 2016.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX A (continued)

Calculation of Discount Rate as of December 31, 2016 Projection of Pension Plan Fiduciary Net Position (\$ in millions)

Notes:

- (1) Amounts may not total exactly due to rounding.
- (2) Amounts shown in the year beginning January 1, 2016 row are actual amounts, based on the financial statements provided by OCERS.
- (3) Years 2026-2040, 2046-2089, and 2095-2130 have been omitted from this table.
- (4) Column (a): Except for the "discounted value" shown for 2132, all of the projected beginning Plan's Fiduciary Net Position amounts shown have not been adjusted for the time value of money.
- (5) Column (b): Projected total contributions include member and employer normal cost rates applied to closed group projected payroll (based on covered active members as of December 31, 2015), plus employer contributions to the Unfunded Actuarial Accrued Liability. Contributions are assumed to occur halfway through the year, on average.
- (6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of December 31, 2015. The projected benefit payments reflect the cost of living increase assumptions used in the December 31, 2015 valuation report. The 2016 benefit payments have been increased by the balance of the Medicare Insurance Reserve as of December 31, 2016.
- (7) Column (d): Projected administrative expenses are calculated as approximately 0.14% of the projected beginning Plan's Fiduciary Net Position amount. The 0.14% portion was based on the actual calendar year 2016 administrative expenses (unaudited) as a percentage of the actual beginning Plan's Fiduciary Net Position as of January 1, 2016. Administrative expenses are assumed to occur halfway through the year, on average.
- (8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.25% per annum.
- (9) As illustrated in this Exhibit, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.25% per annum was applied to all periods of projected benefit payments to determine the total pension liability as of December 31, 2016 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX B

Schedule of Pension Amounts by Employer as of December 31, 2016

	Orange County	O.C. Cemetery District	O.C. Law Library	O.C. Vector Control District	O.C. Retirement System
Deferred Outflows of Resources					
Differences Between Expected and Actual Experience	\$0	\$25,468	\$0	\$12,918	\$0
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	455,782,748	407,188	2,020,458	1,401,060	2,460,971
Changes of Assumptions	71,482,998	0	0	0	0
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>16,466,285</u>	<u>0</u>	<u>162,832</u>	<u>0</u>	<u>1,631,373</u>
Total Deferred Outflows of Resources	\$543,732,031	\$432,656	\$2,183,290	\$1,413,978	\$4,092,344
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$441,331,575	\$297,296	\$1,027,751	\$1,669,650	\$2,535,127
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	124,035,010	104,895	63,430	343,635	666,587
Changes of Assumptions	116,628,948	104,151	539,068	0	921,940
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>124,932</u>	<u>0</u>	<u>1,720,279</u>	<u>0</u>	<u>555,990</u>
Total Deferred Inflows of Resources	\$682,120,465	\$506,342	\$3,350,528	\$2,013,285	\$4,679,644
Net Pension Liability as of December 31, 2015	\$4,391,070,880	\$533,906	\$3,472,003	\$1,941,891	\$24,747,342
Net Pension Liability as of December 31, 2016	\$4,043,855,643	\$222,409	\$1,770,282	\$1,669,793	\$21,886,393
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Allocable Plan Pension Expense	\$439,031,086	\$185,759	\$571,594	\$166,366	\$1,892,074
Net Amortization of Deferred Amounts from Changes in					
Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>3,667,117</u>	<u>0</u>	<u>(372,508)</u>	<u>0</u>	<u>327,058</u>
Total Employer Pension Expense Excluding That					
Attributable to Employer-Paid Member Contributions	\$442,698,203	\$185,759	\$199,086	\$166,366	\$2,219,132

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

	O.C. Fire Authority	Department of Education	Transportation Corridor Agency	City of San Juan Capistrano	O.C. Sanitation District
Deferred Outflows of Resources					
Differences Between Expected and Actual Experience	\$1,181,288	\$544,088	\$198,368	\$0	\$0
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	61,514,711	457,274	1,304,793	2,821,082	24,696,915
Changes of Assumptions	18,503,614	0	0	0	0
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>0</u>	<u>852,511</u>	<u>1,720,279</u>
Total Deferred Outflows of Resources	\$81,199,613	\$1,001,362	\$1,503,161	\$3,673,593	\$26,417,194
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$52,828,035	\$228,305	\$389,345	\$2,906,090	\$14,897,427
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	15,837,586	171,705	370,433	764,129	8,021,253
Changes of Assumptions	2,314,092	178,187	496,686	1,056,846	6,589,263
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>0</u>	<u>2,791,050</u>	<u>162,832</u>
Total Deferred Inflows of Resources	\$70,979,713	\$578,197	\$1,256,464	\$7,518,115	\$29,670,775
Net Pension Liability as of December 31, 2015	\$517,669,806	\$4,306,689	\$12,713,136	\$29,249,120	\$42,439,759
Net Pension Liability as of December 31, 2016	\$469,430,660	\$4,415,517	\$12,423,364	\$25,089,009	\$(10,384,510)
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Allocable Plan Pension Expense	\$79,967,025	\$476,679	\$1,831,342	\$2,168,940	\$10,969,208
Net Amortization of Deferred Amounts from Changes in					
Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>0</u>	<u>(355,326)</u>	<u>372,508</u>
Total Employer Pension Expense Excluding That Attributable to Employer-Paid Member Contributions	\$79,967,025	\$476,679	\$1,831,342	\$1,813,614	\$11,341,716

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

	O.C. Transportation Authority	U.C.I.	O.C. Children and Families Comm.	Local Agency Formation Comm.	Rancho Santa Margarita
Deferred Outflows of Resources					
Differences Between Expected and Actual Experience	\$846,803	\$982,335	\$0	\$0	\$1,408
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	31,318,900	3,841,190	355,127	150,773	10,654
Changes of Assumptions	0	0	0	0	0
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>0</u>	<u>365,286</u>	<u>0</u>
Total Deferred Outflows of Resources	\$32,165,703	\$4,823,525	\$355,127	\$516,059	\$12,062
Deferred Inflows of Resources					
Differences Between Expected and Actual Experience	\$18,879,529	\$886,050	\$365,828	\$155,317	\$4,224
Net Difference Between Projected and Actual Investment					
Earnings on Pension Plan Investments	8,692,234	2,669,842	96,191	40,839	0
Changes of Assumptions	10,519,667	1,406,403	133,039	56,483	551
Changes in Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>914,592</u>	<u>198,634</u>	<u>0</u>
Total Deferred Inflows of Resources	\$38,091,430	\$4,962,295	\$1,509,650	\$451,273	\$4,775
Net Pension Liability as of December 31, 2015	\$250,192,983	\$36,184,065	\$4,066,523	\$1,156,534	\$6,660
Net Pension Liability as of December 31, 2016	\$230,260,478	\$36,113,699	\$3,158,290	\$1,340,888	\$9,332
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions					
Proportionate Share of Allocable Plan Pension Expense	\$29,906,543	\$2,466,246	\$273,034	\$115,921	\$3,002
Net Amortization of Deferred Amounts from Changes in					
Proportion and Differences Between Employer					
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>0</u>	<u>(215,071)</u>	<u>37,415</u>	<u>0</u>
Total Employer Pension Expense Excluding That					
Attributable to Employer-Paid Member Contributions	\$29,906,543	\$2,466,246	\$57,963	\$153,336	\$3,002

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

	O.C. Superior Court	O.C. IHSS Public Authority	Total for all Employers
Deferred Outflows of Resources			
Differences Between Expected and Actual Experience	\$0	\$0	\$3,792,676
Net Difference Between Projected and Actual Investment			
Earnings on Pension Plan Investments	39,262,139	185,328	627,991,311
Changes of Assumptions	0	0	89,986,612
Changes in Proportion and Differences Between Employer			
Contributions and Proportionate Share of Contributions	<u>0</u>	<u>124,932</u>	<u>21,323,498</u>
Total Deferred Outflows of Resources	\$39,262,139	\$310,260	\$743,094,097
Deferred Inflows of Resources			
Differences Between Expected and Actual Experience	\$40,445,221	\$161,545	\$579,008,315
Net Difference Between Projected and Actual Investment			
Earnings on Pension Plan Investments	10,634,686	42,212	172,554,667
Changes of Assumptions	14,708,557	57,474	155,711,355
Changes in Proportion and Differences Between Employer			
Contributions and Proportionate Share of Contributions	<u>14,855,189</u>	<u>0</u>	<u>21,323,498</u>
Total Deferred Inflows of Resources	\$80,643,653	\$261,231	\$928,597,835
Net Pension Liability as of December 31, 2015	\$395,957,480	\$895,964	\$5,716,604,741
Net Pension Liability as of December 31, 2016	\$349,173,850	\$781,506	\$5,191,216,603
Pension Expense Excluding That Attributable to Employer-Paid Member Contributions			
Proportionate Share of Allocable Plan Pension Expense	\$30,186,015	\$160,473	\$600,371,307
Net Amortization of Deferred Amounts from Changes in			
Proportion and Differences Between Employer			
Contributions and Proportionate Share of Contributions	<u>(3,490,860)</u>	<u>29,667</u>	<u>0</u>
Total Employer Pension Expense Excluding That			
Attributable to Employer-Paid Member Contributions	\$26,695,155	\$190,140	\$600,371,307

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

Notes:

Amounts shown in this exhibit were allocated by employer based on the Employer Allocation Percentage calculated in Exhibit 7.

In determining the pension expense:

- Any differences between projected and actual investment earnings on pension plan investments are recognized over a period of five years beginning with the year in which they occur.
- Current-period (i.e., 2016) differences between expected and actual experience and changes of assumptions are recognized over the average of the expected remaining service lives of all employees that are provided with pensions through OCERS determined as of December 31, 2015 (the beginning of the measurement period ending December 31, 2016) and is 5.94 years.
- Prior-period differences between expected and actual experience and changes of assumptions are continued to be recognized based on the expected remaining service lives of all employees calculated as of those prior measurement dates.

The average of the expected remaining service lives of all employees was determined by:

- Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.
- Setting the remaining service life to zero for each nonactive or retired members.
- Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

Note: Results may not total due to rounding.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C

GLOSSARY

Definitions of certain terms *as they are used in Statement 68*; the terms may have different meanings in other contexts.

Active employees

Individuals employed at the end of the reporting or measurement period, as applicable.

Actual contributions

Cash contributions recognized as additions to a Pension Plan's Fiduciary Net Position.

Actuarial present value of projected benefit payments

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial valuation

The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

Actuarial valuation date

The date as of which an actuarial valuation is performed.

Actuarially determined contribution

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

Ad hoc cost-of-living adjustments (ad hoc COLAs)

Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C (continued)

GLOSSARY

Automatic cost-of-living adjustments (automatic COLAs)

Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Closed period

A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.

Collective deferred outflows of resources and deferred inflows of resources related to pensions

Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.

Collective Net Pension Liability

The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.

Collective pension expense

Pension expense arising from certain changes in the collective Net Pension Liability.

Contributions

Additions to a Pension Plan's Fiduciary Net Position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.

Cost-of-living adjustments

Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-sharing employer

An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C (continued)

GLOSSARY

Cost-sharing multiple-employer defined benefit pension plan (cost-sharing pension plan)

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

Covered payroll

The payroll of members that are provided with pensions through the pension plan.

Defined benefit pension plans

Pension plans that are used to provide defined benefit pensions.

Defined benefit pensions

Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 68.)

Defined contribution pension plans

Pension plans that are used to provide defined contribution pensions.

Defined contribution pensions

Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C (continued)

GLOSSARY

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 Statement 68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Entry age actuarial cost method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the *normal cost*. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the *actuarial accrued liability*.

Inactive employees

Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.

Measurement period

The period between the prior and the current measurement dates.

Multiple-employer defined benefit pension plan

A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C (continued)

GLOSSARY

Net Pension Liability

The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit pension plan.

Pension plans

Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed, and benefits are paid as they come due.

Pensions

Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.

Plan members

Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).

Postemployment

The period after employment.

Postemployment benefit changes

Adjustments to the pension of an inactive employee.

Projected benefit payments

All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.

Public employee retirement system

A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Orange County Employees Retirement System

APPENDIX C (continued)

GLOSSARY

Real rate of return

The rate of return on an investment after adjustment to eliminate inflation.

Service costs

The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.

Termination benefits

Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.

Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 68.

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C

Memorandum

DATE: June 1, 2017
TO: Members of the Audit Committee
FROM: Steve Delaney, Chief Executive Officer
SUBJECT: **DIRECTIVE TO REVIEW OCERS INVESTMENT FEE REPORT**

Recommendation

Receive and file.

Background

On March 20, 2017, following a discussion of investment fees and how best to include those in the OCERS annual budget, if at all, the OCERS Board, at Chair Ball's request, directed the Audit Committee to review the format of the current version of the Annual Investment Fee Report [Attachment 1a & b] to determine if it meets the needs and requirements of the fund.

On March 29, 2017, the Audit Committee conducted an initial review of the fee report, and at the Committee Chair Packard's direction, the issue will continue with the committee for additional consideration.

On May 15, I provided the full Board with a memo entitled "Directive to Review OCERS Investment Fee Report" [Attachment 2] that provided suggestions for possible Audit Committee's goals in three broad categories of inquiry – namely, to determine if the annual investment fee report meets the legal, policy and managerial requirements and expectations of such a report.

Finally, ongoing criticism of the general issue of fees and their obtuse complexity, such as the May 24 Forbes news article regarding CalPERS [Attachment 3], further demonstrates the importance of this work.

Discussion

At the June 9 Audit Committee meeting, I will be joined by representatives of OCERS' Finance, Investment and Legal teams to provide additional background on the current status of fee reporting at OCERS, the challenges we face, and the creation of a project timeline to produce the value we expect from the Annual Investment Fee Report.

The goal of the committee's work should be to ensure we have a reporting tool that is both transparent and actionable. It doesn't help to see how much OCERS is paying in fees if such reporting doesn't also "lead to improvements in monitoring, and future contract negotiations. The report should meaningfully address the benefit derived for payment of fees for advice and

Memorandum

implementation. Fees are not the enemy. Poorly negotiated agreements, weak investment administration and poorly structured incentives are the real issues we should resolve. OCERS should embrace paying for performance” – Chair David Ball.

It’s good to note from the start that OCERS is presently sitting on a good foundation when it comes to fee reporting:

A Fee Report is Being Created Annually

In August 2017 we plan on issuing our fourth annual report. Recall that OCERS won national accolades for the production of the first fee report in 2013 when the Government Finance Officers Association of the U.S. and Canada (GFOA) awarded OCERS its coveted Award for Excellence in retirement plan financial management, which recognized the comprehensive approach OCERS has taken to fee management.

The introduction of the 2015 edition of the Investment Fee Report makes clear the scope and purpose that had been intended:

This annual fee report is required by the OCERS board investment committee’s fee policy which was adopted in April 2013.

Now in its third year, the annual report remains a work-in-progress. It will continue to evolve in the future as additional decision-useful information is acquired.

At a summary level, the OCERS portfolio cannot sustain high fees in a low-return world. This year, there are two simple themes that run through the report, First, we must look for ways to reduce fee drag, including the reduction or elimination of high-fee managers that fail to produce value for the money we pay them, and seek still-better alignment of fees from those managers we retain. With a new general consultant working with us to re-examine our portfolio structure, this fee report provides a sobering starting point for that family discussion. Second, trustees will need to be more realistic about the actual fee drag on our portfolio returns when actuarial assumptions are made: the fees are not a free lunch and this year they clearly exceed “alpha” at the portfolio level. Fee drag must also be considered when setting the employer prepayment discount rate. The fund will undershoot its actuarial targets over time if the fee assumptions are unrealistically low

Obtaining the Fee Report Data

The OCERS annual Investment Fee Report is presently based on a simplified fee template drafted by OCERS staff and forwarded to all managers. As with many other public pension plans however, early last year OCERS CIO Mr. Girard Miller began actively investigating how best to encourage our alternative investment managers to use the ILPA (Institutional Limited Partners Association) reporting template [Attachment 4]. That template, first launched in 2016 is now being completed by more than 160 GPs worldwide and is fast becoming the standard for reporting fees.

The Fee Report Includes an Action Items Section

The current fee report already calls for certain specific actions, as noted in the executive summary:

Memorandum

- The absolute-return (hedge fund) investment category should be reviewed for cost-effectiveness in light of relatively high fees and diminished performance expectations in today's low-yield market, which leaves OCERS with an unattractive expected return, net of fees
- Actuarial assumptions for fee drag on expected future returns (~40 bps) should be re-evaluated for realism in light of actual experience (103 bps) in a lackluster year
- Multi-manager strategies with higher fees should be re-evaluated

OCERS investment staff will work on an improved process for bringing forward recommendations such as these from future Investment Fee Reports for consideration by the Investment Committee.

The charge to the Audit Committee will be to determine what other actionable, value add tasks can be served through continued improvement of this foundational document?

Legal Requirements

In 2016, the California Legislature enacted AB 2833, adding section 7514.7 to the California Government Code to require much more transparency into the investment fees paid by public pension systems in California. Prior legislation (SB 439, enacted in 2005) had amended the California Public Records Act (CPRA) to add Government Code section 6254.26 to specify what information about public pension investments in alternative investment vehicles was public and disclosable pursuant to a request under the CPRA.

Newly enacted Section 7514.7 imposes a requirement on public pension systems to collect investment fee information and greatly expands the information that must be disclosed publicly. It also requires affirmative disclosure of the information about public pension investments in alternative investment vehicles that previously would have had to be disclosed only if the public pension system received a request under the CPRA.

Section 7514.7 applies to new alternative investment contracts entered into on or after January 1, 2017 and existing alternative investment contracts for which a new capital commitment is made on or after January 1, 2017. For these contracts, public retirement systems in California, including OCERS, are required to obtain from the alternative investment vehicle certain information with respect to the fees paid by the retirement system to the fund manager. In addition, the retirement system is required to undertake reasonable efforts to obtain the same information for any existing alternative investment contract for which no new commitment was made on or after January 1, 2017. Finally, the fee information must be disclosed at a public meeting at least on an annual basis.

Government Code section 7514.7(a) delineates the information that must be collected and disclosed. Section 7514.7(a) states, in full, as follows:

Memorandum

“(a) Every public investment fund shall require each alternative investment vehicle in which it invests to make the following disclosures at least annually:

- (1) The fees and expenses that the public investment fund pays directly to the alternative investment vehicle, the fund manager, or related parties.
- (2) The public investment fund's pro rata share of fees and expenses not included in paragraph (1) that are paid from the alternative investment vehicle to the fund manager or related parties. The public investment fund may independently calculate this information based on information contractually required to be provided by the alternative investment vehicle to the public investment fund. If the public investment fund independently calculates this information, then the alternative investment vehicle shall not be required to provide the information identified in this paragraph.
- (3) The public investment fund's pro rata share of carried interest distributed to the fund manager or related parties.
- (4) The public investment fund's pro rata share of aggregate fees and expenses paid by all of the portfolio companies held within the alternative investment vehicle to the fund manager or related parties.
- (5) Any additional information described in subdivision (b) of Section 6254.26.”

Government Code Section 6254.26(b) describes the information that must be disclosed as follows:

- “(1)The name, address, and vintage year of each alternative investment vehicle.
- (2) The dollar amount of the commitment made to each alternative investment vehicle by the public investment fund since inception.
 - (3) The dollar amount of cash contributions made by the public investment fund to each alternative investment vehicle since inception;
 - (4) The dollar amount, on a fiscal yearend basis, of cash distributions received by the public investment fund from each alternative investment vehicle.

Memorandum

- (5) The dollar amount, on a fiscal yearend basis, of cash distributions received by the public investment fund plus remaining value of partnership assets attributable to the public investment fund's investment in each alternative investment vehicle.
- (6) The net internal rate of return of each alternative investment vehicle since inception.
- (7) The investment multiple of each alternative investment vehicle since inception.
- (8) The dollar amount of the total management fees and costs paid by OCERS on an annual fiscal yearend basis, by the public investment fund to each alternative investment vehicle.
- (9) The dollar amount of cash profit received by public investment funds from each alternative investment vehicle on a fiscal year-end basis."

Implementation of GC 7514.7 (AB 2833)

How to implement the reporting requirements of GC 7514.7 (AB 2833) has been a major topic of discussion in 2017 at CEO, CIO and Attorney roundtables at both SACRS and CALAPRS.

Los Angeles County Employees Retirement System (LACERA) appears to be taking the lead in this process. Ms. Stina Walander-Sarkin spoke just last week with Mr. Chris Wagner at LACERA. LACERA will be presenting its 2016 Fee report in August, and has hired Pavilion to compile all the information on an ongoing basis and to make sure LACERA reports on all items required by GC 7514.7.

LACERA has been sending the ILPA template to all its alternative managers. Some managers utilize the ILPA template; some others respond with their own template.

LACERA considers this first report a "best effort", knowing that all managers may not yet be fully disclosing their fees and expenses as requested, due to the recent (January 1, 2017) effective date of GC 7514.7. Mr. Wagner indicated they will be reporting on fees in aggregate and not by manager. They will be reporting on "other expenses" as well, with the understanding that all managers may not yet have fully disclosed those aspects of their costs.

Modifications to Contracts Due to GC 7514.7 (AB 2833)

In order to comply with the requirements of Government Code section 7514.7, OCERS began to include in all new alternative investment contracts entered into on or after January 1, 2017 and existing alternative investment contracts for which a new capital commitment was made on or after January 1, 2017, language that requires the fund manager to disclose to OCERS at least annually each item of information required by section 7514.7 and any such other information as is necessary in order for OCERS to comply with section 7514.7.

Memorandum

Fee Reporting Outside of California

To further assist the committee, we are actively searching for fee reporting best practices elsewhere in the country. Ms. Brenda Shott, using the Public Pension Financial Forum (P2F2) platform, has polled public pension systems across the country with the following inquiry:

FULL DISCLOSURE REPORTING OF INVESTMENT MANAGER FEES

We currently provide an annual fee report to our Board and the public that discloses all investment management fees (both direct and indirect) and as mentioned above, we are now being asked to also include a breakdown of fees by base or participation fees vs performance fees. In California there is also new legislation (Government Code 7514.7) that went into effect 1/1/2017 requiring public pension funds to collect information from private equity managers regarding all fees paid to them, both base fees and performance fees included carried interest. The data is required to be collected on a form chosen by the plan. The legislation also requires the plan to prepare and make public an annual report that discloses all of the information collected from the private equity managers.

1. Has any other state had a similar requirement imposed on them?
2. For California systems, have any decisions been made by your agency as to the form that will be used to collect the data from the managers (will the ILPA template be used)?
3. Has anyone developed their annual report that is required by the new legislation (or as required by other governing bodies outside of CA) ? – If yes can you share examples?
4. Has your system used a 3rd party to assist in analyzing, reporting, auditing and/or reviewing investment manager fees/compensation? If so who did you use and what was the scope of work? Can you share the RFP used to retain them (if applicable)?
5. Do you have any other information that you think would be helpful on this topic?

Ms. Shott will provide an initial update to the committee on June 9 of the responses she has been receiving, and will indicate what OCERS may wish to consider.

CONCLUSION

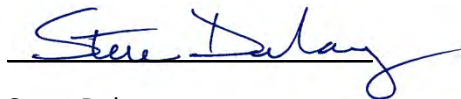
The above information will be reviewed with the Audit Committee on June 9. Input and direction from the committee will be important to future development of the annual Investment Fee Report. A key driver in the success of this effort will be the arrival of our new Chief Investment Officer, Ms. Molly Murphy, who can give the insightful direction needed to ensure the report is as meaningful as possible.

Memorandum

Future Timeline

June 12	Verbal report to the OCERS Board of Retirement of June 9 Audit Committee consideration
June 23	Ms. Molly Murphy's first day as CIO
July 17	Written report to the OCERS Board of Retirement of June 9 Audit Committee consideration
July	Audit Committee meets to consider the 2016 draft edition of the annual OCERS Investment Fee Report
August	Release of the 2016 annual OCERS Investment Fee Report
September	Consideration by OCERS Investment Committee of actionable items identified in the 2016 annual OCERS Investment Fee Report
January 2018	Effective date of OCERS first required GC 7514.7 (AB 2833) Fee Report

Submitted by:



Steve Delaney
Chief Executive Officer

ATTACHMENTS

- 1a – OCERS Annual Fee Report
- 1b – Manager Details
2. Directive to Review OCERS Investment Fee Report – memo
3. How to Steal a lot of Money from CalPERS, the Nation's Largest Public Pension
4. ILPA Reporting
5. Memo regarding Side Letter Language

OCERS
Third Annual Investment Fee Report

Submitted by Girard Miller CFA
Chief Investment officer

As required by OCERS fee policy

July 27, 2016



“ Watch out – he’s coming back for more ! ”

Executive Summary

- This report covers all fees paid by OCERS, both direct and indirect (through funds)
- Despite a negative year for investment returns net of fees, reported fees overall increased by \$18.3 million or 16% on an unadjusted basis. Apples-to-apples, fees increased \$5.0 million or 4% after excluding the first-time inclusion of underlying private equity partnership fees in this year's report
- Fees as a percentage of total assets increased from 94 to 103 bps in 2015, on an apples-to-oranges basis
- Higher private equity fees are largely the result of more-transparent reporting and an increase in AUM in that category. Real estate management fees reflect stronger performance relative to the remainder of the OCERS portfolio. Half of the higher fees in those two categories were performance fees that reflected stronger returns
- Alternative investments including real estate, representing 46% of the total portfolio, accounted for 86% of overall fees
- OCERS fees for index management and traditional active management, (which represent 66% of the portfolio) are modest and represent only 25% of total fee expense
- Given anemic returns, performance fees accounted for only 29 percent of total fees; the remainder were fixed management fees or base fees
- This report recommends that
 - The absolute-return (hedge fund) investment category should be reviewed for cost-effectiveness in light of relatively high fees and diminished performance expectations in today's low-yield market, which leaves OCERS with an unattractive expected return, net of fees
 - Actuarial assumptions for fee drag on expected future returns (~40 bps) should be re-evaluated for realism in light of actual experience (103 bps) in a lackluster year
 - Multi-manager strategies with higher fees should be re-evaluated
 - Efforts to reduce fee drag should remain a high priority

Introduction

This annual fee report is required by the OCERS board investment committee’s fee policy which was adopted in April 2013. OCERS continues to provide leadership to the public pension community in our transparent reporting of investment fees. Reflecting this unique leadership position in our industry, the Government Finance Officers Association of the U.S. and Canada (GFOA) has previously awarded OCERS its coveted Award for Excellence in retirement plan financial management, which recognizes the comprehensive approach OCERS has taken to fee management.

Now in its third year, the annual report remains a work-in-progress. It will continue to evolve in the future as additional decision-useful information is acquired.

At a summary level, the OCERS portfolio cannot sustain high fees in a low-return world. This year, there are two simple themes that run through the report. First, we must look for ways to reduce fee drag, including the reduction or elimination of high-fee managers that fail to produce value for the money we pay them, and seek still-better alignment of fees from those managers we retain. With a new general consultant working with us to re-examine our portfolio structure, this fee report provides a sobering starting point for that family discussion. Second, trustees will need to be more realistic about the actual fee drag on our portfolio returns when actuarial assumptions are made: the fees are not a free lunch and this year they clearly exceed “alpha” at the portfolio level. Fee drag must also be considered when setting the employer prepayment discount rate. The fund will undershoot its actuarial targets over time if the fee assumptions are unrealistically low.

Table 1 – Summary Overview: Fees by Various Categories

Asset Class	2015 Fees \$ 000's	Calculated Fees as % AUM*	% Market Value Dec 2015
TOTAL EQUITY	\$ 13,014	0.27%	37.3%
TOTAL FIXED INCOME	\$ 5,263	0.27%	14.9%
TOTAL ALTERNATIVES	\$ 113,131	2.84%	46.0%

PASSIVE	\$ 896	0.03%	24.6%
ACTIVE	\$ 32,161	0.60%	41.2%
PRIVATE INVESTMENTS	\$ 98,592	2.37%	34.4%
TOTAL FUND	\$ 131,649	1.03%	100.0%

* AUM (Assets under management) is calculated as an average of the ending market value of the 4 quarters in 2015

As explained last year, the total fee estimates that are calculated by the Investment Division will not and cannot reconcile with audited fees shown in the OCERS annual financial reports. This is simply because our “total cost analysis” includes fees that are embedded within fund structures as a deduction of total

returns, which are never invoiced or reported to OCERS' financial staff. (Traditional asset classes typically bill directly, when managed as separate accounts.) Governmental accounting and auditing standards require only the invoiced numbers to be reported in financial statements, as there is not a GAAP-standardized basis for including the unauditable indirect fees. This disparity in measures is not in any way irregular, but simply reflects a good government effort by OCERS to provide in this supplemental report the most complete transparency that can be achieved under current industry conventions. For 2015, the total number reported here, \$131.6 million, considerably exceeds the \$30 million in audited fees shown in our financial statements, as explained in more detail below.

Observations and issues:

1. ***We have paid more and got less.*** Given that net returns to the fund were slightly negative in 2015, the continued high level of fees must remain a concern to all of us serving in a fiduciary capacity. Although there are valid reasons that fees actually increased in absolute dollar terms in 2015, the failure of performance-based fees in several key strategies to decline in a manner commensurate with lagging performance is where this report must focus. In the real estate portfolio, we paid more and got more, as one single large property sale in 2015 resulted in an extraordinary, non-recurring high increase in fees for that category. OCERS also placed a higher percentage of the portfolio in "alternative" investments where commitments had been made but capital not yet deployed before the year began, and those categories resulted in higher fees. As Table 2 below shows, the fees for "Alternatives" were higher as a result of both higher fee levels on average as well as an 8 percent increase in AUM in that category. Likewise, higher-fee illiquid or "Private" investments (as opposed to both passive and active investments in marketable public securities) increased by 14% in 2015, which resulted in a 26% increase in total reported fees for that category as a result of performance and full disclosure. Given these structural shifts to higher-fee strategies, and the failure of most hedge fund to produce above-average returns, the relationship between "alpha" and higher fees was elusive at the total portfolio level.

Table 2 – Fee Changes by Category, from 2014 to 2015

Asset Class	2015 Fees \$ 000's	2014 Fees \$ 000's	% Increase in Fees Y/Y	% Increase in AUM*
TOTAL EQUITY	\$ 13,014	\$ 14,821	-12%	0%
TOTAL FIXED INCOME	\$ 5,263	\$ 6,044	-13%	-11%
TOTAL ALTERNATIVES	\$ 113,131	\$ 92,270	23%	8%
PASSIVE	\$ 896	\$ 681	32%	7%
ACTIVE	\$ 32,161	\$ 34,133	-6%	-11%
PRIVATE INVESTMENTS	\$ 98,592	\$ 78,508	26%	14%
TOTAL FUND	\$ 131,649	\$ 113,323	16%	1%

* AUM (Assets under management) is calculated as an average of the ending market value of the 4 quarters in 2015

In 2016, the Committee approved an expansion of our Fee Policy that now requires investment managers to provide better estimates of their “bogey” so that we can proceed in the future to hold them more accountable for performance vs fees. This is an ongoing project that will take some time to implement, but we have at least begun to collect improved information, and a few of the managers have taken the hint and returned to us with hard hurdles in their performance fees, although they tend to be token in nature and not sufficiently aggressive to provide a material fee reduction in a year like 2015. This effort to better align our interests will be strengthened if the Committee follows the CIO recommendation to trim or eliminate certain hedge funds, which will likely get the attention of those managers we decide to retain, and support the thesis that we are really serious about this initiative.

2. **Portfolio growth vs. higher fee levels.**

Very little of the 2015 fee increase can be attributed to portfolio growth, although the cash-flow positive nature of OCERS’ funding did generate a small increase of the total assets under management (AUM) despite an anemic year for investment performance. That said, total fees increased from 94 to 103 basis points as a percentage of total AUM.

Table 3 identifies the top four contributors to the increase in fees in dollar terms, with fee rates increasing for all of them except for Diversified Credit, which was a relatively new asset category that grew substantially in assets under management. These four categories account for \$24.2 million of fee increases year/year, which well exceeded the total portfolio fee increase of \$18.3 million. Reductions in total dollar fees were seen in several other categories including traditional equity and fixed income. **Said another way, the top two performing investment categories accounted for the entire increase in fees in 2015.** The problem was with the laggards.

Table 3 – Largest Categorical Fee Increases (in dollar costs)

Asset Class	2015 Fees \$ 000's	2015 Bps	2014 Fees \$ 000's	Increase \$ 000's	% Increase in \$
Real Estate	\$ 18,814	162	\$ 11,770	\$7,044	60%
Private Equity	\$ 38,021	587	\$ 25,529	\$12,493	49%
Diversified Credit	\$ 21,175	189	\$ 17,364	\$3,811	22%
GTAA	\$ 8,847	103	\$ 8,040	\$807	10%

Table 4 below shows the basis point and relative percentage increase in fee ratios for the largest cost categories. Note that real estate fees increased markedly on a percentage basis, as explained below. Relative to the prior year, the rate of increase in the other two categories was not particularly remarkable. Private equity fees therefore reflected higher AUM as capital commitments became invested. In 2015 the PE managers improved their transparency of underlying managers’ fees so part of the increase simply reflects improved reporting. Even so, it should be noted that private equity

represents over 29% of total fees but only 5% of the total portfolio. Diversified credit is excluded from Table 4, as those fees in basis points actually declined.

Table 4 – Major Categorical Fee Increases as measured in bps

Asset Class	2015 bps	2014 bps	Increase bps	% Increase in bps
Real Estate	162	105	57	55%
Private Equity	587	491	96	20%
GTAA	103	97	6	7%

3. **Reaping late-cycle profits in private equity and real estate.** In the private equity asset class, our fees in dollar terms increased 49% by over \$12.5 million, but \$13.3 million was attributable to the increase in transparency of underlying fees relative to the 2014 report. Fees for private equity as expressed in basis points increased by a rate of 20%, again reflecting comprehensive fee reporting for the first time. Putting aside the reporting difference, it is notable that the average of fees (in basis points) for private equity fund-of-funds managers actually declined, offsetting the growth of assets managed in this category. Several of the private equity funds managers are now beginning to realize portfolio gains from earlier investments, and that crystallization is now coming through in the form of performance fees -- at the same time that uninvested capital from more recently expanded commitments is now earning management fees and (eventually) carried interest. In the real estate portfolio, a large profitable property sale in early 2015 generated extraordinary non-recurring performance fees for a manager which spiked the numbers this year. We do not expect to see fees remain at 2015 levels next year unless other managers can unexpectedly reap extraordinary profits from property dispositions that are not reflected in current appraisals – that seems quite unlikely.
4. **Investment rationale.** Previously, the annual fee reports attributed much of the fee increases year-to-year to changes in portfolio structure to better manage risk. This year, that factor is less important. In fact, we have now come to a quite opposite scenario: portfolio structures to be considered later this year may require revision for substantive analytical reasons that could result in lower fees overall.
5. **Leadership in fee vigilance.** OCERS has achieved a position of national leadership in identifying, managing and mitigating fees. Our fee policy remains a model for others to follow, nationally. Our efforts to glean lower fees from collaborative procurement have paid off, as the fund-of-fund management costs for private equity actually declined last year, which is a notable achievement. However, we cannot rest on our laurels in the face of last year’s performance and the fee drag that contributed to negative net returns. Before year-end, it will be appropriate for OCERS to re-evaluate our overall portfolio structure with a mind toward better efficiency in a low-return market environment. What worked in the past, and what seemed like good ideas in 2012, may not be as successful in a world constrained by very low interest and inflation rates.

6. **A balanced view.** That said, it is important to remember that the ultimate objective of the portfolio team is to optimize risk-adjusted returns net of fees. Therefore, a balanced approach that recognizes the portfolio value of certain higher-fee strategies is essential to long-term success, and the tail should not wag the dog when it can be shown that higher fees are necessary to construct an optimal portfolio or to mitigate risks that would result from naïve fee-driven asset allocation. High-fee, high-return private equity is a classic example of this challenge.
7. **Governance perspective.** This annual fee report should best be reviewed in the perspective of a broader overall governance structure: The OCERS board’s manager monitoring subcommittee reviews the fees of every investment manager that appears before it on a regular biennial cycle. Underperforming managers are routinely brought before the subcommittee over shorter periods. As a general rule, any fee-vs.-performance analysis for an individual manager is probably better suited for that oversight process. Additional, specific information on individual managers, their mandates, their performance and their fee structures is included in the Board’s Manager Reference binder (on Board Vantage 24x7 and periodically updated), which now covers 70 managers. Further, the 15 hedge fund managers’ performance and their contribution to portfolio diversification are reported quarterly to the full committee by our specialist consultant Aksia in a format far more conducive to performance analysis and assessing the managers’ value contributed to the portfolio.
8. **Part Two: Manager-level data.** With respect to individual managers and their fees vs. performance, Part Two of this report lays the foundation for future, more in-depth analyses at the micro portfolio level. Its immediate utility for granular oversight is admittedly limited this year and next, as we await the “ripening” of multi-year performance data. Readers must appreciate that in 2013, OCERS hired 30 new portfolio managers as we built out our “direct” sleeve of 16 hedge funds to replace a fund-of-funds portfolio allocation for that strategy, and a dozen additional new managers in total were hired for diversified credit strategies and several other specific portfolio segments that were new to OCERS under the 2012 asset allocation plan. Short-term performance of these managers is not particularly relevant to this initial exercise, although we do present 2015 returns in this annual report. When we finally have three-year track records for these managers, the performance data will have far more value for cost-benefit analysis.

Please note that Part Two of the report includes limited statistical information for managers hired or terminated in 2015, for which full-year fee information is not available or relevant. Fee calculations for very short-term managers will inherently contain distortions that limit their utility. Compared with prior reports, however, this problem has receded, as we are now able to present full-year fee and performance information for the vast majority of managers. Even so, we will not have the more-meaningful and reliable 3-year performance histories for the newer managers until the 2016 annual report is prepared. Information presented for these managers

should be treated as *indicative data*, which is several steps down the official ladder for formal “reporting characteristic” criteria of reliability, consistency, and comparability for decision-making in the world of governmental finance, financial reporting and accountability. (See the GASB Concepts Statement 1 for authoritative articulation of these reporting characteristics.)

The report structure includes data columns for high-level oversight of the relationship between the fees and the performance of time-tested portfolio managers (those with tenure of 3 and 5 years), but readers are cautioned that our report format will require further refinement in future years. This report identifies the relative performance of our more-tenured managers compared to their index benchmark or the performance target they have established with OCERS. Using the template instituted last year, we have sought to avoid undue complexity and esoteric detail that would result from quantitative presentation of individual bogeys and relative “alpha” performance at the manager level, and have instead shown a “+ or -” in the “alpha” columns for which meaningful seasoned data is presently available. In a few cases, we make note of significant performance outliers with a “++ or --”(double-notation). At this initial stage, direction is far more instructive than magnitude for policy decisions and fiduciary oversight, and in many cases the information in numerical terms is insufficiently reliable as a performance indicator to dignify with point estimates at this stage of the oversight process. As a general rule, there were relatively few managers (only 3) whose 3-year performance in 2015 was rated a strong negative and these are generally on Watch status already.

9. **Policy considerations.** We would encourage the Committee as a whole to first focus its fiduciary oversight on the evaluation of fees vs. investment performance at the asset-category level, where relevant data is available at a consolidated sub-portfolio level (such as: “illiquid real return” or “liquid multi-strategy”) . Such a focus will encourage strategic portfolio discussion. More-granular analysis will require another year of data, to facilitate comparisons and discussion, but this year’s report follows last year’s observations by repeating or re-emphasizing several enduring insights that are summarized here.
 - **In-sourcing.** If we pursue the concept of a crisis risk offset, one option to consider would be internal management of a government bond portfolio. Whether that actually optimizes our policy options remains to be seen. A second path to consider would be internalizing our private equity management function, but current market conditions suggest that OCERS would be wiser to wait on that idea until the next recession, when general partners become more desperate for public pension capital. It is doubtful that we can access top managers with a staff personally unfamiliar with top-quartile managers.
 - **Manager proliferation/consolidation.** One general strategy to cut fees would be to trim the number of managers, thereby increasing the average size of OCERS commitments to individual managers. As noted before, any efforts to trim or consolidate our absolute return portfolio should present opportunities for cost-savings.

- ***“Inflation insurance” premiums.*** In our real return (inflation-responsive) portfolio segment, it may be feasible someday to replace higher-fee multi-strategy managers with simpler commodity index positions or even a precious metal exposure. This year, one policy option to consider is ownership of gold -- given the opportunity cost of holding precious metals has dropped to unprecedented low levels in a world of negative interest rates abroad and very low rates in the U.S. In light of potential currency devaluations over the coming decade, that concept will require closer study on its merits with fees and costs a secondary consideration given the associated risks. Meanwhile, our commitments to energy exploration and transmission will require us to hold those positions for some time, as a hedge against inflation that carries higher costs than storage of metals. We will likely continue to trim our current costly positions in multi-strategy real return managers: Based on their RFP responses, we expect Meketa to have a pro-active point of view on this issue.
- ***Performance fees.*** OCERS has made a strong effort in recent years to place greater emphasis where possible on performance fees, especially for the more-costly alternative investments where such fee structures are commonplace. Exhibit C in Part One below summarizes the percentage of various asset categories that have performance based fees relative to fixed fees. (Most “alternatives” managers have a combination of a base fee and a performance fee.)

One of the longer-term goals of the OCERS board and staff arguably should be to increase the percentage of total fees associated with the “alpha” component of our returns, with a commensurate strategic reduction in base fees, variable fees for returns below the target return, and soft-hurdle catch-up provisions. OCERS’ fee policy now explicitly encourages hard hurdles industry-wide. That laudable goal, however, is far easier to announce than to accomplish, as it flies in the face of prevailing market practices and is rarely negotiable in today’s world.

The controversy in our community is over what portion of returns between zero and the bogey should the manager be paid, and what portion of total returns is it appropriate for a manager to extract? Unfortunately, these terms are set in a competitive marketplace where supply and demand have not yet turned in favor of a pension plan of our size. In most cases, we must distinguish between what is desirable and fair to the investor, versus what is achievable and what is wishful thinking or pipe-dreaming.

- ***Back to normal someday?*** In the future, it may be possible to reverse the recent trend toward alternatives managers and revert toward a more-traditional portfolio structure with greater emphasis on long-only managers. For example, when the day finally comes when interest rates increase and normalize to levels closer to historical averages, a

compelling case could be made to revert back to bond index management and trim back our use of more-costly unconstrained bond managers and hedge funds as a substitute for bond returns. Likewise, the benefits of diversified credit managers may diminish over time if credit markets normalize, or if the banking industry resumes its historical role as the dominant lender of choice to middle market businesses which would make direct lending an obsolete portfolio strategy. The need for real return strategies would diminish if central banks can eventually wind-down their massive balance sheets or if sovereign governments pare back their debt-to-GDP ratios and social entitlement programs to levels that reduce the propensity to inflate their way out of future obligations. The latter premise seems unlikely in the near future, but we must include it in the list of scenarios that could ultimately impact our fee structure in coming years.

On a more immediate horizon, perhaps, several GTAA (global tactical asset allocation) strategies may offer less value to the portfolio at the end of this cycle, and should be reviewed from a cost-benefit standpoint if the Committee undertakes a top-down countercyclical strategy or questions whether the managers are providing genuine diversification benefits.

10. **Surveillance.** We will continue to monitor specific managers whose performance is lackluster relative to their fee structures and hence potential candidates for negotiation of a fee structure that is better aligned with the general principles of the OCERS fee policy. The CIO already maintains a surveillance list (reported quarterly) and performs this function informally.
11. **The limits to fee negotiability.** In the case of fund structures and illiquid portfolio strategies, the fee arrangements are frequently locked in when the manager is retained, in exchange for a fee reduction. Other managers have terms that often are non-negotiable or not readily modifiable, so the scope of real-world opportunity for pro-active negotiations is more limited than a naïve observer would expect. Experience has also shown us that in many if not most cases, the size of OCERS' portfolio commitments to non-traditional and even some traditional strategies simply is not sufficient to give us the upper hand in fee negotiations, unless performance has become an issue. The leverage available to jumbo pension plans with AUM over \$100 billion does not extend to middle-market systems with assets in the \$12 billion range and individual manager allocations of \$50 to \$100 million in many cases. There is a great deal of inertia in this industry, and what were originally protective "most favored nations" (MFN) contract provisions have ultimately backfired on public pension plans -- because a concession for one plan must now result in concessions for others, which actually reduces negotiability. This MFN paradox results in "reverse negotiating leverage on fees" in the middle market where OCERS operates: the manager's cost of an OCERS-specific fee concession is several times the benefit that we would derive. We may not like it, but in many segments of our portfolio, we are not as "special and powerful" as some may suggest.

12. **Collaboration.** The CIO continues to search for opportunities to reduce fees through collaborative procurement. Little tangible interest has been shown by other public pension plans to date: there are too many pressures to sustain the status quo in decision-making for many if not most CIOs to step forward with strategies to improve our bargaining power. The CIO did attend both the ILPA (International Limited Partners Association) and NCPERS conferences this year, in an effort to build grassroots support for such initiatives, and the national staffs at both organizations remain interested. That said, it seems unlikely that joint procurement will save the day for OCERS. We will continue to work with those two organizations, but it will be a long-term effort with limited short-term fee relief expected.

13. ***An exit strategy for high-fee alternative investments.***

If the board wishes to discuss and oversee development of a strategic exit plan to replace the higher fees from alternative managers with lower fees readily available from passive exposure to public equity, staff will be more than happy to implement such a program with the support of our general consultant. We may also want to normalize the portfolio more broadly after the next recession when traditional investments may have better forward looking opportunities at far lower costs. Such an exit path requires (a) formulation and advance approval of an appropriate re-risking strategy, probably in conjunction with a late-cycle portfolio-wide risk-reduction strategy (b) positioning the alternatives portfolio properly in the next 1-3 years so that liquidity is available at a market trough, (c) development of a board consensus and capacity for action and (d) operational ability to implement, which means that the implementation team and the overseeing trustees cannot procrastinate or agonize endlessly over the requisite approvals. (Waiting for the obvious is never a strategy for successful re-risking.) All four of these governance and organizational preconditions are necessary to successfully re-risk the portfolio to cut fees with greater use of traditional equity, and to shrink or cancel the portfolio-structure insurance policies for which we now pay so dearly.

In the near term, OCERS' absolute return hedge fund portfolio would appear to be the best candidate for an exit strategy driven by a downward shift in projected returns after fees, which presently consume the highest percentage of total returns expected of any of the other asset categories.

14. **A note on ILPA reporting:** This report would be incomplete if it failed to mention OCERS' active support for the fee reporting efforts of the International Limited Partners Association. Although we have led our profession in providing this level of transparency, further improvements and better disclosure is still possible. The ILPA reporting template for private equity and private fund structures will benefit all institutional investors that have struggled to obtain complete visibility on fees, and OCERS has again led the way with our latest RFP, which made compliance with the new ILPA reporting template a Minimum Required Qualification for bidders. Only time will tell whether this approach yields better data, but we have put our money where our mouth is by telling bidders that if they fail to comply with this level of transparency, their RFP responses

will be out of order. So far, there have been no reports of money managers turning away from us on this point.

Part One: Macro Analytics

Overview of Fees at the Portfolio Level by Asset Category

This section of the fee report provides a categorical “bird’s eye view” of the fees OCERS pays at the portfolio level and **by selected asset types**. We begin with a summary by asset classes in Exhibit A, which shows total fees on the portfolio in 2015 at \$131.6 million which translates into roughly 103 basis points (1.03%) of average assets under management during the year.

Fees for “alternative” asset classes, which includes real estate for this first exhibit, totaled \$113.1 million or 86% of the total fees. This is almost double the level of actual assets under management, which were approximately 46% of the total portfolio. Without alternative assets in the portfolio, a traditional (pre-2000s) asset allocation to public equities and bonds would have reflected their far-lower fee levels of 27 bps.

Fees Categorized by Asset Type

Exhibit A			
Asset Class	2015 Fees \$ 000's	Calculated Fees as % AUM*	% MV Dec 2015
TOTAL EQUITY	\$ 13,014	0.27%	37.3%
U.S. Equity	\$ 629	0.03%	16.5%
Global Equity	\$ 2,494	0.42%	4.8%
Int'l Equity	\$ 4,911	0.35%	10.0%
Emerging Equity	\$ 4,979	0.63%	5.9%
TOTAL FIXED INCOME	\$ 5,263	0.27%	14.9%
US Fixed Income	\$ 3,278	0.21%	12.1%
Int'l Fixed Income	\$ 158	0.33%	0.0%
Emerging Debt	\$ 1,826	0.53%	2.7%
TOTAL ALTERNATIVES	\$ 113,131	2.84%	46.0%
Diversified Credit	\$ 21,175	1.89%	10.1%
GTAA	\$ 8,847	1.03%	7.0%
Hedge Funds	\$ 17,033	2.03%	6.9%
Real Estate	\$ 18,814	1.62%	9.4%
Real Return	\$ 9,241	0.89%	7.4%
Private Equity	\$ 38,021	5.87%	5.2%
Cash Overlay	\$ 241	0.07%	1.8%
TOTAL FUND	\$ 131,649	1.03%	100%

* AUM is calculated as an average of the ending market value of the 4 quarters in 2015

The second view provided in this section, in Exhibit B, is a breakdown of **fees by management approach:** passive vs active with a further distinction between liquid active strategies (public markets) and the less-liquid private investment strategies. Here again, the results are what one would expect: Passive management fees are extremely low, averaging only 3 basis points on 25% of OCERS' total assets. More-traditional liquid active managers are charging OCERS 60 bps on average, ranging from 30 bps for fixed income to 110 bps for active real return management. Managers of less-liquid asset categories are far more costly, averaging 237 bps, and ranging from a lower level of 69 bps for real return to 178-203 bps respectively for real estate, diversified credit, and hedge funds in escalating order. The most costly, private equity fees averaged 587 bps last year, which is the first time they have been reported at levels we always expected because of fee-layering and high fees from underlying managers. Although such high fees (in isolation) invite public scrutiny and frequent criticism, they reflect far-higher return profiles from this asset class; the public policy issue is what percentage of total profits does the provider of capital (OCERS) deserve to keep? Our challenge as stewards of public capital is to drive down the cost of accessing this asset class -- which we have partially achieved with our P4 procurement work, and could eventually advance further with the longer-term staffing strategy discussed on page 8 (in-sourcing).

(Remainder of page left blank to accommodate large table below.)

Fees Categorized Primarily by Management Strategy within Asset Classes

Exhibit B

Asset Class	2015 Fees \$ 000's	Calculated Fees as % AUM*	% MV Dec 2015
PASSIVE	\$ 896	0.03%	24.6%
Passive Equity	\$ 386	0.02%	19.2%
Passive Fixed Income	\$ 50	0.02%	2.1%
Passive REITS	\$ 136	0.12%	0.9%
Currency Hedges	\$ 83	0.03%	0.4%
Cash Overlay	\$ 241	0.07%	2.0%
ACTIVE	\$ 32,161	0.60%	41.2%
Active Equity	\$ 12,545	0.56%	17.7%
Active Fixed Income	\$ 5,213	0.30%	12.8%
Active Real Return**	\$ 5,556	1.10%	3.8%
Active GTAA	\$ 8,847	1.03%	7.0%
PRIVATE INVESTMENTS	\$ 98,592	2.37%	34.4%
Diversified Credit	\$ 21,175	1.89%	10.1%
Hedge Funds	\$ 17,033	2.03%	6.9%
Real Estate	\$ 18,678	1.78%	8.5%
Real Return Assets**	\$ 3,685	0.69%	3.6%
Private Equity	\$ 38,021	5.87%	5.2%
TOTAL FUND	\$ 131,649	1.03%	100%

* AUM is calculated as an average of the ending market value of the 4 quarters in 2015

** Active Real Return includes liquid Commodities and Multi Strategy Real Return Funds
Real Return Assets include Energy, Timber and Agriculture holdings

The next table, Exhibit C, provides a summary of performance fees, showing the extent of performance fees in various asset categories. In 2015, performance fees were relatively negligible because of low returns and even losses in some categories. At the fund level, 29 bps were paid for performance with the remaining 74 bps reflecting flat fees and base (sometimes called “management”) fees. Although hedge funds as a group produced negative returns, the positive performers in that group received \$5 million in carried interest. Private equity managers, representing 5% of the total portfolio and 15% of our overall private-investment segments, garnered over half the total performance fees and 40% of the fees collected by the non-traditional private investment managers.

Performance Fee Components by Management Strategy

Exhibit C

Asset Class	2015 Fees \$ 000's	Total Fees in bps	Performance Fees \$000's	Performance Fees in bps
PASSIVE	\$ 896	3		
ACTIVE	\$ 32,161	60	\$ 2,233	4
Active Equity	\$ 12,545	56	\$ 1,381	6
Active Fixed Income	\$ 5,213	30	\$ -	0
Active Real Return*	\$ 5,556	110	\$ 180	4
Active GTAA	\$ 8,847	103	\$ 672	8
PRIVATE INVESTMENTS	\$ 98,592	237	\$ 34,867	84
Diversified Credit	\$ 21,175	189	\$ 3,989	36
Hedge Funds	\$ 17,033	203	\$ 4,579	55
Real Estate	\$ 18,678	178	\$ 8,572	82
Real Return Assets**	\$ 3,685	69	\$ (3,129)***	-59 ***
Private Equity	\$ 38,021	587	\$ 20,856	320
TOTAL FUND	\$ 131,649	103	\$ 37,100	29

* Active Real Return includes liquid Commodities and Multi Strategy Real Return Funds

**Real Return Assets include Energy, Timber and Agriculture holdings

***The negative reported fee reflects performance-fee credits/adjustments from oil and gas partnerships that experienced losses in 2015

Special analysis: Hedge funds across the OCERS portfolio

This year's report contains several references to a special review of OCERS' hedge funds. In our current portfolio structure, the primary "home" for hedge funds is the Absolute Return portfolio segment, but OCERS has viewed hedge funds as a product structure and not simply an asset class per se. Therefore we retain hedge fund managers in other sectors of the portfolio, including our Diversified Credit segment and our Real Return segment. The following exhibit D presents supplemental manager data for hedge funds as a product structure, in support of discussions we expect evolve in September 2016 when the new consultants at Meketa and our Investment Committee conduct workshops on the topic of asset allocation and portfolio structure. Having fee and performance information on all hedge funds, regardless of their location in the overall portfolio, should be a helpful tool for quick comparatives.

Remainder of page left blank intentionally to allow single-page presentation of Exhibit D.

Exhibit D: Hedge Fund Strategies Across the Entire Portfolio

	2015		2014		2015	2014
	Fee (bps)*		Fee (bps)		Net Return	Net Return
DIRECT HEDGE FUND PROGRAM (AKSIA)	203	-	224		-2.22%	3.30%
Archer Capital	167	-	286		-7.1%	5.5%
Perry Partners	148		148		-13.0%	-3.6%
Beach Point Total Return (now Div. Credit)	134		134		N/A	-0.7%
Ionic	138	-	170		-11.9%	N/A
Venor Capital	125		132		-11.5%	-1.8%
Caspian Capital Select Credit	128	-	204		-10.8%	2.8%
Fore Multi-Strategy	143	-	163		2.4%	5.1%
PIMCO GCOF	313	+	260		6.9%	4.7%
Garda	200		N/A		2.2%**	N/A
D.E. Shaw Multi-Asset Fund	246	-	261		5.9%	6.8%
Highfields	201		198		2.3%	2.0%
Och-Ziff	150	-	286		0.0%	5.9%
Hoplite Capital	330		320		N/A	4.2%
Gotham L/S 115/65	101	-	158		-10.6%	5.4%
BlueMountain	95		N/A		-8.6%**	N/A
Pharo Macro Fund	277	-	355		3.7%	8.3%
Alphadyne	307		N/A		7.4%**	N/A
GTAA	103		97		1.05%	3.2%
GMO Benchmark Free AA (not a Hedge Fund)	66		75		-4.2%	1.3%
Standard Life Global Absolute Return	73		72		2.5%	4.5%
Bridgewater Pure Alpha	175	+	149		5.4%	3.9%
DIVERSIFIED CREDIT	-		-		-	-
PIMCO DISCO II	159	-	185		5.2%	8.2%
Brigade Lev. Capital	150		146		-11.6%	0.1%
Brigade Energy Opportunities	35		N/A		NM	N/A
CQS Diversified Fund	174	-	221		-1.8%	1.6%
Tricadia Credit Strategies	197	-	284		-1.8%	3.9%
Beach Point Total Return	47		N/A		NM	N/A

* +/- indicates notably higher or lower bps fee in 2015

**Short track record. Returns shown from inception to year end

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year

Part Two: Micro Analytics

Fees by Asset Category with Manager-Specific Information

This section provides a more-granular view of fees for each asset category, juxtaposing selected performance data with the category totals and levels, and providing historical performance information where available for each manager. This feature in the report is a “work in progress” because OCERS has hired over 30 new managers in 2012-13, for whom performance information (and even fee information in some cases) is quite limited and is generally too brief to be meaningfully evaluated in a report like this. In future years, when we acquire 3-year and 5-year performance histories on more of these managers, the value of the report’s comparisons of fees relative to performance will increase. For now, it is best to focus primarily on policy-oriented data at the asset category level, and provide feedback to the staff on how the presentation of granular information in this section could be improved for decision-making purposes in the future.

In some cases, especially the alternatives managers, there is not a single-point bogey for determining and reporting a manager’s alpha. We plan to report separately the results of our staff survey showing the ranges of expected returns provided by these managers when hired, and as adjusted for post-recessionary market conditions. The prevalence of ranges in their responses makes it difficult if not impossible in some cases to provide a single point estimate of certain managers’ “alpha” and further supports the methodology we adopted here in this inaugural report, which is a “+” or “-” depiction of alpha produced over a minimum three-year review period.

Each section provides brief commentary and relevant observations to the extent those are possible at this stage of the evolution of this report, given the “Swiss cheese” nature of the multi-year data presently available.

Note that shaded areas on these nine subsequent “Exhibit E” tables reflect investment managers with extremely short tenure for which performance data and fee calculations are not likely to be meaningful (in several cases we explicitly use the legend NM = not meaningful). Calculated 2015 fee percentages for managers with less than one full year of OCERS tenure are identified explicitly to warn readers that this data is incomplete, non-recurring and non-comparable and therefore must be regarded as only indicative. The basis point fees in such cases are derived from part-year dollar costs (which is public information that can be disclosed or used in disclosure under California law) divided by year-end AUM and therefore will tend to understate their actual magnitude. Staff considered and rejected the alternative approach of converting this data to an annualized estimate by mathematical extension because that would create yet further distortions in various cases.

Please see the PDF file containing Exhibit E (9 tables) for the remainder of this Fee Report. That section provides manager-specific data, to the extent available and relevant to decision-making.

Appendix 1

Notes on Year-over-Year Fee Increases in Selected Asset Categories

Equity management fees – Across the board, fees for traditional equity managers declined in 2015, averaging 27 bps vs 32 bps in 2014. In most cases, lower performance fees accounted for the difference, as well as some minor shifts in the size of higher-fee mandates. Emerging markets equity had the largest decline in fees as expressed in basis points. Notably lower fees driven by weaker performance were paid to Acadian (emerging equity), Eagle Asset Mgmt (small cap), and Franklin Templeton (global), while higher fees were earned by AQR (international equity) which beat its benchmark.

Fixed income fees from traditional managers – A slight decrease in total fees paid was mostly the result of lower performance-based fees and a reduction of international bond positions. Fees for emerging markets debt rose slightly in absolute and basis-point terms. The PIMCO unconstrained bond fund fees were lower as results failed to exceed expectations and OCERS received a one-time fee credit reflecting a personnel change.

Diversified Credit – The increase in fees in 2015 primarily reflects the higher invested base in the Diversified Credit portfolio segment (7.6% of total OCERS assets at the end of 2014 grew to 10.1% at the end of 2015) as capital commitments were drawn and allocations were increased to this strategy. The actual fee rate (as a percent of AUM) actually declined as more direct lenders were funded with fee structures lower than the multi-strategy managers (with hedge fund legal structures and similar pricing) who were hired and funded first when this asset class was instituted. Most of the multi-strategy managers also underperformed their benchmarks, which notably reduced the performance fees for Tricadia and CQS.

GTAA – Overall fees were higher as Bridgewater earned a performance fee in 2015 which increased the group total despite anemic returns overall.

Hedge Funds – Hedge fund fees actually declined in 2015, reflecting the lower performance based fees that were generated by poor (or lower) investment returns at Ionic, Caspian, Gotham and Pharo. Only the PIMCO credit strategy and Highfields earned notably higher fees even though their returns were not stellar but exceeded previous returns or 2015 bogeys.

Real Estate – The higher real estate fees reflect strong performance and performance fees from the CBRE separate account which opened the year with an extraordinarily profitable sale of a Miami property that underwent a fortuitous change in use. That single sale accounts for half the increase in real estate fees. Strong performance for the asset class generally also drove performance fees higher for several other managers including Angelo Gordon, Morgan Stanley, True North and Waterton.

Real Return – Lower fees in this category reflect a reduction in assets as OCERS trimmed its exposure to commodities and costly multi-manager strategies in 2015. Fees declined \$2.4 million, about 11% of their previous level in basis points. EIG funds XV & XVI and EnerVest XII & XIII reported lower fees largely as a result of the 2015 washout in energy product prices, and in some cases made retroactive adjustments of accrued fees, resulting in negative performance fees on Exhibit E.

Private Equity – The increase in private equity fees reflects an increase of assets invested in this category, but is driven primarily from improved reporting of actual underlying fees. As noted before, the partnership fees for underlying managers in funds-of-funds (FoFs) were under-reported in this category in the two previous reports because the data were simply not available from the underlying partnerships. With the advent of ILPA reporting and increased industry-wide scrutiny of underlying FoF fees, we have now secured better data than prior-year reports. There was also continued growth of assets now invested, as OCERS moves closer to a 6 percent long-term portfolio target. Funding commitments can take several years to be deployed, especially for funds of funds in private equity.

In 2015, fees at the “top” or “overseeing” fund-of-fund manager level actually declined, reflecting the benefits of our “P4” procurement effort, but these real-world savings were offset by predominantly high “2 and 20” performance fees now finally being reported for the underlying partnerships in those funds. At 587 basis points, the visible fee ratio increased by 20 percent from 491 bps reported in the prior year -- which is a level one would actually expect for the asset class when the fund-of-fund managers and the underlying funds are all harvesting performance fees from gross returns in the high ‘teens. Under the new comprehensive fee template, fund of funds managers Abbott and Adams Street reported notably higher fees in both absolute dollars and in basis-point terms, largely as a result of underlying manager (general partner) fee harvesting and more-comprehensive reporting of underlying partnership fees and expenses.

Readers must also appreciate that OCERS has not yet reached a steady state in funding of our cautiously expanding private equity portfolio. We still have funds experiencing the normal “J-curve” during their investment period, especially with the newer manager Pantheon. Until all the underlying managers have fully deployed their capital, the fee ratios that OCERS reports may overstate their actual relative long-term cost because of fees charged on committed but uninvested capital in the early years of a fund of funds. There is not a universal calculation methodology that staff can apply, to control for such factors; the reported fee levels are indicative but will never be precise enough for all possible uses of the data.

The dilemma for public pension funds is that very high fees are gleaned by elite individual PE managers who essentially have oligopoly control over an asset class that can potentially earn 20 percent gross returns. Despite fees, the double-digit net return from private equity is still superior to current expectations for the public equity markets. At cycle peaks, the private equity market is a seller’s market for fees and access to superior managers, so there is little OCERS can do at this time to mitigate these costs except to wait for a better, lower entry point -- which is the intent of our counter-cyclical “dry powder” commitments.

For perspective, OCERS' returns net of fees from private equity have significantly exceeded our domestic public markets investment returns over the past decade, once they achieved the "harvest" stage. That said, private equity is hardly a "free lunch" for plans of OCERS' size, because of this fee-layering issue. In order to capitalize on the same private-equity opportunity that endowments and large state pension plans have enjoyed historically, OCERS must first position itself internally to invest directly rather than through FoFs, and the late-stage of a market cycle is not an optimal time to enter that arena.

E-1: Traditional Assets - INDEX MANAGERS

OCERS has negotiated favorable low fees for index management and staff does not see any opportunities for significant cost reduction in this segment of the portfolio. The incumbent manager has produced incremental returns above the benchmark through securities lending revenue, but we have marked this “alpha” as not meaningful as it is a fund-level structural by-product not active management of the assets themselves. The CIO would support indexing small cap domestic equity allocations if a compelling active manager is not identified soon. The Clifton overlay is shown here, in this section, as a passive application of derivatives overlay to mimic our portfolio’s macro allocation, which avoids cash drag.

	Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	3 Years Net Return ³	Alpha ⁴	5 Years Net Return ³	Alpha ⁴
TOTAL INDEX/ PASSIVE	2	\$3,140					
BlackRock Russell 1000	1	1743	1.0%	15.0%	+	12.5%	+
BlackRock Russell 2000 Value	2	118	-7.2%	Sep-14			
BlackRock MSCI EAFE	5	463	-0.5%	5.3%	+	3.9%	+
BlackRock US Debt Index	2	249	0.6%	1.6%	+	3.4%	+
Parametric/Clifton - Cash Overlay	7	243	-1.5%	4.7%	++	5.8%	++
Parametric/Clifton - Euro Hedge	3	38	11.9%	Dec-14			
Parametric/Clifton - Yen Hedge	3	13	N/A	11 months			

Exhibit E-2: Traditional Assets - ACTIVE MANAGERS

Small cap managers have underperformed and new performance fees have been negotiated, pending Committee decisions on portfolio structure. Capital Group has been trimmed to half its former allocation, reflecting weak performance in recent years. JP Morgan, GMO, Mondrian, Franklin Templeton, and Capital Group are under staff surveillance.

	Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	3 Years Net Return ³	Alpha ⁴	5 Years Net Return ³	Alpha ⁴
ACTIVE EQUITY - FLAT FEE	65	\$904					
GMO Global Opps	46	195	-4.2%	6.1%	--	6.6%	--
Fidelity Institutional Investment Int'l Small Cap	81	121	10.7%	11.5%	++	7.8%	++
Mondrian Int'l Small Cap	68	119	2.8%	4.7%	--	5.4%	+
City of London EME Closed-End	80	169	-12.0%	Oct-13			
William Blair Emerging Market Growth	62	263	-14.7%	-2.9%	++	-1.5%	++
ACTIVE EQUITY - PERFORMANCE FEE	49	\$1,345					
Eagle Asset Mgmt. US Small Cap Growth	31	137	1.9%	13.3%	-	10.6%	+
Capital Group Int'l EAFE	42	218	-4.3%	3.1%	--	2.7%	-
AQR Capital International Equity	74	217	3.0%	6.9%	++	5.3%	++
Franklin Templeton Global Equity	50	213	-4.9%	8.4%	-	8.1%	+
JP Morgan Global Opportunities	25	177	-2.1%	9.4%	-	7.1%	-
Mercator International Equity	32	0	N/A	terminated March 2015			
Acadian Emerging Market Equity II	52	169	-18.2%	Nov-13			
Acadian Emerging Market Small-Cap Equity	41	118	-11.1%	Jun-14			

Footnotes:

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.

2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.

3. All returns are NET of fees as reported by State Street.

4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++) and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-3: Traditional Assets - FIXED INCOME

Incumbent traditional fixed income managers have generally delivered alpha over the last 3 and 5 years, although the Loomis High Yield portfolio slipped last year. OCERS' new emerging markets debt managers have underperformed, as they were funded shortly before the 2013 Federal Reserve-watchers "taper tantrum" in that marketplace.

We expect to conduct a thorough review of the fixed income portfolio structure in coming months.

	Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	3 Years Net Return ³	3 Years Alpha ⁴	5 Years Net Return ³	5 Years Alpha ⁴
ACTIVE DEBT - FLAT FEE	30	\$1,699					
Loomis Sayles High Yield	24	339	-10.6%	1.0%	-	4.7%	+
PIMCO Total Return	25	134	1.2%	1.5%	+	3.5%	+
Dodge & Cox Core Fixed Income	13	196	N/A	9 months			
Loomis Sayles Strategic Alpha	38	307	-1.0%	Sep-13			
PIMCO Unconstrained Bond	8	242	-0.8%	Sep-13			
Mondrian International Bond	7	0	N/A	terminated March 2015			
Pictet Emerging Market Debt	58	104	-13.8%	Mar-13			
Blue Bay Emerging Market Debt	51	228	-10.2%	Mar-13			
ACTIVE DEBT - PERFORMANCE FEE	11	\$0					
GAM International Bond	11	0	N/A	terminated March 2015			

Exhibit E-4: MULTI-STRATEGY MANAGERS

We trimmed two multi-strategy managers, Wellington and AQR, last year. Bridgewater fees were reviewed exhaustively by the Committee in 2013, renegotiated to reinstate a hurdle, and compared favorably with similar managers in a national exploratory search conducted in early 2014.

	Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	3 Years Net Return ³	3 Years Alpha ⁴	5 Years Net Return ³	5 Years Alpha ⁴
LIQUID REAL RETURN & GTAA	81	\$1,005					
Wellington DIH - Real Return Fund	103	13	-21.4%	-13.2%	--	-8.9%	--
AQR Real Return Fund	99	14	-24.8%	Aug-13			
PIMCO All Asset All Authority	98	298	-11.9%	Jul-13			
GMO Benchmark Free AA	66	275	-4.2%	Aug-13			
Standard Life Global Absolute Return	73	303	2.5%	Aug-13			
ACTIVE REAL RETURN/GTAA - PERFORMANCE FEE	175	\$271					
Bridgewater Pure Alpha	175	267	5.4%	4.4%	-	5.0%	-

Footnotes:

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.

2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.

3. All returns are NET of fees as reported by State Street.

4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++), and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-5: REAL ESTATE

Overall the real estate portfolio has exceeded expectations over the years with OCERS fees similar to the national averages. The CBRE portfolio has been undergoing an orderly disposition in 2014-16. Angelo Gordon's high performance-based fee in 2015 was reflective of very strong returns from their value-added strategies, and the CBRE fee reflected an extraordinary high value exit on a Miami property. We cut the BlackRock REIT in half in early 2016, pre-Brexit, but not because of fees.

	Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	IRR Since Inception ³
REAL ESTATE - FLAT FEE	63	\$615		
AEW Core Property Trust	58	242	13.1%	12.6%
ASB Allegiance Real Estate	88	158	16.4%	14.5%
J.P. Morgan Strategic Property Fund	91	121	14.2%	13.8%
BlackRock Int'l ex-U.S. REIT	12	111	-3.5%	1.5%
REAL ESTATE TOTAL FEE	273	\$548		
MANAGEMENT FEE	119			
PERFORMANCE FEE	154			
CB Richard Ellis	802	55	6.4%	8.1%
Morgan Stanley PRIME	146	277	14.6%	12.7%
AEW Real Estate VIF II	108	3	19.7%	6.2%
Angelo Gordon Core Plus III	714	31	43.9%	23.1%
Fidelity Real Estate	171	5	33.7%	7.7%
CBRE SP 5	NM	0	5.0%	15.9%
CBRE SP 6	89	49	19.8%	16.2%
KTR Industrial Fund III (Prologis buyout)	NM	0	28.4%	39.9%
Oaktree Real Estate Debt Fund	56	11	13.2%	15.3%
True North Real Estate Debt Fund	237	28	28.0%	26.4%
Jamestown Prime Property Fund	53	37	NM	Jul-15
Waterton Residential Venture Fund	311	31	NM	Sep-15

Footnotes:

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.
2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.
3. The Internal Rate of Return is reported NET of fees by RVK for Real Estate and the annualized return is reported NET of fees by State Street.
4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++), and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-6: Alternatives - DIVERSIFIED CREDIT

Diversified Credit is a new portfolio segment, with many new managers. The oldest mandate in this category, PIMCO's distressed credit fund, has performed very strongly since inception with us (up 14% annualized after fees for OCERS). Direct lenders are still in the capital-call and early investment phase, so returns and fees are not meaningful in this report. Brigade's 2015 losses were reversed in 2016, and staff secured a lower fee with a hurdle.

		Calculated Fee (bps) ¹	Dec-15 Mkt Val \$ millions ²	2015 Net Return ³	3 Years		IRR Since Inception ³
DIVERSIFIED CREDIT	TOTAL FEE	188			Net Return ³	Alpha ⁴	
	MANAGEMENT FEE	157	\$1,047				
	PERFORMANCE FEE	31					
PIMCO DISCO II		159	122	5.2%	8.1%	++	
Brigade Lev. Capital		150	157	-11.6%	Feb-13		
CQS Diversified Fund		174	126	-1.8%	Mar-13		
Tricadia Credit Strategies		197	148	-1.8%	Feb-13		
Beach Point Total Return		47	97	NM	Aug-15		
Brigade Energy Opportunities		35	60	NM	May-15		
BlackRock Orange DisloCredit		14	4		Sep-15		NM
Tennenbaum Energy Opportunities		90	15		Apr-15		-7.0%
Monroe Sr Secured DL		82	65		Sep-13		8.2%
Tennenbaum Sr Loan II		151	70		Sep-13		7.9%
Hayfin European DL		81	35		Dec-13		5.5%
Cross Ocean ESS I		769	32		Dec-13		5.2%
Park Square Credit Opps		485	38		Dec-13		-3.4%
BlueBay Direct Lending Fund II		51	30		Jun-15		3.7%
OCP Asia Orchard Landmark		281	144	11.6%	Dec-13		
DIVERSIFIED CREDIT	FLAT FEE	125	\$75				
Crescent DL Fund		87	51		Sep-13		6.8%
NXT Capital Sr Loan		188	28		Aug-13		7.7%

Footnotes:

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.

2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.

3. The Internal Rate of Return or annualized return is reported NET of fees by State Street and by Aksia for Brigade, CQS, and Tricadia.

4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++), and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-7: Alternatives - HEDGE FUNDS

OCERS' hedge fund portfolio was restructured in 2013, replacing a fund-of-funds structure with direct investments, which has reduced fees by several hundred thousand dollars annually. As a group, performance in 2015 was lackluster and failed to provide downside protection or meaningful anti-correlations. The entire segment is now under review for possible trim or even elimination.

	Calculated Fee (bps) ¹	Dec-2015 Mkt Val \$ millions ²	2015 Net Return ³	2014 Net Return ³
HEDGE FUNDS	203			
TOTAL FEE	148			
MANAGEMENT FEE	55	\$839		
PERFORMANCE FEE				
Archer Capital	167	48	-7.1%	5.5%
Perry Partners	148	43	-13.0%	-3.6%
Beach Point Total Return	134	26	N/A	-0.7%
Ionic	138	36	-11.9%	3.6%*
Venor Capital	125	51	-11.5%	-1.8%
Caspian Capital Select Credit	128	44	-10.8%	2.8%
Fore Multi-Strategy	143	43	2.4%	5.1%
PIMCO GCOF	313	52	6.9%	4.7%
Garda	200	60	2.2%*	N/A
D.E. Shaw Multi-Asset Fund	246	75	5.9%	6.8%
Highfields	201	55	2.3%	2.0%
Och-Ziff	150	58	0.0%	5.9%
Hoplite Capital	330	3	N/A	4.2%
Gotham L/S 115/65	101	53	-10.6%	5.4%
BlueMountain	95	50	-8.6%*	N/A
Pharo Macro Fund	277	62	3.7%	8.3%
Alphadyne	307	69	7.4%*	N/A

*Short track record. Returns shown from inception to year end

Footnotes:

All rows highlighted in light-blue represent managers who were hired during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.

2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.

3. All returns are NET of fees as reported by Aksia.

4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++), and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-8: Alternatives - REAL RETURN

The real return portfolio allocation is presently under active review, for structure and cost-effectiveness. Commodities produced negative returns in 2011-15. We phased out several existing commodities managers to fund increased exposure in 2014-15 to dislocated energy strategies through private funds that can combine an income yield with upside appreciation to provide an inflation hedge with positive carry. If and when conditions develop that require direct commodity exposure, such as precious metals would provide, to offset excessive monetary inflation or currency devaluations, we can redeploy capital in that direction.

Agriculture and energy investments are made through illiquid, non-marketable private funds that do include performance fees which will begin to surface if returns ever rise to justify them. Timber investments were made in 2007 which was untimely in retrospect. As inflation hedges, these investments all have merit, but they require immense patience. As noted above, we favor strategies that will produce positive carry (income) with upside potential as the inflation hedge, as opposed to straight capital-appreciation plays. EnerVest has been placed on watch, and EIG's returns reflect a soured port project in Brazil that may eventually reach profitability but has been a dog in their portfolio.

		Calculated Fee (bps) ¹	Dec-2015 Mkt Val \$ millions ²	2015 Net Return ³	
COMMODITIES	TOTAL FEE	145	\$102		
	MANAGEMENT FEE	127			
	PERFORMANCE FEE	18			
Schroders Commodities		67	0	terminated June 2015	
PIMCO Commodity Plus Total		271	0	terminated April 2015	
METALS					
Galena Metals Fund		142	81	terminated Dec 2015	
		Calculated Fee (bps) ¹	Dec-2015 Mkt Val \$ millions ²	2015 Net Return ³	IRR Since Inception ³
ILLIQUID REAL RETURN	TOTAL FEE	71	\$534		
	MANAGEMENT FEE - Committed Capital	128			
	PERFORMANCE FEE - Market Value	-57*			
UBS AgriVest LLC		109	53	6.0%	9.1%
Hancock TR - Valencia F.		125	95	7.5%	1.0%
BTG Pactual (RMK Timberland)		86	46	3.1%	3.0%
Hancock Agricultural Inv.		82	41	5.0%	5.0%
EnerVest XII		137	30	-0.2%	11.3%
EnerVest XIII		195	31	-16.5%	-13.0%
EnerVest XIV		137	12	N/A	-24.9%
EIG Energy Fund XV		-371*	20	-12.5%	12.2%
EIG Energy Fund XVI		68	38	-48.8%	-24.1%
Kayne Anderson Energy Fund VI		196	52	5.0%	6.7%
BlackRock Orange PEP		59	10	N/A	-4.5%

*The negative fee for EIG Fund XV reflects an adjustment for the lower return expectation for the Fund and as a result a lower projected incentive fee compared to the manager's estimations in prior years

Footnotes:

All rows highlighted in light-blue represent managers who were hired or terminated during 2015 and were not invested for the full calendar year.

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.

2. Dec 2015 Market Value is the managers actual ending market value at the end of the year, but the market value shown in the grey box for the total asset category IS based upon the weighted average market value of each manager or committed capital for purposes of deriving an accurate aggregate fee for the group. The manager market value is NOT the average value used to compute the manager's Calculated Fee, although it is used in the formula.

3. The Internal Rate of Return or annualized return is reported NET of fees by State Street.

4. Alpha is the difference between the manager's net of fee return minus the manager's benchmark. Alpha greater than 1.5% is indicated with a double plus sign (++), and alpha greater than negative -1.5% is denoted with a double negative (--) symbol. Alpha less than 1.5% but greater than 0% is represented by a single plus sign (+) and less than 0% but greater than -1.5% with a single negative sign (-).

Exhibit E-9: Alternatives - PRIVATE EQUITY

Private equity managers are identified by letters, as their aggregate pricing information below the fund-of-fund manager level is deemed proprietary and not available for extensive disclosure in this document. Most notably, OCERS has benefitted from a 2014 national search using a collaborative RFP to obtain a lower-fee structure that places much greater emphasis on lower fees on invested capital at the fund-of-fund manager level. Given the total size of our private equity commitment, the Pantheon p-share pricing structure is likely to be as low as we can achieve in the near future, but it will become a standard by which our other incumbents will be evaluated in future competitions for subsequent funding. Our private equity portfolio is still immature and subject to J-curve effects, but has begun bearing fruit that should make the wait worthwhile, based on preliminary indications from incumbent managers. As earlier vintages mature and ultimately produce the expected returns, we have higher fees all-in, which is the price one pays for access to this double-digit market sector. With the prior incumbents' underlying general partners picking off fees up to "2 & 20"(%), plus the overlying fund-of-funds fees exceeding one percent of invested capital, we should expect to see total fees above 500 bps before these managers close out their mature funds. Again, this is the price of superior net returns in the asset class over extended time periods, a cost that we will persistently strive to minimize. With Pantheon, we have made "dry powder" commitments with zero fees until such time as a recession activates that capital.

		Calculated Fee (bps) ¹	Dec-2015 Mkt Val \$ millions ²	IRR Since Inception ³
PRIVATE EQUITY	TOTAL FEE	587		
	MANAGEMENT FEE- Fund Level	111		
	PERFORMANCE FEE - Fund Level	24		
	MANAGEMENT FEE- Underlying	156		
	PERFORMANCE FEE - Underlying	296	\$625	
Private Equity Manager A		NM	1	2.7%
Private Equity FoF Manager B		610	226	10.3%
Private Equity FoF Manager C		665	110	11.6%
Private Equity FoF Manager D		562	295	9.8%
Private Equity FoF Manager E		183	5	10.7%
Private Equity FoF Manager F		689	10	-9.3%

Footnotes:

1. Calculated Fee is derived by dividing the manager reported fees (both management fee and performance fee if relevant) by the average ending market value of the 4 quarters in 2015. The calculated fee is an estimate for simplicity sake which does not take into account the weighted average of cash flows occurring intra-year or a more computationally precise 12-month average.
2. Dec 2015 Market Value is the managers actual ending market value at the end of the year. This figure is NOT the average value used to compute the Calculated Fee, although it is used in the formula. The market value shown in the grey box for the total asset category is based upon the committed capital for management fees and market value for performance fees.
3. The Internal Rate of Return (IRR) is reported by State Street. Since each manager has multiple vintage year fund-of-funds, there are multiple inception dates for each manager.

Memorandum

DATE: May 15, 2017
TO: Members of the Board of Retirement
FROM: Steve Delaney, Chief Executive Officer
SUBJECT: DIRECTIVE TO REVIEW OCERS INVESTMENT FEE REPORT

Recommendation

Receive and file.

Background/Discussion

On March 20, 2017, following a discussion of investment fees and how best to include those in the OCERS annual budget, if at all, the OCERS Board, at Chair Ball's request, directed the Audit Committee to review the format of the current version of the Investment Department's annual fee report to determine if it meets the needs and requirements of the fund.

OCERS has tracked and reported investment management fees (including incentive fees) for a number of years but the current annual fee report format was instituted in the 2013-2014 timeframe. It was in that year that OCERS received national recognition from the prestigious Government Finance Officers Association (GFOA) for the quality of the annual investment fee report, as it is presently crafted. In granting this national recognition, GFOA stated "the Orange County Employees Retirement System adopted a comprehensive fee policy for heightened transparency to stakeholders and to guide the organization in investment management practices" which included publishing an annual fee report in 2014. The fee policy arose from a desire for more transparency and accuracy in the reporting of investment management fees, particularly those fees that are not invoiced but deducted from portfolio returns.

On March 29, 2017, the Audit Committee conducted an initial review of the fee report. As a result of that review, and with further clarification from the Board when it met on April 17, 2017, the question of investment fee reporting was bifurcated into two separate issues with two different avenues of approach:

- The question of whether OCERS Budget Approval Policy and in turn the annual budget should be changed with regards to investment fees will be taken up by the Governance Committee at its meeting on June 8, 2017.
- The broader question of whether the annual investment fee report is serving its intended purpose of transparency and meets the needs of the Board will return to the Audit Committee for further consideration on June 9, 2017.

This memo is meant to document some of the key issues the Audit Committee will most likely wish to address at its meeting.

There are three broad categories of inquiry that need consideration, together with some basic technical questions of fee report construction. The Audit Committee will want to determine if the annual investment fee report meets the legal, policy and managerial requirements and expectations of such a report.

Legal Requirements for the Collection and Reporting of Investment Fee Information

In 2016, the California Legislature enacted AB 2833, which added section 7514.7 to the California Government Code to require much more transparency into the investment fees paid by public pension systems in California. Prior legislation (SB 439, enacted in 2005) had amended the California Public Records Act (CPRA) to specify what information about public pension investments in alternative investment vehicles was public and disclosable pursuant to a request under the CPRA. Newly enacted Section 7514.7 imposes a requirement on public pension systems to collect investment fee information and greatly expands the information that must be disclosed publicly. It applies to new alternative investment contracts entered into on or after January 1, 2017 and existing alternative investment contracts for which a new capital commitment is made on or after January 1, 2017.

For these contracts, public retirement systems in California, including OCERS, are required to obtain from the alternative investment vehicle certain information with respect to the fees paid by the retirement system to the fund manager. In addition, the retirement system is required to undertake reasonable efforts to obtain the same information for any existing alternative investment contract for which no new commitment was made on or after January 1, 2017. Finally, the fee information must be disclosed at a public meeting at least on an annual basis.

More specifically, under the law, OCERS must require each fund manager of an alternative investment vehicle in which OCERS invests to disclose the following information at least annually:

1. Fees and expenses that OCERS pays directly to the fund, fund manager or related parties.
2. OCERS' pro rata share of fees and expenses not included in #1 that are paid from the fund to the fund manager or related parties. (If OCERS independently calculates this information, then the fund will not be required to provide the information.)
3. OCERS' pro rata share of carried interest distributed to the fund manager or related parties.
4. OCERS' pro rata share of the aggregate fees and expenses paid by all of the portfolio companies held within the fund to the fund manager or related parties.
5. Any additional information that OCERS is already required to disclose under the CPRA, including:
 - a. Name, address and vintage year of the fund;
 - b. The dollar amount since inception of OCERS' commitment to the fund;
 - c. The dollar amount since inception of OCERS' cash contributions to the fund;
 - d. The fiscal year end dollar amount of the fund's cash distributions received by OCERS from the fund;
 - e. The fiscal year end dollar amount of the remaining value of the fund's assets attributable to OCERS' investment in the fund;
 - f. The net internal rate of return of the fund since inception;
 - g. The investment multiple of the fund since inception'
 - h. The dollar amount of the total management fees and costs paid by OCERS on an annual fiscal year end basis; and
 - i. The annual fiscal year end dollar amount of the cash profit OCERS has received from the fund.
6. The gross and net rate of return of each fund, since inception, in which OCERS participates, either by OCERS' own calculations or based on calculations provided by the fund.

In order to comply with the requirements of Government Code section 7514.7, OCERS began to include in all new alternative investment contracts entered into on or after January 1, 2017 and existing alternative investment contracts for which a new capital commitment was made on or after January 1, 2017, language that

requires the fund manager to disclose to OCERS at least annually each item of information required by section 7514.7 and any such other information as is necessary in order for OCERS to comply with section 7514.7.

OCERS will include all of the information it collects pursuant to Government section 7514.7 in its annual fee report to the Investment Committee each July.

Policy Considerations for the Collection and Reporting of Investment Fee Information

There are dual policy reasons for rigorous control over and reporting of investment fees.

First, the Board has a fiduciary duty to administer the system and to invest the assets of the fund so as to maximize the rate of investment returns. Control over investment fees is of course a critical component of maximizing returns. Second, the public has a right to monitor the performance of public pension investments. As aptly stated in the 2005 Legislative findings related to the section of the California Public Records Act that requires disclosure of certain information about public pension investments in alternative investments:

[A]ccess to information concerning the conduct of the public's business is a fundamental and necessary right of every person in this state [and] the public has a paramount interest in knowing how public money is spent and invested. It is the intent of this legislation [adding section 6254.26 to the Government Code in 2005] to allow the public to monitor the performance of public investments, for public bodies to avoid payment of excessive fees to private individuals or companies; and for the public to be able to know the principals involved in management of alternative investment funds in which public investment funds have invested so that conflicts of interest on the part of public officials can be avoided.

In acknowledgement of the importance of investment fee controls and transparency, in April 2013, the Board adopted an Investment Fee Policy. The stated objectives of the Investment Fee Policy are:

- Reducing the costs of investment operations to the lowest sustainable level available in competitive markets for top investment managers;
- Aligning the interests of OCERS and its stakeholders with the selected investment management firms we retain, as well as their key professionals who manage our portfolios and provide superior research;
- Securing the best available combination, skill, performance expectations, risk and cost for a given investment discipline; and
- Minimizing potential appearances of excessive fees to address the optics of public-sector investment funds that operate in a highly transparent community.

The Investment Fee Policy acknowledges that fee administration is ultimately a management responsibility, and requires fee arrangements and related contractual terms to be summarized regularly in periodic reports to the Investment Committee. In addition, the CIO is charged with scheduling an annual fee review study session with the Investment Committee, and is authorized and encouraged to engage in discussions with other public pension plan officials to explore the feasibility of cooperative efforts to obtain lower, more suitable fees from investment managers.

In addition, a key tenet of OCERS' Investment Beliefs is:

II. Costs

Expensive active management must be evaluated in an effort to ensure that OCERS will be commensurately compensated for the higher fees. Whenever possible, passive alternatives should be utilized, and performance fees should be accompanied by hurdle rates. Additionally, OCERS believes in structuring active manager compensation to best align the managers' interests with those of OCERS.

Managerial Considerations for the Collection and Reporting of Investment Fee Information

A key driver in the creation of the annual fee report was to ensure public transparency into the fees paid to investment managers as well as demonstrating the impact of these fees at the asset class and the total fund level.

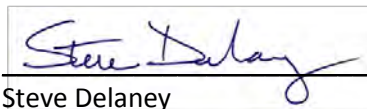
The fee report also serves as a managerial tool for staff in observing trending and controlling costs. To that end the report discusses the beliefs and rationale driving OCERS' investment program, the value-add relative to the fees paid, and strategies for fee reduction.

Other Considerations

In reviewing the annual fee report the Audit Committee will want to consider certain technical aspects of the report's construction as well. The question of what is being reported as a "fee" as opposed to office expense was raised during the Board's earlier consideration of this topic. How does a manager cover business expenses such as travel, due diligence, and other aspects of their daily activities? Are those being lumped in to OCERS' fee expense? Additionally, the Committee will want to determine how those costs are in turn accounted for in our contracts as crafted by investment counsel.

Ultimately the Committee will want to determine if the annual fee report serves not just as a disclosure and communication tool, but rather as a means for providing the Board with actionable information to the betterment of the fund.

Submitted by:



Steve Delaney
Chief Executive Officer

Forbes

The Best Value for Your Business



Edward Siedle Contributor

I cover pension, money management and securities industry practices.

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INVESTING 5/24/2017 @ 4:41PM | 15,218 views

How To Steal A Lot of Money From CalPERS, The Nation's Largest Public Pension

How hard would it be to steal millions from CalPERS, the nation's largest public pension with \$320 billion in assets? Easy-peasy.

Yesterday the [Wall Street Journal](#) reported a disturbing fact—a fact well known to pension insiders for years. That is, officials at CalPERS do not know the full extent of the fees the pension's private equity managers take out of the pension.

At a 2015 meeting, the chief operating investment officer openly acknowledged that no one knew the performance fees paid.

Let's clarify what's going on here. Presumably the mega-pension knows, or can readily establish, all the fees—asset-based and performance—it **pays** its money managers pursuant to fee invoices. (A breakdown of other operational fees—which can be significant—can either be gleaned from investment fund financial statements or specifically requested from managers.)



If you want to steal millions, escape detection and prosecution, then set your sights on the mother of all pension honey-pots, CalPERS. (Photo by Max Whittaker/Getty Images)

What CalPERS doesn't know is the performance and other fees its managers **take** directly from the funds they manage for CalPERS without asking, disclosing or invoicing.

At the same 2015 meeting, the chief operating investment officer admitted, "We can't track it today."

CalPERS claims to have turned to "big data" computer models—algorithms—to understand private equity costs. Supposedly, a software program developed by outside firms determined at the end of 2015 that the pension paid \$3.4 billion in performance fees over the past quarter-century to private-equity firms. In 2016, that number was said to be \$490 million. Don't believe these figures for a second.

For those who are impressed by opaque algorithms no one understands and that lack effective feedback loops to highlight deficiencies and errors, I suggest reading Cathy O'Neil's new book, [Weapons of Math Destruction](#).

As an expert in ferreting-out hidden, excessive and illegal investment fees, I would never recommend any pension fiduciary (and certainly not a fiduciary overseeing hundreds of billions in government workers retirement savings) rely upon an ill-defined computer model to catch criminals.

So, to re-cap the problem facing CalPERS: Private equity managers are **taking** billions from the pension but the pension has no idea how much. How comforting is that to pension stakeholders? You'd think that California's largest state employee union, [SEIU Local 1000](#) and [AFSCME](#) would be concerned about protecting the retirement assets of their members that are participants in the state pension.

Of course, if CalPERS doesn't know how much money these private equity managers are taking out of the pension, it cannot possibly know whether the amounts taken are legitimate or wrongful—i.e., theft.

In my opinion (and based upon my experience conducting over \$1 trillion of pension investigations), it is almost certain some CalPERS private equity managers are, shall we say,

misappropriating assets from the retirement system. Recent SEC staff findings confirm my views.

In 2014, SEC staff found that more than half of about 400 private-equity firms it [examined](#) had charged [unjustified fees and expenses](#) without notifying investors. To be sure, CalPERS conceivably could have adroitly avoided the hoards of private equity wrongdoers but, based upon my knowledge of longstanding CalPERS due diligence lapses and monitoring weaknesses, don't count on it. As I wrote in 2011, CalPERS involvement in an investment scheme is no assurance of integrity, or a "[Good Housekeeping Seal of Approval.](#)"

CalPERS board member JJ Jelincic, who raised the issue of undisclosed fees in the 2015 board meeting mentioned earlier agrees. "We don't know what fees our private equity managers are taking out of the pension and so we can't possibly know whether all the fees are legitimate. When I've raised the issue, I've been told the managers are our "partners" in the funds and we should just trust them."

I posed the following question to CalPERS today in an email: If CalPERS does not know precisely how much money private equity managers are receiving related to fund assets, how can stakeholders be assured that these managers are not wrongfully taking from the pension?

In response CalPERS said, "Our Private Equity fees are fully disclosed in our [Comprehensive Annual Financial Report](#) and in the [Private Equity Annual Program Review](#)." In my experience dealing with CalPERS, the board regularly claims certainty as to matters which it barely grasps.

How long has CalPERS known about potential theft by its managers? At least four years.

On March 22, 2013, I sent a letter to the CalPERS board reciting my credentials (for those board members who did not already know me) and emphatically stating, "It is apparent to me, even from a distance that the fund continues to lack many of the safeguards I would recommend to improve management and performance." I received no response to the letter.

A few months later, on May 13, 2013, I sent a second letter to board member Jelencic, as requested, providing further detail regarding

issues which in my expert opinion should be investigated fully by the pension. Included in these issues were specifically “undisclosed fees related to investment providers/vendors,” and “private equity and hedge fund conflicts of interest, fee abuses and malfeasance.”

I am told that when Mr. Jelencic brought my second letter to the attention of the board at a closed meeting, the Board President responded, “How is this letter different from any of the thousands of others we receive? The suggestion to meet with me was rejected, I am told by Jelencic. CalPERS today stated, “We cannot comment on issues that are discussed in closed session.” (Please see update at the bottom of this article.)

If it's true that the CalPERS board regularly receives thousands of letters from forensic experts and other credible whistleblowers alleging potential wrongdoing regarding pension investments—allegations of wrongdoing which the board routinely ignores—that's really scary. Unions protecting government workers should be alarmed that such warnings go unheeded and demand to see all such correspondence.

My advice to would-be criminals: If you want to steal millions, escape detection and prosecution, then set your sights on the mother of all pension honey-pots, CalPERS.

*Author's Update: While CalPERS initially declined to comment on a conversation that took place in a closed session, following publication of this article, CalPERS Chief of Public Affairs Wayne Davis wrote in an email that the full quote from the Board President should have been: “How is this letter different from any of the thousands of others we receive **offering services?**” (As my Forbes full bio makes clear, I do conduct forensic investigations of pensions through my firm, Benchmark Financial Services, Inc. In this case, I was asked to send the letter to the board by a concerned member of the board.)*

RECOMMENDED BY FORBES

[Calpers Involvement Is No "Good Housekeeping Seal of Approval"](#)

['Red Flags' Surround CalPERS Costly Hedge Fund Gamble](#)

[CalPERS Criminal Prosecutions Needed To End Public Pension Fraud](#)

[CalPERS Crowdfunded \\$300 Billion Pension Investigation](#)

[The Richest Person In Every State](#)

[Don't Put Wasp Nests In Your Vagina](#)

[The 10 Most Dangerous U.S. Cities](#)

[Grab A Retirement Saver's Tax Credit](#)

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Overview

The ILPA Reporting Template (the “Template”) was developed to promote more uniform reporting practices in the private equity industry. It is one component of the ILPA’s Transparency Initiative (the “Initiative”), a broad-based effort to establish more robust and consistent standards for fee reporting and compliance among investors, fund managers, and their advisors. The Initiative was comprised of senior investment and reporting professionals from a cross-section of investor institutions and advisors.

The Template, which details all monies paid to the fund manager, affiliates, and third parties, is the first deliverable of the Initiative. The Template reflects feedback from more than 120 individuals and organizations, including nearly 50 global LP groups, and 25 General Partner organizations (GPs), as well as numerous industry trade bodies and a number of leading consultants, advisors, fund administrators, and accountants.

Template Goals

The Template is organized into two sections (A & B). Each section has a discrete goal, providing LPs with:

- A. The ability to monitor, aggregate and analyze an LP’s direct costs of participating in a given private equity fund (a “Fund”). These values are presented within the framework of a typical partners’ capital account statement, providing valuable context to the reported
- B. A summary of the GP’s sources of economics regarding the Fund and the investments made by the Fund (including reimbursements and any fees not subject to offset).

Template Guidance

Through dozens of interactions with the GP and LP communities during the consultation phase of the Template’s development, the ILPA became aware of several complex issues that should be considered by all stakeholders when populating and analyzing the content provided in the Template. The guidance below is intended to communicate the expectations and necessary background to allow LPs and GPs to determine how both parties can utilize the Template most effectively.

This guidance assumes that every LP and GP has unique needs and resources. To accommodate this diversity, the responsibility for determining how the Template can be used to support their needs lies with individual LPs and their managers. The ILPA recommends that LPs and GPs should carefully consider the following when deciding how the Template is to be utilized within a GP’s periodic disclosure package.

These guidelines, originally issued in January 2016, and revised in October 2016, are not anticipated to change in the near term. However, the ILPA will continue to monitor the challenges faced by LPs and GPs during the Template’s adoption and may make additional clarifying or other changes to either this guidance or the Template in future. Interested parties should consult ilpa.org for the latest versions of these guidelines and the Template.

I. Frequency & Implementation

The Template is designed to be supplemental to a Fund’s standard financial disclosures. The ILPA recommends that the Template is provided on a quarterly basis within a reasonable timeframe after the release of standard reports. The Template is not intended to be a substitute for any other reports, including capital call and distribution notices.

The content should be provided in an Excel or digital format (e.g., XML) that is compatible with reporting software systems and allows for aggregation and analysis of information. To maximize the usefulness of the data being presented, PDF format is not recommended.

During the initial adoption period, LPs should adjust their adoption/frequency/ lagging expectations to accommodate for the necessary changes to GPs’ processes, technology, and resources. It is expected to take up to one year or more for GPs to adapt their processes to meet the demands of mass-producing the customized Template for each of their LPs, depending on the size, complexity, and infrastructure of each firm’s operations.

The ILPA anticipates that the timing of each GP’s transition to the standard indicated by the Template will depend upon the point at which a critical mass of a GP’s LPs begin requesting the Template. Therefore, it’s imperative for LPs to signal to their GPs at the earliest opportunity that they require this information.

Additionally, LPs should be aware that select fields within the Template, particularly in Section A.3 (“Miscellaneous”), may be more difficult for GPs to produce. Feedback from GPs suggest that the data in Section A.3 is neither customarily tracked in most GP systems, nor easily derived from existing ledger entries. LPs should moderate their expectations for the timely reporting of information for these fields accordingly. For the avoidance of doubt, it is anticipated that GPs will eventually modify their processes to allow for the regular reporting of this data in the future.



When contemplating the desired timeline for full integration of the Template into reporting processes, LPs are reminded that many (if not all) of the fees charged to portfolio investments are tracked in a separate ledger (and software) from a Fund’s accounts. It will likely require meaningful revisions to GP accounting and reporting procedures to aggregate the information from multiple ledgers into a single report. The scope of these changes in procedure and operations will necessarily be greater for GPs managing multiple products or pools of capital, those with more complex economic or operating models, or those GPs with a less sophisticated reporting infrastructure.

The Template should only be applied on a prospective basis to future funds, and, where feasible, to current vintages in the active investment phase. See Section IV for additional guidance on legacy funds.

The Template was developed for quarterly frequency to accommodate for LPs’ fiscal year ends that often differ from the calendar year reporting of typical GPs. Having the Template data on a quarterly basis allows LPs to produce annualized figures to whatever quarter aligns with their own reporting cycle. However, as improvements in GP reporting processes and reporting software make quarterly calculations more feasible on an automated basis, the ILPA anticipates that GPs and LPs will together determine the frequency that meets each LP’s needs.

The ILPA believes that it will be in the best interests of the industry in the long term to explore how to automate the generation, presentation, and dissemination of the data contained within the Template. To that end, the ILPA has collaborated with the AltExchange Alliance to ensure that the elements of the Template are reflected within the AltExchange data standards. A version of the Template is now available in a software-agnostic format (i.e., XML) to facilitate the integration of the Template’s elements into LPs’ and GPs’ existing reporting systems. The XML formatted Template is available on ilpa.org.

II. Tiered Content – Differentiated Levels of Reporting

To ensure the Template focuses on efficiently meeting the needs of a diverse LP community, a two-tiered structure has been incorporated into the Template. Level 1 data represents high-level summary content, and the minimum baseline that the ILPA is recommending should be provided by GPs to LPs. Level 2 data introduces additional granularity and itemization for certain subtotals, i.e., fees subject to offset and partnership expenses, and fees/reimbursements received from portfolio investments. The more-detailed Level 2 content is represented by the shaded, collapsible rows in the Template.

The following table highlights the key differences between the data points captured by Level 1 and Level 2 information in the Template.

Level 1 Standard	Level 2 Standard
Partnership Expenses - Total	Partnership Expenses – Accounting, Administration & IT
	Partnership Expenses – Audit & Tax Preparatory
	Partnership Expenses – Bank Fees
	Partnership Expenses – Custody Fees
	Partnership Expenses – Due Diligence
	Partnership Expenses – Legal
	Partnership Expenses – Organization Costs
	Partnership Expenses – Other Travel & Entertainment
	Partnership Expenses – Other
	Total Offsets to Fees & Expenses (applied during period)
Broken Deal Fee Offset	
Transaction & Deal Fee Offset	
Directors Fee Offset	
Monitoring Fee Offset	
Capital Markets Fee Offset	
Organization Cost Offset	
Placement Fee Offset	
Other Offset	
Total Fees with Respect to Portfolio Companies/Investments	
	Broken Deal Fees
	Transaction & Deal Fees
	Directors Fees
	Monitoring Fees
	Capital Markets Fees
	Other Fees

The data representing the Level 1 summary content may be sufficient for many LPs to monitor their portfolios. As such, LPs preferring less detail may request that their GPs provide only Level 1 content. This will help GPs focus their efforts on providing Level 2 content only to LPs that require it.

For the avoidance of doubt, ILPA recommends that GPs provide both Level 1 and Level 2 content to each of their LPs. However, GPs should have conversations with their LPs regarding the requisite level of reporting.



III. Scaled Implementation – Fund Sizes

LPs should factor the size, back-office resources, operating budgets, and complexity of the funds managed by their GPs when determining their requirements for Template compliance.

Some GPs, including newer managers and managers of smaller, VC, or SBIC funds, may not have the staffing or technology resources to populate the quarterly Template in a reasonable timeframe, without significantly reducing their effectiveness in other areas. In addition, several of the fields within the Template may not apply to funds with simpler economics, meaning that these fields would consistently have a null value. LPs' expected timeline for receiving the Template should reflect the operational and other constraints facing GPs described in this section. The ILPA recommends that LPs investing in smaller GPs with simpler economics consider whether Level 1 content would be sufficient to meet their compliance or investment monitoring needs.

IV. Application to Legacy Funds

LPs should consider a fund's age when determining their requirements for Template compliance. The process surrounding how a GP manages account balances or cash flows with respect to certain elements within the Template may make populating the Template difficult. For instance, information may be managed across different ledgers, or GPs may use a different hierarchy for tracking partnership expense sub-totals (audit, bank fees, etc.). There may be a significant operational burden associated with reorganizing a GP's historical ledgers to align with the Template layout. LPs should therefore weigh carefully whether the incremental value of this information for historical periods warrants requiring it for older funds and perhaps consider the acceptability of less stringent requirements (particularly any requests for since inception data).

For the avoidance of doubt, GPs are encouraged to utilize best judgement when an LP requests since inception data for a legacy fund. GPs that deem such requests unduly burdensome for their back-office resources would still comply with these guidelines if they elected not to comply with such a request.

V. Conformity with the LPA

The values presented in the Template should be calculated within the framework of a Fund's Limited Partnership Agreement (LPA), including its valuation policy. Template values for NAV, incentive allocation (carried interest), fee offsets, management fees, unfunded commitment, and call/distribution amounts should be consistent with the totals presented in a Fund's other disclosures. Additionally, the definition used for Related Parties in the Template should be consistent with the definition used in the existing LPA.

Please note that the Template does provide a recommended definition for Related Parties. The ILPA encourages the adoption of this definition for all future PE funds.

As an exception to the above, the ILPA recommends that GPs adopt the ILPA's prescribed hierarchy for partnership expenses, fee offsets and fee/expense income received from investments (all of which is categorized as Level 2 content). Due to the various hierarchies currently being reported in fund financials, LPs are unable to conduct any meaningful, plan-level analysis of these balances. As noted in a previous section, this accommodation is only recommended for newer funds. For the avoidance of doubt, GPs are asked to adopt these categories for reporting purposes only, and are not being asked to revise their methodologies for calculating these sub-totals.

VI. Use of Estimates for Individual Partner's Balances

To provide context to each value, the Template requests an individual LP's allocation for every reported balance. The ILPA acknowledges that it may be unfeasible to precisely calculate the partner's share for certain balances, particularly any fees not subject to offset (as there would be no provision in the LPA to calculate the LP's share of a fee offset for which it was not entitled). These balances are denoted with a "****" in the Template. For these balances, GPs should only provide an estimated amount, using the LP's pro rata share of the Fund.

Due to the accounting complexity resulting from LP opt-outs and any specialized offset/waterfall provisions in certain LP side letters, LPs should understand that any individual LP's allocation for these balances are approximations and should only be used to provide context to any cumulative balances.

VII. Template Endorsement

To help communicate the scope of adoption within the industry, organizations are encouraged to endorse the Template. Instructions for endorsing the Template are provided on ilpa.org.

In general, a Template endorsement signals that the endorsing organization:

- Believes that a single standard for fee disclosures is necessary to efficiently monitor and report private equity fund activity
- Will make best efforts to adhere to all of the Template Guidelines
- Will not modify the Template beyond what is prescribed in the Template Guidelines (most notably, Sections VIII, IX, and XIII)
- Will not make, or comply with, requests to complete alternate, customized template formats that provide the same data points found in the ILPA Template



- Recognizes the challenges faced by GPs and LPs with regards to completing the Template and monitoring fees, respectively, and will make best efforts to collaborate with each other to ensure that the Template is applied in the most effective and efficient way

For LPs (and their consultants/administrators), an endorsement also indicates that:

- They're willing to encourage their GPs to complete and adopt the Template
- They will use content yielded by the Template to systematically monitor their portfolio
- They will phase-out use of any other formats they're using to gather fee data

For GPs (and their advisors), an endorsement also indicates that:

- In the short term, they're willing to complete the Template for any LP that requests it
- In the long term, they'll work towards implementing an automated solution that provides the Template to all of their LPs on a regular basis, as part of their standard reporting package

VIII. GP Modifications to Template

The Template-style format, with its hard-coded series of fields, was deemed most effective at creating a unified reporting standard, rather than a principles-based approach which was expected to only exacerbate the continuing proliferation of bespoke formats.

The prescribed fee data is presented alongside values typically included in a partners' capital account statement (PCAP) because it is believed that this PCAP information offers valuable context and quality control to the disclosures on fees and expenses. The ILPA acknowledges that standardizing the format for the PCAP itself is problematic, therefore this section is intended to detail acceptable modifications to the Template that allow GPs additional flexibility in its application.

GPs should not delete or merge any fields in the Template, including any of the more detailed itemization included as Level 2 content. If certain fields do not apply to a Fund, GPs are still advised to include these fields and populate them with zeros.

While Template fields should not be deleted or merged, GPs do have the flexibility to repurpose, supplement, or re-order the fields in Section A.1 (NAV Reconciliation and Summary of Fees, Expenses and Incentive Allocation) to accommodate for variances between their existing PCAP format and the one used in the Template (which is mostly relevant to U.S. GAAP-centric, commingled funds). While potentially beneficial to the industry, the purpose of the Initiative was not to standardize the format for PCAPs.

Some examples of acceptable modifications include:

- GPs whose PCAPs typically show the NAV reconciliation on a gross-of-carry basis, where periodic changes in accrued carry are indicated in separate line items, can adapt the Template format (which represents a net-of-carry basis) by adding and repurposing certain fields to match the basis of their standard PCAP. Regardless of any changes, the GP should still report any periodic changes in accrued/paid carried interest (in the section called "Reconciliation for Accrued Incentive Allocation").
- Additional fields that could be potentially inserted into Section A.1 include tax withholding, transfer of capital from a secondary purchase/sale, and currency gain/loss.
- Existing fields, such as Placement Fees, may be moved into the reconciliation of Net Operating Income, depending on the GP's existing reporting practices.
- GPs may rename fields to match the terminology in use within their country (e.g., Priority Profit Share is the more commonly used term for management fees in the U.K.).
- GPs may need to add or rename field names in the Level 1 content to accommodate funds that are denominated in multiple currencies, or with non-traditional or more complex fund structures (e.g., permanent capital and evergreen funds).

For any such revisions, GPs are encouraged to point out the explicit variations from the names or ordering of fields within the original ILPA Template, including explanatory footnotes, where appropriate. Some LPs may be relying on name-based Excel formulas (e.g., VLOOKUP) to aggregate content from reports provided by multiple GPs.



IX. LP Modifications and Adherence to the Template

One of the many benefits of a standardized Template is the reduced need for the GP community to process numerous, bespoke fee template requests from LPs. A single standard will make the reporting process more efficient and, over time, allow for greater comparability of information across managers and portfolios. As such, LPs should not modify any of the fields within the Template (including the accompanying Fund of Funds Template) before requesting that their GPs populate it.

However, LPs may request supplemental schedules that provide more clarity on any individual Template balance (e.g., itemized details on fee income received from individual portfolio companies). GPs should use their discretion when accommodating these supplemental Template requests.

Furthermore, LPs that adopt the Template are encouraged to transition away from using any customized template format that they're currently using to collect the same data provided in the Template. While it's understandable that they may use both their legacy format and the Template for a short period, it is counterproductive to encouraging broad adoption of these reporting standards to require the GP community to report in multiple formats over an extended period of time. For the avoidance of doubt, LPs that continue to request fee information via multiple formats after a reasonable transition period are not in compliance with these guidelines.

X. Footnotes

A footnotes section is provided at the bottom of the Template. GPs are encouraged to use this space to pre-emptively describe any out-of-the-ordinary balances. Also, GPs should footnote any YTD amounts that are classified in an "Other" balance (e.g., Partnership Expenses-Other, Other Offsets, etc.). Lastly, GPs should disclose in the footnotes if they have charged the Fund for any fund administration services that utilized in-house staff and infrastructure.

XI. Fee Allocations to Remaining Positions held by the Manager

In Section B.1 ("Source Allocation"), GPs are asked to provide a summary of all fees and reimbursements received by the GP and its affiliates from portfolio investments (under "With Respect to the Fund's Portfolio Companies/Investments"). Aggregate LPs' allocation for these fees are to be provided in the middle columns of the section (under "Cumulative LPs' Allocation of Total Fund"). In cases where the GP/affiliates have additional exposure to the Fund's investments (e.g., via LP co-investors or other funds/vehicles within the GP's fund family), any remaining allocation of the total fees received from investments held by the reported Fund should be provided in the far-right columns of the section (under "Affiliated Positions").

In total, the cumulative fee amounts received by the GP and its affiliates (including fees not subject to offset) should be accounted for (with care taken to avoid redundant entries or double-counting) in these two groups of columns. For the avoidance of any doubt, this section should not include any fees received by co-investors not under the umbrella of the GP/affiliates (e.g., other GPs or non-affiliated deal sponsors).

XII. Fund of Funds Template

A supplemental schedule, which links to the Template, is provided to itemize the layer of fees and incentive allocation that a fund of funds ("FOF") pays to its underlying fund holdings. These values represent the normal fees and incentive allocation that the FOF paid via their commitment to each fund holding in the portfolio. The values do not include any pro-rata share of the fees charged by the FOF to its own LPs.

The ILPA acknowledges that any FOF will be highly challenged to provide the itemized content in the supplemental template. Like a traditional LP, the FOF's ability to track and report this content in a meaningful fashion to its own LPs is entirely contingent upon a uniform level of reporting and universal compliance from all of the underlying managers in the FOF's portfolio. As such, the ILPA recommends that FOF organizations provide the content in the supplemental schedule to LPs by special request only. The content should be reported in the format provided. The frequency and lag time of the reporting should be determined jointly by the FOF and the LP making the request.

XIII. Miscellaneous

- The Template was designed as a tool for standardizing the preferred level of disclosures on fees, expenses, and incentive allocation. It was not designed for verifying any of the GP's calculations for these amounts. To remain focused on this goal, certain metrics/terms used in these calculations (e.g. current management fee rate, preferred return rate, carry percentage, waterfall structure, etc.) are intentionally withheld from the Template. Subsequent to the release of the Template, the ILPA will issue additional guidance (in the form of a white paper and updates to the ILPA Principles) that will address the issue of LPA compliance.

- In the event of a transfer of interest between LPs (i.e., secondary purchase of an LP interest), historical activity should be presented in a manner that is consistent with a fund's standard reports.

- To match a traditional partners' capital account statement, values presented in Section A.1 (NAV Reconciliation and Summary of Fees, Expenses and Incentive Allocation) can have a positive or negative balance, depending upon how that value typically impacts the entity's wealth (e.g., increases in incentive allocation are a negative balance for LPs, a positive balance for the GP's allocation and a null balance for the Total Fund). However, balances in the remaining sections are typically presented as a positive balance (regardless of their impact on wealth). As such, Template users should avoid aggregating values from different sections.



- Current fee offset percentages are provided in Section A.1 in order to give interested LPs an approximation of total fees that are not subject to offset. LPs should be aware that potential nuances in how offset calculations are defined in an LPA (e.g., the offset percentages may increase/decrease over the life of the Fund) may make it difficult to use the Template to precisely calculate fees not subject to offset.
- When analyzing the fees charged by the GP to its investments, LPs should consider the potential accretive nature of any billable services rendered by the GP to the portfolio investment. LPs should also acknowledge that reimbursements paid by portfolio companies to the GP for amounts the GP has advanced to cover the cost of travel/services do not represent a source of revenue for the GP. Furthermore, GPs should acknowledge that LPs have an obligation to understand any non-“arms-length” engagement between a GP and portfolio company.
- The Total Fund balances presented in the Template should include all parallel vehicles/AIVs under the Fund’s umbrella. Certain exceptions (e.g., funds denominated in multi-currencies) may apply.
- As in a traditional partners’ capital account statement, partnership expenses presented in Section A.1 would not include any capitalized transaction fees charged to LPs.

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Best Practices Fund II, L.P.	QTD	YTD	Since Inception	QTD	YTD	Since Inception	QTD	YTD	Since Inception
	(Oct-15 - Dec-15)	(Jan-15 - Dec-15)	(Feb-07 - Dec-15)	(Oct-15 - Dec-15)	(Jan-15 - Dec-15)	(Feb-07 - Dec-15)	(Oct-15 - Dec-15)	(Jan-15 - Dec-15)	(Feb-07 - Dec-15)

A. Capital Account Statement for LP #5

A.1 NAV Reconciliation and Summary of Fees, Expenses & Incentive Allocation		LP #5's Allocation of Total Fund			Total Fund (incl. GP Allocation)			GP's Allocation of Total Fund		
Beginning NAV - Net of Incentive Allocation		\$45,067,000	\$38,196,000	\$0	\$2,495,281,787	\$2,163,081,300	\$0	\$339,194,377	\$276,104,050	\$0
Contributions - Cash & Non-Cash		0	5,000,000	35,000,000	0	250,375,000	1,752,625,000	0	375,000	2,625,000
Distributions - Cash & Non-Cash (input positive values)		1,250,000	5,000,000	19,000,000	62,593,750	250,375,000	1,452,175,000	2,593,750	12,875,000	77,175,000
Total Cash / Non-Cash Flows (contributions, less distributions)		(1,250,000)	0	16,000,000	(62,593,750)	0	300,450,000	(2,593,750)	(12,500,000)	(74,550,000)
Net Operating Income (Expense):										
(Management Fees – Gross of Offsets, Waivers & Rebates):		(187,500)	(750,000)	(6,625,000)	(9,375,000)	(37,500,000)	(331,250,000)	0	0	0
Management Fee Rebate		0	0	0	0	0	0	0	0	0
(Partnership Expenses - Total):		(48,000)	(154,780)	(548,429)	(2,328,750)	(4,985,053)	(25,072,055)	0	0	0
(Partnership Expenses – Accounting, Administration & IT)		(1,000)	(2,500)	(27,000)	(50,000)	(128,000)	(1,350,000)	0	0	0
(Partnership Expenses – Audit & Tax Preparatory)		(2,000)	(5,000)	(58,000)	(100,000)	(250,000)	(2,600,000)	0	0	0
(Partnership Expenses – Bank Fees)		0	0	0	0	0	0	0	0	0
(Partnership Expenses – Custody Fees)		(12,500)	(27,500)	(55,000)	(550,000)	(695,000)	(2,900,000)	0	0	0
(Partnership Expenses – Due Diligence)		(20,000)	(50,000)	(95,000)	(1,000,000)	(1,250,999)	(2,555,000)	0	0	0
(Partnership Expenses – Legal)		0	(37,500)	(250,000)	0	(1,875,000)	(12,500,000)	0	0	0
(Partnership Expenses – Organization Costs)		(10,000)	(25,000)	(50,000)	(500,750)	(628,000)	(2,522,500)	0	0	0
(Partnership Expenses – Other Travel & Entertainment)		(2,500)	(7,005)	(12,444)	(128,000)	(147,554)	(599,555)	0	0	0
(Partnership Expenses – Other*)		0	(275)	(985)	0	(10,500)	(45,000)	0	0	0
Total Offsets to Fees & Expenses (applied during period):		82,600	346,500	1,538,521	4,140,600	19,227,400	82,424,249	0	0	0
Offset Categories			% Offset to LP #5*							
Advisory Fee Offset		16,000	80%	72,000	500,000	2,000,000	9,062,500	0	0	0
Broken Deal Fee Offset		8,000	80%	32,000	320,000	1,600,000	8,000,000	0	0	0
Transaction & Deal Fee Offset		4,000	80%	12,000	390,000	1,400,000	5,968,749	0	0	0
Directors Fee Offset		600	100%	2,500	30,000	875,000	6,875,000	0	0	0
Monitoring Fee Offset		30,000	100%	135,000	1,500,000	6,900,000	34,000,000	0	0	0
Capital Markets Fee Offset		15,000	100%	68,000	750,000	3,450,000	16,500,000	0	0	0
Organization Cost Offset		8,000	80%	20,000	400,600	502,400	2,018,000	0	0	0
Placement Fee Offset		0	100%	0	0	0	0	0	0	0
Other Offset*		0	80%	0	0	0	0	0	0	0
Reconciliation for Unapplied Offset Balance (Roll-forward)										
Unapplied Offset Balance (Roll-forward) - Beginning Balance		1,000		5,000	250,000	2,500,000	0	0	0	0
Plus: Total Offsets to Fees & Expenses (recognized during period)		81,600		341,500	3,890,600	16,727,400	82,424,249	0	0	0
Less: Total Offsets to Fees & Expenses (applied during period)		82,600		346,500	4,140,600	19,227,400	82,424,249	0	0	0
Unapplied Offset Balance (Roll-forward) - Ending Balance		0		0	0	0	0	0	0	0
(Total Management Fees & Partnership Expenses, Net of Offsets & Rebates, Gross of Fee Waiver)		(152,900)		(558,280)	(7,563,150)	(23,257,653)	(273,897,806)	0	0	0
Fee Waiver		0		7,500	0	375,000	1,250,000	0	0	0
Interest Income		500		1,000	25,038	50,075	500,750	38	75	750
Dividend Income		10,000		32,380	500,750	2,503,750	17,030,000	750	3,750	30,000
(Interest Expense)		(2,000)		(8,000)	(100,150)	(400,600)	(2,003,000)	(150)	(600)	(3,000)
Other Income/(Expense)*		1,000		3,000	50,075	150,225	1,001,500	75	225	1,500
Total Net Operating Income / (Expense)		(143,400)		(522,400)	(7,087,438)	(20,579,203)	(256,118,556)	713	3,450	29,250
(Placement Fees)		0		0	0	0	(2,000,000)	0	0	0
Realized Gain / (Loss)		1,000,000		3,000,000	50,075,000	145,392,253	887,937,906	2,575,000	12,725,000	175,728,250
Change in Unrealized Gain / (Loss)		1,000,000		5,000,000	62,593,750	250,375,000	1,608,000,000	12,531,160	75,375,000	250,500,000
Ending NAV - Net of Incentive Allocation		\$45,673,600		\$45,673,600	\$2,538,269,350	\$2,538,269,350	\$2,538,269,350	\$351,707,500	\$351,707,500	\$351,707,500
Reconciliation for Accrued Incentive Allocation										
Accrued Incentive Allocation - Starting Period Balance		(4,750,000)		(3,750,000)	0	0	0	337,500,000	275,000,000	0
Incentive Allocation - Paid During the Period		50,000		250,000	0	0	0	(2,500,000)	(12,500,000)	(75,000,000)
Accrued Incentive Allocation - Periodic Change		(300,000)		(1,500,000)	0	0	0	15,000,000	87,500,000	425,000,000
Accrued Incentive Allocation - Ending Period Balance		(5,000,000)		(5,000,000)	0	0	0	350,000,000	350,000,000	350,000,000
Ending NAV - Gross of Accrued Incentive Allocation		\$0,673,600		\$0,673,600	\$2,538,269,350	\$2,538,269,350	\$2,538,269,350	\$1,707,500	\$1,707,500	\$1,707,500



Best Practices Fund II, L.P.	QTD (Oct-15 - Dec-15)	YTD (Jan-15 - Dec-15)	Since Inception (Feb-07 - Dec-15)	QTD (Oct-15 - Dec-15)	YTD (Jan-15 - Dec-15)	Since Inception (Feb-07 - Dec-15)	QTD (Oct-15 - Dec-15)	YTD (Jan-15 - Dec-15)	Since Inception (Feb-07 - Dec-15)
A.2 Commitment Reconciliation:	LP #5's Allocation of Total Fund			Total Fund (incl. GP Allocation)			GP's Allocation of Total Fund		
Total Commitment	\$50,000,000	\$50,000,000	\$50,000,000	\$2,503,750,000	\$2,503,750,000	\$2,503,750,000	\$3,750,000	\$3,750,000	\$3,750,000
Beginning Unfunded Commitment:	\$18,500,000	\$23,500,000	\$50,000,000	\$926,387,500	\$1,176,762,500	\$2,503,750,000	\$1,387,500	\$1,762,500	\$3,750,000
(Less Contributions)	0	(5,000,000)	(35,000,000)	0	(250,375,000)	(1,752,625,000)	0	(375,000)	(2,625,000)
Plus Recalable Distributions	0	0	4,000,000	0	0	200,300,000	0	0	300,000
(Less Expired/Released Commitments)	0	0	0	0	0	0	0	0	0
+/- Other Unfunded Adjustment	0	0	(500,000)	0	0	(25,037,500)	0	0	(37,500)
Ending Unfunded Commitment	\$18,500,000	\$18,500,000	\$18,500,000	\$926,387,500	\$926,387,500	\$926,387,500	\$1,387,500	\$1,387,500	\$1,387,500
A.3 Miscellaneous** (input positive values):	LP #5's Allocation of Total Fund			Total Fund (incl. GP Allocation)			GP's Allocation of Total Fund		
Incentive Allocation - Earned (period-end balance)****	\$1,250,000	\$1,250,000	\$1,250,000	\$0	\$0	\$0	\$75,000,000	\$75,000,000	\$75,000,000
Incentive Allocation - Amount Held in Escrow (period-end balance)****	\$250,000	\$250,000	\$250,000	\$0	\$0	\$0	\$15,000,000	\$15,000,000	\$15,000,000
Returned Clawback****	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Capitalized Transaction Fees & Exp. - Paid to Non-Related Parties****	\$50,000	\$200,000	\$1,000,000	\$2,503,750	\$10,015,000	\$50,075,000			
Distributions Relating to Fees & Expenses****	\$2,500	\$10,000	\$58,000	\$125,188	\$500,750	\$2,904,350			
Fund of Funds: Gross Fees, Exp. & Incentive Allocation paid to the Underlying Funds****	\$1,951	\$7,806	\$24,626	\$97,720	\$390,879	\$1,233,161			

B. Schedule of Fees, Incentive Allocation & Reimbursements Received by the GP & Related Parties, with Respect to the Fund and Portfolio Companies/Investments Held by the Fund

B.1 Source Allocation:		LP #5's Allocation of Total Fund			Cumulative LPs' Allocation of Total Fund			Affiliated Positions***		
With Respect to the Fund's LPs	Management Fees - Net of Rebates, Gross of Offsets and Waivers	187,500	750,000	6,625,000	9,375,000	37,500,000	331,250,000			
	Partnership Expenses - Paid to GP & Related Parties - Gross of Offsets	1,000	4,000	30,000	50,075	200,300	1,502,250			
	(Less Total Offsets to Fees & Expenses - applied during period)	(82,600)	(346,500)	(1,538,521)	(4,140,600)	(19,227,400)	(82,424,249)			
	Capitalized Transaction Fees & Exp. - Paid to GP & Related Parties****	0	0	0	0	0	0			
	Accrued Incentive Allocation - Periodic Change	300,000	1,500,000	6,250,000	15,000,000	87,500,000	425,000,000			
With Respect to the Fund's Portfolio Companies/ Invs.	Total Fees with Respect to Portfolio Companies/Investments:	80,600	350,500	1,611,277	3,792,500	17,475,000	86,164,062	\$947,225	\$4,342,500	\$21,334,765
	Advisory Fees****	20,000	90,000	231,259	625,000	2,500,000	11,328,125	156,250	625,000	2,832,031
	Broken Deal Fees****	10,000	40,000	171,259	400,000	2,000,000	10,000,000	100,000	500,000	2,500,000
	Transaction & Deal Fees****	5,000	15,000	161,259	487,500	1,750,000	7,460,937	121,875	437,500	1,865,234
	Directors Fees****	600	2,500	37,500	30,000	875,000	6,875,000	6,600	192,500	1,512,500
	Monitoring Fees****	30,000	135,000	675,000	1,500,000	6,900,000	34,000,000	375,000	1,725,000	8,500,000
	Capital Markets Fees****	15,000	68,000	335,000	750,000	3,450,000	16,500,000	187,500	862,500	4,125,000
	Other Fees****.*	0	0	0	0	0	0	0	0	0
Total Reimbursements for Travel & Administrative Expenses****	5,000	15,000	62,200	200,000	600,000	248,800	8,000	19,500	88,500	
Total Received by the GP & Related Parties	\$491,500	\$2,273,000	\$13,039,956	\$24,276,975	\$124,047,900	\$761,740,863	\$955,225	\$4,362,000	\$21,423,265	

*Current offset percentages for the specific LP; As offset calculations may change over the life of the Fund, the current offset percentages may not be applicable for calculating the non-QTD offset balances

**Content in A.3 aims to provide users with additional context on the balances provided in other sections; Some of the balances in A.3 represent a sub-total for an amount provided in another section; Balances in this section should be entered as a positive amount, even though similar balances in other sections may typically be presented as a negative amount; To prevent double-counting, or other miscalculations, users should avoid netting balances in A.3 with amounts in other sections

***Balances in this section represent fees & reimbursements received by the GP/Manager/Related Parties with respect to the Fund's investments that are not allocable to the Total Fund (i.e. allocated to ownership interests of LP co-investors & other vehicles managed-by/affiliated-with the GP/Manager/Related Party); To avoid double-counting, LP # 5's Allocation of Total Fund should not reflect any pro-rata share of these positions; Balances in this section, plus the balances in the "Cumulative LPs' Allocation of Total Fund" section, should equal the total fees/reimbursements received by the GP/Manager/Related Parties With Respect to the Fund's Portfolio Companies/Invs.

****Allocation for individual LPs, the Total Fund and all remaining positions may need to be estimated on a pro-rata basis

*A description should be provided in the footnote section for any amount(s) listed in this row for the year-to-date period

Shaded/Italicized/Grouped Content Represents Level 2 Data

Footnotes for any YTD (Total Fund) expenses, fees & offsets (including any "other" balances)

Partnership Expenses – Other (\$10,500) = Insurance (\$8,000) + Partnership-Level Taxes (\$2,500)



Fund of Funds Template: Fees, Expenses & Incentive Allocation to Underlying Funds (values in "Parent" Fund Currency)

ILPA Reporting Template (v. 1.1) - This packet was last updated on Oct. 17, 2016

"Parent" Fund Name:	Best Practices Fund II, L.P.
"Parent" Fund Currency:	USD
"Parent" Fund Size:	\$2,503,750,000
LP #5 Commitment to "Parent" Fund:	\$50,000,000
Period Ending:	Dec. 31, 2015

Underlying "Child" Fund				Fees, Expenses & Incentive Allocation Paid by "Parent" Fund to "Child" Funds (Total Fund, Incl. GP Allocation - Reported in "Parent" Fund Currency)														
				Management Fees – Gross of Offsets, Waivers & Rebates			Management Fees – Net of Offsets, Waivers & Rebates			Partnership Expenses - Total			Incentive Allocation - Paid			Incentive Allocation - Periodic Change in Accrued		
Name	Commitment Amount	Vintage	Currency	QTD	YTD	Since Inception	QTD	YTD	Since Inception	QTD	YTD	Since Inception	QTD	YTD	Since Inception	QTD	YTD	Since Inception
1 ABC Venture Partners III, L.P.	\$100,000,000	2008	USD	\$4,993	\$19,970	\$239,641	\$4,743	\$18,972	\$227,659	\$2,496	\$9,985	\$119,820	\$25,000	\$100,000	\$120,000	\$1,672	\$6,690	\$80,280
2 XYZ Capital Partners II, L.P.	\$50,000,000	2012	USD	\$3,994	\$15,976	\$179,730	\$3,794	\$15,177	\$170,744	\$1,997	\$7,988	\$89,865	\$20,000	\$80,000	\$90,000	\$1,338	\$5,352	\$60,210
3 European Venture Partners IV, L.P.	\$109,065,000	2013	EUR	\$5,295	\$21,179	\$42,358	\$5,030	\$20,120	\$40,240	\$2,647	\$10,590	\$21,179	\$26,514	\$106,054	\$175,888	\$1,774	\$7,095	\$14,190

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Section	Field	Definition
A1. NAV Reconciliation	LP's Allocation of Total Fund	Balances that represent a single LP's interest in the Total Fund; Estimations are acceptable for any single LP amount that's denoted with a *****
	Total Fund (incl. GP Allocation)	Balances that represent the cumulative interest of a single fund, including all of its side/parallel vehicles (current and liquidated)
	GP's Allocation of Total Fund	Balances that represent the interest of the legal entity, including any Related Parties, that manages the fund
	Beginning NAV - Net of Incentive Allocation	The valuation of the Fund at the beginning of the period for a given investor, or group of investors; This balance is reflective of any incentive allocation that was attributable to the GP at the beginning of the period; Per Section VIII of the Template Guidelines, GPs may also report this value without first attributing incentive allocation (i.e., Gross of Incentive Allocation); See Section VIII of the Template Guidance for more details
	Non-Cash Contributions & Distributions	Includes any in-kind transactions (e.g., stock distributions) and/or "netted" transactions (i.e., call and distribution called on the same date that fully offset each other)
	Management Fee Rebate	Refund of any prior management fees to the Fund's investors
	Partnership Expenses – Accounting, Administration & IT	Expenses charged to the Fund for fund administration, including accounting, valuation services, filing fees and IT activities; Any YTD expenses attributed to internal staff, Related Parties and/or internal infrastructure must be footnoted in this document ; Excludes expenses for audit and tax preparation
	Partnership Expenses – Audit & Tax Preparatory	Expenses charged to the Fund for the audit of the Fund's financial records and for the preparation of any tax documents related to the Fund; Excludes any costs related to organizing the Fund, investment due diligence and fund administration expenses
	Partnership Expenses – Bank Fees	Expenses charged to the Fund for banking/finance services; Excludes fund administration expenses and interest; Includes fees related to credit facilities and other short-term financing at the fund level
	Partnership Expenses – Custody Fees	Expenses charged to the Fund for the registration of securities and other custody-related activities; Excludes fund administration expenses
	Partnership Expenses – Due Diligence	Expenses charged to the Fund to confirm all material assumptions in regards to potential investment opportunities; Includes all costs that can be clearly linked to the due diligence of specific investment opportunities including legal, travel and other costs; Includes both consummated and unconsummated deals; Exclude management fees and the costs of identifying and sourcing potential investment opportunities; Excludes fund administration expenses
	Partnership Expenses – Legal	Expenses charged to the Fund for legal services on behalf of the Fund; Includes legal analysis to interpret or amend the Fund's LPA; Excludes any legal costs associated with organizing/administering the fund or investment due diligence
	Partnership Expenses – Organization Costs	Expenses charged to the Fund for the establishment of the Fund, including any legal/audit costs; Excludes any fund administration expenses or Placement Fees
	Partnership Expenses – Other Travel & Entertainment	Expenses charged to the Fund related to travel & entertainment on behalf of the Fund; May include travel related to LPAC meetings or unreimbursed portfolio company meetings; Excludes travel costs associated with due diligence
	Partnership Expenses – Other	Expenses charged to the Fund, not described elsewhere; May include annual meeting expenses, insurance, partnership level taxes, and deal origination/monitoring expenses; May include fees paid to the Fund's directors and advisory committee members; Explanations for any YTD amounts included in this field must be footnoted in this document
	Total Offsets to Fees & Expenses (applied during period)	Total amount that recognized fund management fees/expenses were reduced by during the period, to the benefit of the Fund's investors, resulting from fees/expenses received by the GP/Manager/Related Party; Applied offset amount does not necessarily represent the total amount of recognized fees/expenses that were subject to offset during the period, as the applied amount typically cannot exceed the total recognized, gross fund management fees/expenses during the period
	Advisory Fee Offset	Offset (gross of any unapplied balance) for any fees/costs paid to the GP/Manager/Related Party relating to consultancy services provided to portfolio companies; Advisory fees are provided through project-based services with no ongoing monitoring style fees; Compensation is based on hourly or task-based fees; Excludes services related to Transaction & Deal Fees
	Broken Deal Fee Offset	Offset for any termination fees/costs received from counterparties of the Fund's unconsummated deals; Typically netted (subject to the Fund's LPA) against any unreimbursed termination fees/costs paid to counterparties; Amount is gross of any unapplied balances during the period
	Transaction & Deal Fee Offset	Offset (gross of any unapplied balance) for any fees/costs paid to the GP/Manager/Related Party regarding the purchase and sale of investments (excl. Broken Deal Fees); Include fees/exp. related to any bolt-on acquisitions for the portfolio company
	Directors Fee Offset	Offset (gross of any unapplied balance) for any fees paid to the GP/Manager/Related Party (including any fees paid directly to individuals) for their role on a portfolio company's board of directors; Includes any non-cash compensation (e.g., stock)
	Monitoring Fee Offset	Offset (gross of any unapplied balance) for any fees, including accelerated monitoring fees, paid to the GP/Manager/Related Party as part of an agreement between the portfolio company and the GP/Manager/Related Party over a finite or indefinite period; Monitoring fees are identified as ongoing management services provided to portfolio companies, based on annually established fees as opposed to hourly or task based fees
	Capital Markets Fee Offset	Offset (gross of any unapplied balance) for any fees/costs paid to the GP/Manager/Related Party for their role in securing financing for a company; Excludes any Transaction & Deal Fees
	Organization Cost Offset	Offset (gross of any unapplied balance) for any costs related to the establishment of the Fund; Typically, LP offsets are provided for amounts in excess of a predetermined value; Exclude any offsets for Placement Fees
	Placement Fee Offset	Offset (gross of any unapplied balance) for fees/costs paid to the GP/Manager/Related Parties, or paid to outside parties, for fundraising services
	Other Offsets	Offset (gross of any unapplied balance) for any remaining fees/costs paid to the GP/Manager/Related Party, subject to LP offset, not listed elsewhere; Explanations for any YTD amounts included in this field must be footnoted in this document
	Unapplied Offset Balance (Roll-forward) - Beginning Balance	Prior period, ending-balance for any fees/expenses, subject to offset against fund management fees/expenses, that have been recognized, but not yet credited to the benefit of the Fund's investors
	Total Offsets to Fees & Expenses (recognized during period)	Periodic fees/expenses, subject to offset against fund management fees/expenses, that were credited to the benefit of the Fund's investors; This amount may not necessarily equal the offset amount applied during the period, as the applied amount cannot typically exceed the total amount of total recognized, gross fund management fees/expenses during the period
	Unapplied Offset Balance (Roll-forward) - Ending Balance	Current period, ending-balance for any fees/expenses, subject to offset against fund management fees/expenses, that have been recognized, but not yet credited to the benefit of the Fund's investors
	Total Management Fees & Partnership Exp., Net of Offsets & Rebates, Gross of Fee Waiver	Periodic gross management fees and fund expenses, less any Fee Waiver and Total Offsets to Fees & Expenses (applied during the period)
	Fee Waiver	Any waiver of management fees in lieu of assuming the GP's commitment obligations to the Fund
	Placement Fees	Fees/costs paid to the GP/Manager/Related Party, or to outside parties, for fundraising services; These fees are sometimes not an income statement line-item in a fund's financial records, but rather a direct reduction to partners' capital; GP may relocate this row, depending on how it is treated on their income statement
	Realized Gain / (Loss)	Changes in the Fund's valuation, attributable to full or partial sales of investments; Please note that gain/loss in the Template is presented on a net-of-incentive-allocation-basis; Per Section VIII of the Template Guidelines, GPs could also report the gain/loss can on a gross-basis; See Section VIII of the Template Guidance for more details
Change in Unrealized Gain / (Loss)	Changes in the Fund's valuation, attributable to investments still held by the Fund; Please note that gain/loss in the Template is presented on a net-of-incentive-allocation-basis; Per Section VIII of the Template Guidelines, GPs could also report the gain/loss on a gross-basis; See Section VIII of the Template Guidance for more details	
Ending NAV - Net of Incentive Allocation	The valuation of the Fund at the end of the period for a given investor, or group of investors; This balance is reflective of any incentive allocation that was attributable to the GP at the end of the period; Per Section VIII of the Template Guidelines, GPs may also report this value without first attributing incentive allocation (i.e., Gross of Incentive Allocation); See Section VIII of the Template Guidance for more details	
Accrued Incentive Allocation - Starting Period Balance	Prior period, ending-balance for GP's/Managers'/Related Parties' expected share of any unrealized profits that would be paid upon realization of all remaining investments, based on current valuations (also known as Carried Interest or GP Profit Share), less any potential Clawback obligation; Balance also includes any uncollected profits from realized investments, if applicable	
Incentive Allocation - Paid During the Period	GP's/Managers'/Related Parties' share of any realized profits from an investment (also known as Carried Interest and GP Profit Share), less any returned Clawback; Balance only reflects Incentive Allocation collected by the GP/Related Parties, including amounts held in escrow	
Accrued Incentive Allocation - Periodic Change	Periodic change in GP's/Managers'/Related Parties' expected share of any unrealized profits that would be paid upon realization of all remaining investments, based on current valuations (also known as Carried Interest and GP Profit Share), less any potential Clawback obligation; Change also includes any uncollected profits from realized investments, if applicable	
Accrued Incentive Allocation - Ending Period Balance	Current period, ending-balance for GP's/Managers'/Related Parties' expected share of any unrealized profits that would be paid upon realization of all remaining investments, based on current valuations (also known as Carried Interest or GP Profit Share), less any potential Clawback obligation; Balance also includes any uncollected profits from realized investments, if applicable	
A3. Misc.	Incentive Allocation - Earned (period-end balance)	Estimated period-end balance for GP's/Managers'/Related Parties' share of any realized profits from investments (aka Carried Interest and GP Profit Share), less any Returned Clawback; Balance reflects all incentive allocation entitled to the GP/Related Parties (attributable to realizations), including amounts held in escrow and/or not yet collected by the GP
	Incentive Allocation - Amount Held in Escrow (period-end balance)	Period-End balance for the portion of the GP's/Managers'/Related Parties' share of any realized profits from investments (aka Carried Interest and GP Profit Share) that has been collected, but is currently held in a third party account until certain milestones are met (per the Fund's LPA)
	Returned Clawback	Excess Incentive Allocation paid to the GP/Manager/Related Parties, including amounts held in escrow, which has been returned to the Fund
	Capitalized Transaction Fees & Exp. - Paid to Non-Related Parties	Any fees & expenses rolled into the cost-basis of the Fund's investments that are paid by the Fund's investors to non-Related Parties
	Distributions Relating to Fees & Expenses	Estimated portion of distributions that are attributed to the return of any fees/expenses paid; Typically returned by the GP before any Incentive Allocation is captured as part of the waterfall calculation
B1. Source Allocation	Fund of Funds: Gross Fees, Exp. & Incentive Allocation paid to the Underlying Funds	Additional layer of fees/expenses/Incentive Allocation (incl. accruals) charged by the underlying funds held by the Fund-of-Funds; Excludes any fees/expenses/Incentive Allocation charged by the Fund-of-Fund (the 'parent' fund) that manages the underlying funds ('child' funds); Fields are linked to a supplemental template (Fund of Funds-Underlying); LP balances are estimates
	Related Party	See "Related Party Definition" tab
	With Respect to the Fund's LPs	Fees, expenses and incentive allocation paid/accrued by the Fund's LPs to the GP/Management/Related Parties; Excludes any expenses that are paid to non-Related Parties
	With Respect to the Fund's Portfolio Companies/Invs.	Fees, expenses and reimbursements paid/accrued by (or in regards to) the Fund's portfolio holdings (incl. fees not subject to offsets) to the GP/Manager/Related Parties; Include any fees received from 3rd parties regarding arrangements for the investment (e.g., purchasing discount fees), and any fees received after the liquidation of the Fund or any sleeve/AIV of the Fund
	Cumulative LPs' Allocation of Total Fund	Balances that represent the cumulative interest of a single fund, including all of its side/parallel vehicles (current and liquidated), less the GP's Allocation of Total Fund
	Partnership Expenses - Paid to GP & Related Parties - Net of Offsets	Share of total partnership expenses (including any placement fees or other charges that are treated as direct reduction to partners capital) paid to the GP/Manager/Related Parties for services provided to the Fund; Excludes expenses paid to non-Related Parties that are advanced out of the management company's reserves until the expense can be called from the Fund's LPs (aka "pass-through" transactions)
	Capitalized Transaction Fees & Exp. - Paid to GP & Related Parties	Any fees & expenses rolled into the cost-basis of the Fund's investments that are paid by the Fund to the GP/Manager/Related Parties; Excludes expenses paid to non-Related Parties that are advanced out of the management company's reserves until the expense can be called from the Fund's LPs (aka "pass-through" transactions)
	Advisory Fees	Fees/costs that are paid/accrued to the GP/Manager/Related Parties (incl. any fees not subject to offset) relating to consultancy services provided to portfolio companies; Advisory fees are provided through project-based services with no ongoing monitoring style fees; Compensation is based on hourly or task-based fees; Excludes services related to Transaction & Deal Fees
	Broken Deal Fees	Termination fees/costs received from counterparties of the Fund's unconsummated deals, netted against any termination fees/costs paid to counterparties that weren't reimbursed by the Fund; Include any fees not subject to offset
	Transaction & Deal Fees	Fees/costs that are paid/accrued to the GP/Manager/Related Party (incl. any fees not subject to offset) regarding the purchase and sale of investments; Excludes broken deal fees; Include fees/exp. related to bolt-on acquisitions for the portfolio company
	Directors Fees	Fees/costs that are paid/accrued (gross of any unapplied offset balance) to the GP/Manager/Related Party (incl. any fees paid directly to individuals and/or any fees not subject to offset) for their role on the portfolio company's board of directors; Includes any non-cash compensation (e.g., stock)
	Monitoring Fees	Fees/costs, including accelerated monitoring fees, that are paid/accrued to the GP/Manager/Related Party (incl. any fees not subject to offset) as part of an agreement between the portfolio company and the GP/Manager/Related Party over a finite or indefinite period; Monitoring fees are identified as ongoing management services provided to portfolio companies, based on annually established fees as opposed to hourly or task based fees.
	Capital Markets Fees	Fees/costs that are paid/accrued to the GP/Manager/Related Party (incl. any fees not subject to offset) for their role in securing financing for a portfolio company
	Other Fees	Any remaining fees/costs that are paid/accrued to the GP/Manager/Related Party (incl. any fees not subject to offset) not listed elsewhere; Explanations for any YTD amounts included in this field must be footnoted in this document
	Total Reimbursements for Travel & Administrative Expenses	Repayment of any travel or other administrative expenses from the Fund's portfolio investment to the GP/Manager/Related Party



The ILPA acknowledges that the definition of 'Related Parties' can vary from manager to manager, and is typically linked to specific language in a fund's LPA. The ILPA also acknowledges that it's unlikely a manager would track and report Related Party activities that did not fall within the scope of any previously agreed upon definition. However, to ensure that a consistent standard is applied to any future funds, the ILPA strongly recommends the use of the following Related Party definition in any disclosures for funds with an inception date after March 1, 2016:

Operational Person(s) means any operational partner, senior advisor or other consultant or employee whose primary activity for a Relevant Entity is to provide operational or back office support to any portfolio company of any investment vehicle, account or fund managed by a Related Person.

Related Person(s) means any current or former employee, manager or partner of any Relevant Entity which employee, manager or partner is involved in the investment activities or accounting and valuation functions of such Relevant Entity or any of their respective family members.

Related Party(ies) means (i) any Related Person, (ii) any Operational Person, (iii) any entity more than [10]% of the ownership of which is held directly or indirectly (whether through other entities or trusts) by any Related Person or Operational Person and whether or not such Related Person or Operational Person participates in the carried interest received by the General Partner or the Special Limited Partner, and (iv) any consulting, legal or other service provider regularly engaged by portfolio companies of any investment vehicle, account or fund managed by a Related Person and which also provides advice or services to any Related Person or Relevant Entity.

Relevant Entity(ies) means the General Partner, any separate carry vehicle, the Investor Advisor or any of their parent or subsidiary entities or any similar entity related to any other investment vehicle, account or fund advised or managed by any current or former Related Person.

ILPA Reporting Template (v. 1.1) - This packet was last updated on Oct. 17, 2016



Below is a summary of all changes to the Template since its original release in January 2016:

Fee Template

1. Repaired formula error in cells H38:M38 (Oct. 2016)
2. Repaired formula error in cell J77 (Oct. 2016)

Definitions

1. Added definitions for the following (existing) Template fields (Oct. 2016):
 - Non-Cash Contributions & Distributions
 - Realized Gain / (Loss)
 - Change in Unrealized Gain / (Loss)
 - Beginning NAV - Net of Incentive Allocation
 - Ending NAV - Net of Incentive Allocation
2. Added "Annual Meeting Expense" to the list example examples that fall under "Partnership Expense - Other" (Oct. 2016)
3. Clarified definition for "Partnership Expenses – Bank Fees" (Oct. 2016)

Guidance

1. Added further clarity on: (Oct. 2016)
 - Acceptable modifications to the Template (Sections VIII & IX)
 - The differences between the Level 1 and Level 2 content tiers (Section II)
 - What a Template endorsement means (Section VII)
 - How to apply the Template for older and smaller funds (Sections III & IV)



Memorandum

DATE: June 2, 2017
TO: Members of the Board of Retirement
FROM: Steve Delaney, Chief Executive Officer
SUBJECT: **SIDE LETTER LANGUAGE PERTAINING TO AB 2833**

Background/Discussion

Tom Hickey, OCERS' Investment Counsel, working with five or six California public plans including SCERS and CalSTRS has begun using the following side letter agreement language. While not definitive in what must be reported as of yet, it lays the foundation for future development of reporting requirements.

2. Permitted Disclosure. (a) The General Partner acknowledges that you are a public agency subject to state laws, including, without limitation, the California Public Records Act (Cal. Govt. Code § 6250, et seq.) (the "Public Records Act"), which provides generally that all records relating to a public agency's business are open to public inspection and copying unless exempted under the Public Records Act, and the Ralph M. Brown Act (Cal. Govt. Code § 54950, et seq.) (the "Brown Act"), which provides generally for open meetings for local public bodies. In addition, you represent to the General Partner that you are a "public investment fund" subject to the provisions of Section 7514.7 of the California Government Code (the "Fee Disclosure Law"), which addresses certain disclosures related to fees and expenses of "alternative investment vehicles" on at least an annual basis.

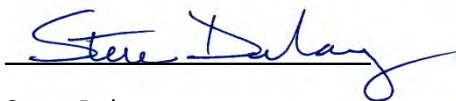
(b) The General Partner hereby consents, without prior notice to the General Partner being required, to your regular and ongoing disclosure on your website and/or pursuant to a valid request for disclosure under the Public Records Act, the Brown Act or the Fee Disclosure Law of Fund Level Information (as hereinafter defined), and agrees that such disclosure shall neither constitute a breach of Paragraph 18(g) of the Partnership Agreement nor be construed as to permit the General Partner to be authorized to withhold from you any Partnership Information pursuant to Paragraph 18(g)(v)-(vi) of the Partnership Agreement; provided that such disclosure is made only in connection with similar disclosure of information with respect to the other venture capital funds and the private equity funds in which you have invested. "Fund Level Information" shall mean: (i) the name of the Partnership, its address, the fact that you are a Limited Partner of the Partnership and the date you were admitted to the Partnership, (ii) the amount of your Subscription, (iii) the total amount of your Subscription drawn down pursuant to capital calls, (iv) the total amount of distributions received by you from the Partnership, (v) your net internal rate of return with respect to the Partnership's performance as prepared by you, (vi) the total amount of distributions received by you from the Partnership and the ratio of the sum of (A) the amount of such distributions received by you from the Partnership and (B) the remaining value of your interest in the Partnership (which you agree shall mean your capital account balance for financial statement purposes as most recently reported to you by the Partnership) to the amount of your contributions in the Partnership (i.e., the "multiple"), (vii) the total amount of management fees paid by the Partnership that were allocated to you by year, (viii) the realized gains (or losses) of the Partnership that were allocated to you by year, (ix) any information described in §6254.26(b) of the Public Records Act as in effect on date of this letter agreement and (x) 7514.7 Information (as defined below).With respect to any disclosure

Memorandum

referred to in this Paragraph 4(b), you shall clearly indicate that such disclosures were not prepared, reviewed or approved by the General Partner or the Partnership, to the extent applicable.

(c) The General Partner agrees to provide to you, in a reasonable format, at least annually, each item of 7514.7 Information (which may include providing such information in one or more reports provided to you pursuant to the Partnership Agreement or this letter agreement or otherwise), and any such other information requested by you that is necessary to enable you to comply with the Fee Disclosure Law as in effect on the date of this letter agreement. Notwithstanding anything in this Paragraph 4 to the contrary, however, to the extent that the Fee Disclosure Law is amended (or the requirements of the Fee Disclosure Law are otherwise changed or superseded) after the date hereof in a manner that limits or otherwise restricts the scope or types of information that you are required to obtain from the General Partner in order to comply with the Fee Disclosure Law, you agree that the General Partner shall no longer be required to provide any such information that you are no longer required to obtain in order to comply with the Fee Disclosure Law (as amended, changed or superseded). For purposes of this Paragraph 4, "7514.7 Information" shall mean: (i) the aggregate amount of fees and expenses paid by you directly to the Partnership, the "Fund Manager" or "Related Parties" by year, in each case, with respect to your investment in the Partnership, (ii) your pro rata share of fees and expenses not included in clause (i) that are paid by the Partnership to the "Fund Manager" or "Related Parties" by year, (iii) your pro rata share of "Carried Interest" distributed to the "Fund Manager" or "Related Parties" by year, (iv) your share of aggregate fees and expenses paid by all of the portfolio companies of the Partnership to the "Fund Manager" or "Related Parties" by year and (v) the gross and net internal rate of return of the Partnership, since inception. Terms used in quotations in clauses (i)-(iv) have the meanings ascribed to such terms in the Fee Disclosure Law (as in effect on the date of this letter agreement). For purposes of this Paragraph 4(c), the "Partnership" shall include any AIVs, if applicable.

Submitted by:



Steve Delaney
Chief Executive Officer

D



Memorandum

DATE: May 23, 2017
TO: Members of the Audit Committee
FROM: David James, CPA, Director of Internal Audit
SUBJECT: REVIEW OF OCERS' INVESTMENT WIRE TRANSFER PROCESS

Recommendation

Receive and file.

Background/Discussion

At the direction of the Audit Committee, Internal Audit has completed a review of OCERS' investment wire transfer process. Based on our review, we conclude that OCERS' current processes for approving investment wire transfers, for performing due diligence prior to an investment and ongoing due diligence after an investment, provide adequate internal controls to prevent fraud and monitor investments. We do not recommend additional changes to these processes or staffing for these processes at this time. Further details are in the attached report.

Submitted by:

The OCERS logo is repeated here, with the text "D.J. - Approved" to its right.

OCERS D.J. - Approved

David James, CPA
Director of Internal Audit



**Review of OCERS'
Investment Wire Transfer Process**

Report Date: May 31, 2017

**Internal Audit Department
Director of Internal Audit: David James, CPA, MBA
Internal Auditor: Mark Adviento, CPA**

Executive Summary

At the direction of the Audit Committee, Internal Audit has completed a review of OCERS' investment wire transfer process. Based on our review, we made three main conclusions:

1. **OCERS' current processes and internal controls for approving investment wire transfers are adequate.** Among the key internal controls that help address wire fraud risk are:
 - a. OCERS' Investments staff download capital call notices from the investment managers' secured web portals.
 - b. At least four Investments staff and Finance staff are involved in properly segregated duties for each wire transfer, reducing the risk of collusion.
 - c. OCERS' custodian bank contacts multiple authorized initiators and authorized approvers to confirm all wire transfers' instructions.
 - d. Any changes in wire instructions are verified with the investment manager directly by OCERS' Finance staff.
 - e. Finance staff reviews wire transfer request letters for all new manager funding and all portfolio rebalancing transactions before the wire transfer request letter is signed by an authorized initiator and sent to the custodian bank.
 - f. There are various daily and quarterly reconciliations performed by staff between the custodian bank account, OCERS' general ledger, and the investment manager.
2. **OCERS' processes and internal controls for initial due diligence of investments and ongoing due diligence of investments are adequate.** OCERS follows industry best practices for public pension funds of its size regarding investments due diligence. OCERS' reviews each of its investment managers at a minimum of every three years, and OCERS Manager Monitoring Subcommittee reviews investment managers' performance. In addition, OCERS' investment consultant performs a quarterly portfolio review of direct investments. OCERS' uses operational due diligence consultants for investment managers as needed, and OCERS' Investments Division conducts its own due diligence.
3. **Internal Audit does not recommend that OCERS add another position within the Finance Division whose primary purpose is to perform investment analysis as a requirement before each investment-related wire transfer.** The hiring of additional Finance staff that would perform accounting functions and in-depth analysis of the viability of specific investment decisions by investment managers would not achieve the objective of performing adequate analysis of new investments. The compressed time period of five to ten days for capital calls is not sufficient for OCERS' staff to perform analysis of new investments, considering the anticipated volume of 800 capital calls expected in

the next few years. However, OCERS and its investment consultants have performed adequate review and analysis of investment funds prior to recommending them to the Investment Committee for approval and for performing ongoing due diligence on current investment managers through the Manager Monitoring Subcommittee of the Board and through quarterly reporting to the Investment Committee. Further details of these processes and our assessment are contained in the following report.

Background

Upon the departure of OCERS' Chief Investment Officer in January 2017, Investment Committee members expressed concern over the controls in place to prevent investment wire transfer fraud. Committee members also inquired about whether Finance Division staff is processing wire transfers without sufficient, specific knowledge of investments being financed, whether by capital call, rebalancing, or the funding of a new manager or investment mandate. Committee members expressed interest in adding a new position within the Finance Division whose primary purpose was to perform investment analysis as a requirement before each investment-related wire transfer.

Internal Audit's November 30, 2016 audit report, *Audit of OCERS' Bank Wire and ACH Transfer Process*, concluded that OCERS has adequate controls over procedures used for sending wire transfers, to ensure that OCERS' investment funds are correctly wired to an investment manager's bank account.

Approximately 90% of OCERS' wire transactions, or nearly 300 per year, are capital call notices. By contractual agreement with private investment managers, OCERS as a limited partner is obligated to pay by the capital call notice's due date, typically within five to ten business days. If investment analysis is done for each capital call, it would need to be prepared by staff and reviewed by management within this relatively brief time span. We estimate that nearly 800 capital call notices will be received by OCERS over the next several years, based on open commitments as of year-end 2016.

Capital call notices typically provide limited description of the investment to be funded. This further limits the ability of OCERS' staff to perform meaningful investment analysis prior to the payment of each capital call. According to contracts, private investment general partners are not obligated to share detailed investment analysis with the limited partners on specific investments in each capital call notice. Our interviews with investment staff and auditors at other pension systems confirmed this limitation on performing in-depth investment analysis prior to paying a capital call notice.

Given the mandates of OCERS' investments, OCERS would need to hire a staff member(s) that has the investment accounting background, due diligence experience,

and the ability to perform in-depth analysis of specific investments in various investment sectors. Given the relatively brief time of five to ten days for a capital call to perform in-depth analysis of specific investments, the objective of due diligence and analysis of specific investments is better covered as OCERS does currently through its Investments staff and its consultants, as is typically done by public pension funds of OCERS' size and staffing level.

Internal Controls for Wire Instructions

Wire transfer purposes include paying investment manager capital calls notices, funding new investment managers, and rebalancing the investment portfolio, as summarized below.

Investment Wire Transfers (2014-2016)

Purpose of Transfer	Average Yearly Number of Wires	Average Dollar Amount per Wire
New manager funding Portfolio rebalancing	30	\$36.2 million
Capital Calls	276	\$2.4 million

Wire Instructions for Capital Calls

In most cases, OCERS' Investment Officers download capital call notices from the investment managers' secured web portals. After the Investment Officer reviews the capital call notice, it is emailed to the Finance Division for processing and copied to State Street, OCERS' custodian bank. An OCERS' Finance Division Senior Accountant/Auditor prepares a wire transfer request letter containing the wire instructions as stated on the manager's capital call notice. A Finance Division manager who is an "Authorized Initiator" reviews the wire transfer request letter against the capital call notice for accuracy before signing and faxing the wire request letter to State Street. Upon receiving the fax, State Street confirms the wire instructions on the wire transfer request letter with a telephone call to the next available OCERS' Finance Division staff person who did not sign the original transfer request letter but who is also an "Authorized Verifier." There are multiple "Authorized Verifiers" and State Street will call each "Authorized Verifier" on the list until they can reach a live person. Ultimately, between the Investments Division and the Finance Division, there are four separate individuals involved in a wire transfer request.

The “*Fund Transfer Security Procedures*” agreement between OCERS and State Street formally establishes who at OCERS can act as “Authorized Initiators” and “Authorized Verifiers.” These controls help ensure that the wire instructions (ABA routing number, account number, and payee name) on the manager’s capital call notice match with the wire instructions on the wire transfer request letter faxed to State Street.

Investment managers typically place the same wire instructions on the capital call notice. However, if a capital call notice from a manager contains different wire instructions (for example when a manager changes banks), then both the Finance Division and Investments Division verify these changes directly with the manager via an email to the manager. Such changes have occurred only twice in the past five years, and Finance was copied on the manager’s response email confirming the changes to wire instructions. Going forward, the Finance division will also telephone the manager using current phone contact information to independently verify the wire instruction changes with the manager.

Wire Instructions for a New Manager or Portfolio Rebalancing

Our *Audit of OCERS’ Bank Wire and ACH Transfer Process* noted a control deficiency with the preparation of wire request letters related to the funding of new managers and for portfolio rebalancing. For the funding of new managers or for portfolio rebalancing, the practice at OCERS was for the Investments Division to prepare, sign by the CIO or CEO, and fax the wire transfer request letter to State Street without Finance Division’s review prior to being faxed. As stated in the audit report, Internal Audit recommended, and management agreed, that the Finance Division will review wire transfer request letters for all new manager funding and all portfolio rebalancing transactions before the wire request transfer request letter is signed by an “Authorized Initiator” and faxed to State Street. This should help ensure that the wire instructions from the new manager’s documentation match with the wire instructions on the wire transfer request letter ultimately faxed to State Street.

State Street Bank Account Reconciliations

Post wire transactions controls include various daily and quarterly reconciliations between the State Street bank account, OCERS’ general ledger, and investment manager quarterly and annual statements to ensure that funds wired from OCERS’ bank account with State Street were made correctly and accurately to the managers. These controls are performed and properly segregated between OCERS’ Finance Division staff and State Street’s staff, as noted in our *Audit of OCERS’ Bank Wire and ACH Transfer Process*.

State Street's Cash Flow Module

This year OCERS is expected to begin using State Street's *Cash Flow Module* (eCFM) which is an automated platform for the approval, transmission, and processing of all cash related transactions. This will eliminate the current requirement for manually signed wire request letters from OCERS and telephone callback verifications from State Street. Instead, authorized OCERS' personnel will login to State Street's secured website to initiate and verify wire transfers electronically.

Within eCFM, the segregation of duties between the Investments Division and the Finance Division and the concept of authorized wire transfer initiators and wire transfer verifiers should still be incorporated. Access to State Street's online system will also require the use of User IDs and passwords, in addition to randomly generated passwords via an electronic token assigned to each user. According to management, dual electronic approvals within eCFM will be required from both the Investments Division and the Finance Division to initiate wire transfers from eCFM.

Risk of Wire Fraud via Email

The controls described above help prevent and detect possible attempts of employee fraud. However, OCERS is a target for external fraud attempts. As stated on the FBI's website, *"Business Email Compromise (BEC) is defined as a sophisticated scam targeting businesses that regularly perform wire transfer payments. The scam is carried out by compromising legitimate business email accounts through social engineering or computer intrusion techniques to conduct unauthorized transfers of funds. There has been a 270 percent increase in identified victims and exposed loss since January 2015. The scam has been reported in all 50 states."*

OCERS' employees regularly receive emailed attempts at BEC that slip through spam filtering software protection. In part to address this risk, OCERS' IT Division instituted web-based video training to further educate employees about the various techniques that fraudsters use to compromise legitimate business email accounts through social engineering or computer intrusion techniques in order to prevent fraud. For example, fraudulent wire requests disguised as emails from legitimate vendors or disguised as emails from an organization's own executives often stress the need for secrecy or urgency to wire funds. Furthermore, during quarterly all-staff meetings, OCERS' IT Division discusses examples of BEC and social engineering attempts. This topic is a recurring agenda item for quarterly staff meetings. Finally, OCERS' IT Division has also begun the practice of emailing OCERS' staff with its own version of BEC emails to test staff's retention of the training and for remediation.

Investment Due Diligence

Open Capital Call Commitments as of December 2016

Strategy	# of Managers	Remaining Commitment
Private Equity	4	\$600 million
Diversified Credit	13	\$595 million
Non-Core Real Estate	6	\$345 million
Real Return	9	\$327 million
Total	32	\$1.9 billion

OCERS' Investment Committee has approved \$4.1 billion in commitments to the above managers; \$2.2 billion has already been wired to the managers via capital calls.

The wire transfer controls described above help ensure that investment wire transfers are sent to the investment manager's bank account in accordance with the instructions on the capital call notice and that the capital call notice is directly obtained from an OCERS' investment manager. However, these controls are not investment due diligence for each capital call notice received from a manager.

OCERS' Investments Division and Finance Division staff are investment generalists and do not have specialized knowledge or experience to perform in-depth analysis of energy sector portfolio companies, public/private debt structuring or credit markets, nor of real estate properties that the above managers typically purchase with called funds within the time span of when a capital call payment is due. We confirmed with other pension funds that their due diligence is mostly performed prior to committing to an investment manager and ongoing with staff and the consultant's quarterly and annual review of a pension fund's portfolio.

Since OCERS' is invested within a private equity fund-of-funds program, OCERS' staff and OCERS' consultants do not have the visibility, nor the contractual right, to examine the portfolio companies purchased by the underlying equity funds that OCERS' private equity managers invests called funds with. OCERS' private equity managers do perform due diligence on underlying funds and do have visibility of the underlying portfolio companies, as detailed in our report, *Audit of OCERS' Private Equity Managers Abbott Capital and Pantheon*, dated March 21, 2016.

Meketa's Quarterly Portfolio Review

Since the diversified credit managers, non-core real estate managers, and real return managers noted above are direct investments (not fund-of-funds), the investments are subject to review by OCERS' investment consultant, Meketa. Meketa's quarterly

portfolio review assesses OCERS' portfolio for compliance with OCERS' investment allocation, the individual investment managers' mandates, investment return performance, risk analysis, and general market conditions. This analysis is performed by Meketa, and a quarterly portfolio analysis report is presented to the Investment Committee.

Although OCERS' private equity program is entirely fund-of-funds, Meketa provides a quarterly analysis of the private equity program to determine how much OCERS should commit in future years to private equity managers in accordance with the target allocation to private equity, to provide a breakdown of private equity investment returns by strategy/region/vintage years, and to describe at a high level the underlying funds used by the private equity managers.

Internal Investments Due Diligence

OCERS' Manager Monitoring Subcommittee provides a portfolio review of all OCERS' investment managers at a minimum of every three years. The subcommittee receives a manager's organizational update, including assets under management, team structure, and any significant changes to the organization. The investment manager provides a review of investment strategy, an update on OCERS' investments, including performance attribution, outlook for investment returns, and the market outlook on the specific asset class. The investment manager reviews the target return expectations and whether the returns are achievable in light of current market conditions. Additionally, each manager's fee structure is reviewed.

OCERS also contracts with operational due diligence consultants to conduct independent evaluations of selected OCERS' alternative investment managers. The due diligence consultant works closely with OCERS' staff and investment consultants to conduct a detailed review of the internal controls, investment operations, trading processes and controls, third-party service providers, personnel background checks, role of fund directors and regulatory reviews of selected investment managers.

Finally, OCERS' Investments Division conducts its own due diligence process. They send due diligence questionnaires to potential new managers. Questionnaires vary by investment category and are built to gain an understanding of the manager's organization; key leaders; investment research process; past and potential investment performance; risk management process; and fee structure. Second, Investments' staff reviews the investment manager's responses and various documents and exhibits from the manager. Third, Investments' staff conducts on-site visits with potential managers.

E

Memorandum

DATE: June 9, 2017
TO: Members of the Audit Committee
FROM: David James, Director of Internal Audit
SUBJECT: **NEW YORK STATE COMMON RETIREMENT FUND'S SCANDAL AND OCERS' POLICIES**

Recommendation

Receive and file.

Background/Discussion

Recent press accounts and a Securities and Exchange Commission Complaint have described how a former Director of Fixed Income at New York State Common Retirement Fund (NYSCRF) allegedly steered approximately \$3.38 billion in fixed income trades to two broker-dealers in exchange for various gifts he solicited that were equivalent to about \$180,000. Several internal control failures occurred that may have prevented this fraud.

We review the details of the fraud that occurred at NYSCRF, recommendations to the Fund by a consultant in their 2013 and 2016 Fiduciary and Conflict of Interest Reviews, implementation of recommendations and improved internal controls by the Fund, and OCERS' policies to address the risks of this type of fraud.

Fraud at New York State Common Retirement Fund

In early 2014, NYSCRF hired Navnoor Kang as Director of Fixed Income. In the hiring process, NYSCRF allegedly did not call Kang's former employer, Guggenheim Partners, to ask about his job performance. Kang had been terminated from his former employer for soliciting and receiving gifts from representatives of broker-dealers in exchange for directing trades to those broker-dealers. In his job interview with NYSCRF, Kang did not give the true reason he left Guggenheim. The investigation at Guggenheim determined that Kang failed to report at least 55 instances where he received benefits and gifts. Kang was terminated from Guggenheim in January 2013 for violation of Guggenheim's compliance and ethics policies.

One of the references Kang used was a representative of a broker-dealer who had given him gifts. NYSCRF hired Korn Ferry International for the search process. Korn Ferry's vetting failed to give NYSCRF the reason for Kang's leaving Guggenheim or reason for concern.

Kang received training on NYSCRF's policies and codes, and certified his understanding to prohibitions regarding receipts of gifts, meals, travel, and entertainment. However, as soon as Kang arrived at NYSCRF, he solicited and received items of value from two different representatives of broker-dealers. He received the equivalent of \$160,000 from one and \$20,000 from the other.

When Kang arrived at NYSCRF, a small number of brokers were approved to execute fixed income trades directly for the Fund. In June 2014, at Kang's direction, NYSCRF initiated a fixed income broker search. Interested

entities were required to submit applications which were reviewed internally by a group led by Kang. In November 2014, Kang sent a memo to the NYSCRF's CIO recommending eight brokers, including the two brokers he used at Guggenheim. The memo said the eight brokers would submit to a full due diligence process, but this never occurred. So the eight brokers were approved solely on the recommendation of Kang's memo. While soliciting and receiving benefits and gifts from these two broker's representatives, Kang steered about \$2.38 billion in fixed income securities trades to one first broker and nearly \$1 billion to the other.

Several internal control failures appear to have occurred. A move from paper tickets to electronic trade confirmations allowed Kang to avoid listing the broker who executed the trades. Under Kang's watch, the pension fund stopped producing weekly trade reports that identified the brokers involved. Unlike his predecessor or his counterpart who managed the Fund's stock investments, Kang himself traded rather than direct his staff to trade. This meant that no one approved his transactions. Kang instructed his brokers to send the electronic confirmations to his subordinates, creating the false impression that most of these transactions were conducted by the investment staff and then approved by him. Kang sidestepped rules requiring a minimum number of broker bids on each trade. Kang was slow to adopt new guidelines as the fund became a more active bond trader. NYSCRF apparently did not do analysis of trades for unusual activity like trades shifting to a broker-dealer or potential unnecessary trades. NYSCRF did not discover the fraud internally, but were notified by the SEC. In February 2016, NYSCRF terminated Kang.

In 2006 former Comptroller Alan Hevesi pleaded guilty to a felony involving misuse of State resources and resigned. Subsequent investigations revealed improper payments to politically connected intermediaries in exchange for investments in the Fund. The former Comptroller pleaded guilty to accepting nearly \$1 million in travel and benefits from a money manager who won \$250 million in investments from NYSCRF. Eight individuals, including the CIO, pleaded guilty to crimes related to pay to play. As part of the outcome of this scandal, NYSCRF implemented mandatory ethics training for all staff, including special training for investment staff. NYSCRF also required monthly public disclosure of investment transactions. A compliance officer was appointed to better monitor potential conflicts and ethical behavior. Also a Director of Risk and Reporting was added. The Comptroller introduced "initiatives to restore integrity," such as banning placement agent fees, issuing an Executive Order that barred staff from accepting any gifts, created new positions of Inspector General and Special Council for Ethics, expanded internal and external vetting, and review and approval for all investment decisions.

Fiduciary and Conflict of Interest Reviews

In 2013, consultant Funston Advisory Services issued a *Fiduciary and Conflict of Interest Review* of NYSCRF. The review covered the investment-related operations of the Fund. The 2013 report did not find issues with investment transactions, transaction approval, and due diligence procedures. The report concluded that investment-related contracts were signed and transactions were closed in substantial compliance with applicable Fund policies and procedures. The report found that NYSCRF's investment-related operational expenses were recorded in a detailed, clear, and logical structure to allow analysis and comparison. The report concluded that the NYSCRF led their benchmark group in the detail of operational expense disclosed.

Funston's 2013 report offered recommendations on internal controls related to risks of kickbacks:

- Employees training of policies and law, fiduciary duty, insider trading, ethics, enhanced training for investment staff.
- Review policies to provide greater consistency for internal transaction approval report forms.
- RFP for brokers seeking trading business.
- Bring in an outside advisor to help vet and select brokers.

The 2013 report said, “For its internally managed portfolios, the Fund currently uses 35 brokers selected through an RFP process in 2008. Staff recognizes that because of the pace at which markets and brokerage firms’ change, the selection process should be done more frequently. For example, CalPERS uses a continuous online application process managed by an expert consultant, and the Fund reevaluates its broker-dealer list semi-annually.”

In March 2016, NYSCRF signed a contract with Mosaic Global Partners Inc., a broker-vetting consultant, complying with the 2013 review’s recommendation.

Funston’s June 2016 Fiduciary and Conflict of Interest Review said 40 of the 47 recommendations from their 2013 report had been fully implemented or had seen substantial implementation progress. However, most of the recommendations did not address risks regarding illegal gifts to staff. Like the 2013 report, there was an emphasis on growing staff size and compensation levels. The report was intended to provide reasonable but not absolute assurance.

The 2016 review found that there were 96 investment transactions that were approved in accordance with Fund policies and legal requirements. Documentation on 96 transactions was reviewed for compliance with investment policies, procedures and requirements. The Comptroller approved all transactions. Descriptions of all transactions which closed are available on the website. The descriptions include the rationale for the changes and other pertinent information. The report said, “We did not identify any instances of inappropriate or unethical behavior. None of the external managers or service providers we spoke to identified any inappropriate requests or behavior by any... staff. We found the policies and procedures established by the Inspector General and Special Counsel for Ethics to be effective and a further control and check and balance.”

The 2016 review did not identify any areas for material improvements to policy or process. The report found the governance of the Fund to be sound, but with opportunities for improvement. The report did not identify any instances of inappropriate conduct. “None of the external managers or service providers we spoke to identified any inappropriate requests or behavior by any... staff.” The report found the Fund’s policies and procedures to be effective.

OCERS’ Policies Addressing Risk of Investment Fraud and Inappropriate Gifts

OCERS does not have the same exposure to the type of fraud in the NYSCRF case since no OCERS’ employee directs trading of any type of investment which would require interaction with a broker-dealer. The same risk for bribery or inappropriate gifts could exist with an OCERS’ external fixed income or equity money manager, but OCERS has no direct control over this risk.

OCERS has policies to help prevent the broader risk of bribery and inappropriate gifts to staff:

OCERS' Staff Code of Ethics & Standards of Professional Conduct Policy places the integrity of the investment profession and the interests of plan participants and beneficiaries above staff's personal interests. Staff must not engage in any professional conduct involving dishonesty, fraud, or deceit or commit any act that reflects adversely on their professional reputation, integrity, or competence. Staff may not accept or receive any compensation, consideration, or benefit from or paid to others for the recommendation of an investment manager, products or services. Staff must not accept gifts, benefits, compensation, or consideration that competes with or might reasonably be expected to create a conflict of interest with their employer's interest unless they obtain written consent from all parties involved. Staff must make reasonable efforts to detect and prevent violations of applicable laws, rules, regulations, and the OCERS' Code and Standards by anyone subject to their supervision or authority.

In addition to those disclosures required under the California Fair Political Practices Commission regulations relating to economic interests, staff must make full and fair disclosure of all matters that could reasonably be expected to impair their independence and objectivity or interfere with their duties to the plan, the Board, participants, beneficiaries and employers. Staff must ensure that such disclosures are prominent, timely, are delivered in plain language, and communicate the relevant information effectively.

OCERS' Procurement and Contracting Policy requires the use of an RFP process to select Named Service Providers such as investment consultants, auditors, and actuaries. Named Service Provider contracts require Board approval prior to execution. Contracts valued at less than \$100,000 can be executed by the executive responsible for the budget in from which the contract is paid. Contracts with greater amounts are executed by the CEO. According to the policy, OCERS' staff and members of the Board shall not be directly involved in a decision if it will have a material effect on their economic interest. The Board, or a Committee of the Board, will interview candidates recommended for appointment as Named Service Providers.

Procurements can also be performed by an Invitation for Bid when procurement needs can be stated specifically, or where services or products are standardized. For small purchases of less than \$50,000, at least three quotes from qualified sources must be obtained. In cases where the CEO believes that a competitive alternative to a particular service provider does not exist, the CEO will provide the Board with a report supporting the need for a sole source.

According to OCERS' **Investment Policy Statement**, investment managers may be sourced through consultants, a CIO prepared Request For Information, or an Investment Committee approved RFP.

OCERS' Due Diligence Policy requires initial and ongoing due diligence of investment managers. On-site due diligence is performed at the discretion of the CIO. Also, OCERS has hired audit firms and others to perform due diligence over new and existing managers for proper operational controls to help prevent fraud and other objectives. In addition, OCERS' investment attorney crafts phrases in side agreements to prevent unreasonable expenses from investments being charged to OCERS.

OCERS' Annual Disclosure Policy requires use of Form 700, Statements of Economic Interests. The form requires that OCERS' Board members and executive staff disclose all family and business relationships with, and value received from, any investment manager, placement agent, vendor, consultant, actuary, counsel or other persons providing or actively seeking to provide services or products to, or seeking to influence the deliberations of,

OCERS' Board of Retirement. They must disclose any personal financial interests in any contract that OCERS considered or entered into during the disclosure period, an incompatible office, gifts and honoraria, and campaign contributions.

OCERS' Acceptance and Reporting of Gifts Policy limits gifts that can be received by staff. According to the California Fair Political Practices Commission, state and local officials and employees are prohibited from receiving gifts totaling more than \$470 in a calendar year from certain sources.

OCERS' Travel Policy limits Board Member and staff travel. The California Fair Political Practices Commission regulations limit the ability of OCERS' Board Members and designated staff to accept gifts of travel, lodging and meals from third parties. The evaluation of whether the gift can be accepted and the determination of the Commission reporting requirements is made by the CEO in conjunction with general counsel.

OCERS' Investment Placement Agent Policy requires disclosure of placement agents by investment managers or consultants. The external investment manager is solely responsible for, and OCERS does not pay directly or indirectly, any fees, compensation, or expenses for any placement agent used by an external manager.

OCERS also has its Ethics, Compliance, and Fraud Hotline in which suspected illegal acts can be anonymously reported for investigation.

Submitted by:

 D.J. - Approved

David James
Director of Internal Audit

F

Memorandum

DATE: June 2, 2017
TO: Members of the Audit Committee
FROM: David James, CPA, Director of Internal Audit
SUBJECT: **HOTLINE UPDATE**

Recommendation

Receive and file.

Background/Discussion

As required by OCERS' hotline policy, the Audit Committee should be regularly updated when new reports are made to the hotline. On April 11, 2017, the hotline received a report regarding an incorrect benefit payment made to a beneficiary. As communicated previously to the Board in January and February 2017, numerous customer service issue phone calls were fielded by OCERS' Member Services when the County of Orange switched healthcare plan administrators to Secova beginning in 2017. This hotline call reflects one type of customer service issue in which incorrect retiree medical premiums were deducted from the member's benefit checks in February and March 2017.

The County had previously received feedback from OCERS in order for the County to strategize on solutions and needs to address these customer service issues with Secova. As reported to the Board in May 2017, Member Services has noticed a decrease in call volume from members in regards to Secova related customer service issues.

Internal Audit contacted the beneficiary at his request and Secova. Internal Audit determined that Secova had made corrections to the County's transmittal file, and the beneficiary's bank account was credited for the proper amount in the OCERS' June payroll.

Submitted by:

ORANGE COUNTY
OCERS D.J. - Approved
EMPLOYEES RETIREMENT SYSTEM

David James, CPA
Director of Internal Audit

G

Memorandum

DATE: May 23, 2017
TO: Members of the Audit Committee
FROM: David James, CPA, Director of Internal Audit
SUBJECT: **AUDIT COMMITTEE INQUIRY ON ADMINISTRATIVE TIME IN INTERNAL AUDIT**

Recommendation

Receive and file.

Background/Discussion

At the March 29, 2017 Audit Committee meeting, the Committee enquired regarding the amount of time Internal Audit spent on administration versus internal audit functions of other public pension funds. We inquired of several systems and received the following responses. Most of these were based on estimates of time by the chief audit executives.

System	Time on Administration
OCERS	29%
ACERA	17%
SDCERS	30%
NDERS	30%
LAFPP	20%
LACERA	20%
LACERS	20%

OCERS' Internal Audit tracks time spent on audit projects, which is entered into TeamMate audit software. In the past we have included miscellaneous projects with a relatively small projected number of hours as administration time, which has skewed the hours recorded to administration higher. Going forward, if these hours cannot be assigned to a specific project, we will assign them to a category of miscellaneous projects.

Submitted by:

ORANGE COUNTY
OCERS D.J. - Approved
EMPLOYEES RETIREMENT SYSTEM

David James, CPA
Director of Internal Audit

H

Memorandum

DATE: May 22, 2017
TO: Members of the Audit Committee
FROM: David James, CPA, Director of Internal Audit
SUBJECT: STATUS OF INTERNAL AUDIT AND AUDIT PROJECTS

Recommendation

Receive and file.

Background/Discussion

Following is a brief description of in-progress internal audits and audit projects:

- Due to actions by OCERS' Board and staff regarding Orange County Sherriff's Department POST mandatory training benefits, we have decided to delay the planned payroll transmittal audit of this department until 2018. We will add a payroll transmittal audit of another plan sponsor to the 2017 Audit Plan.
- A draft report of the reciprocity claims audit has been given to OCERS' management for review and discussion, and written management responses to the findings. We plan to present this report at the next Audit Committee meeting.
- A draft report of the V3 data conversion audit is being revised to include management responses and the status of findings. Internal Audit plans to present the final report at the next Audit Committee meeting. The purpose was to audit the data migration from PensionGold to V3, and compare the outputs of six key reports from Pension Gold and V3 for possible discrepancies.
- The annual Risk and Controls Matrices review of OCERS' key internal controls with management is in progress.
- The Investments rebalancing review is in the planning stage.

A new category for small miscellaneous projects was added to the Audit Plan. This category will primarily be for newly assigned projects that are anticipated to use few hours. We moved 50 hours budgeted for General Administration to this new category.

Submitted by:

 D.J. - Approved
EMPLOYEES RETIREMENT SYSTEM

David James, CPA
Director of Internal Audit

**Orange County Employees Retirement System
Internal Audit Division
2017 Internal Audit Plan**

Audit Activity	Description	Priority (A, B, or C)	Planned Hours - Original Budget	Actual Hours as of 5/26/17	Hours Estimated to Complete	Comments
Internal Audits						
Plan Sponsor Review	Report and presentation of plan sponsors' financial status.	A	50	45	0	Completed in February.
CIO Position Review	Review responsibilities of CIO Position.	A	200	189	0	Completed in February.
San Juan Capistrano Payroll Transmittal	Review payroll transmittals and employee data.	B	50	48	0	Completed in March.
Finance Investments Transfers Review	Role of Investments' staff in assessing and approving investments fundings, balancings, transactions, valuations.	A	300	301	0	Completed in May.
NYSCRF Fraud Review	Review NYSCRF fraud and OCERS related policies	A	50	54	0	Project added in March. Completed in May.
Reciprocity Claims Audit	Review reciprocity claims for accuracy and completeness, and adequate supporting documentation.	A	250	286	-36	Draft report completed.
V3 Data Conversion Audit	Review data used in system conversion from PensionGold to V3.	A	50	2	48	Draft report in progress.
Investments Rebalancing Review	Review rebalancing processes.	A	300	0	300	Planning phase.
Payroll Transmittal Review of Plan Sponsor	Review payroll transmittals and employee data.	A	250	0	250	Revised to select a different plan sponsor. Reduced hours from 300 to 250.
OCFA Payroll Transmittal	Review payroll transmittals and employee data.	B	300	0	300	Scheduled to begin in October.

**Orange County Employees Retirement System
Internal Audit Division
2017 Internal Audit Plan**

Audit Activity	Description	Priority (A, B, or C)	Planned Hours - Original Budget	Actual Hours as of 5/26/17	Hours Estimated to Complete	Comments
	Internal Audits Subtotal		1,800	925		

**Orange County Employees Retirement System
Internal Audit Division
2017 Internal Audit Plan**

Audit Activity	Description	Priority (A, B, or C)	Planned Hours - Original Budget	Actual Hours as of 5/26/17	Hours Estimated to Complete	Comments
Non-Audit Projects						
Actuarial Audit	RFP - Audit of Segal's 2015 valuation.	A	60	43	17	In progress.
Miscellaneous Investigations	Use of hotline reporting system.	B	50	5	45	One investigation for 2017.
Risk and Control Matrix	Review and update Risk and Control Matrix.	A	50	3	47	In progress.
Risk Assessment and Audit Plan	Annual preparation of the Audit Plan, updates to the current Audit Plan.	A	50	37	13	Completed in January.
Miscellaneous Projects	For small hours unplanned projects or assignments by the Audit Committee.	C	50	15	35	Category added in May. Moved hours from General Administration.
	Non-Audit Projects Subtotal		260	103		
Administration						
Board and Committee Meetings	Board meetings, Audit Committee, Investment Committee, Governance Committee.	A	300	106	194	Includes preparation time for meetings.
General Administration	Attending staff and other meetings, administrative duties.	B	1,200	343	857	Includes various ad hoc projects.
	Administration Subtotal		1,500	449		
	Total Hours		3,560	1,477		

**Orange County Employees Retirement System
Internal Audit Division
2017 Internal Audit Plan**

Audit Activity	Description	Priority (A, B, or C)	Planned Hours - Original Budget	Actual Hours as of 5/26/17	Hours Estimated to Complete	Comments
Other						
Miscellaneous Leave	Holidays, Sick Leave, Time off, etc.		432	78	354	
Training / Conferences	Required to maintain CPA certification. SACRS, APPFA.		168	125	43	
Total Hours off			600	203		
	Total Hours Available for Two Auditors		4,160	1,680		

I



Memorandum

DATE: May 30, 2017
TO: Members of the Audit Committee
FROM: David James, CPA, Director of Internal Audit
SUBJECT: ACTUARIAL AUDIT RFP FINALISTS PRESENTATIONS

Recommendation

Take appropriate action.

Background/Discussion

OCERS' has completed an evaluation of the six submissions for the actuarial audit RFP. The evaluation was performed by a panel consisting of members of OCERS' executive management and Internal Audit. We have asked the two finalists selected to make presentations to the Audit Committee, and we are requesting that the Audit Committee recommend the finalist to the Board for appointment to perform the actuarial audit of OCERS' consulting actuary, The Segal Company.

Following this memo are the submissions of the two finalists, Milliman and Cheiron.

The criteria for evaluation used by the selection panel were:

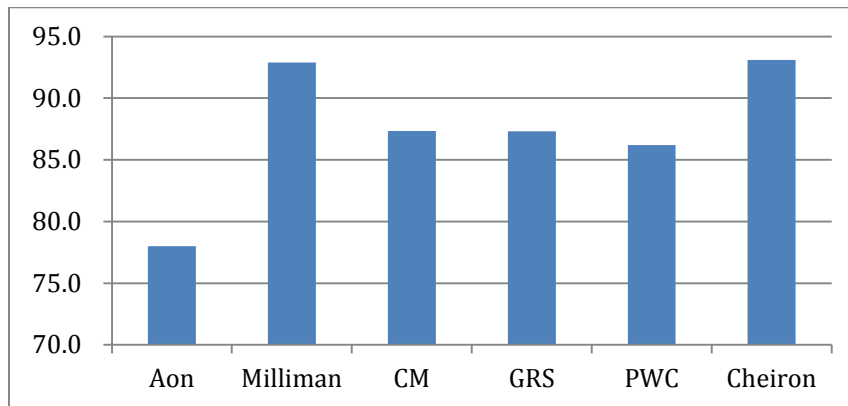
- Firm's experience of OCERS' business and industry through an appropriate level of industry experience in the audit of pension plan actuaries, with an emphasis for CERL pension systems.
- Quality of the team proposed to provide services to OCERS.
- Staff qualifications, such as whether the lead actuary performing the audit possesses the FSA, EA, and MAAA designations for actuarial professionals.
- Staff experience, such as whether the proposed staff has experience auditing the actuaries of defined benefit pension plans.
- Information provided by references.
- Communication skills indicated in the proposal, such as whether the firm identified any potential areas of concern in the audit proposals and described its approach to resolving these issues.
- Understanding of scope indicated in the proposal.
- Whether the proposal addresses all requirements in the RFP.
- The organization, completeness, and quality of the proposal.
- Overall quality of the presentation.
- Pricing and value of the proposal. Scoring took into account and was adjusted based on the relative pricing differences of the proposals. The proposed prices were as follows:

Aon	Milliman	CM	GRS	PWC	Cheiron
\$ 54,900	\$ 75,000	\$ 55,500	\$ 65,000	\$ 70,000	\$ 75,000

Memorandum

In general, the panel found that all of the applicants were well qualified and experienced actuaries. Final scores by the panellists were as follows:

	Aon	Milliman	CM	GRS	PWC	Cheiron
Evaluator 1	84.0	93.3	90.7	88.1	89.6	93.3
Evaluator 2	93.0	93.3	97.7	90.1	92.6	93.3
Evaluator 3	79.0	91.3	85.7	91.1	88.6	93.3
Evaluator 4	59.0	93.3	84.7	91.1	89.6	93.3
Evaluator 5	75.0	93.3	77.7	76.1	70.6	92.3
Average	78.0	92.9	87.3	87.3	86.2	93.1



The audit is part of OCERS' regular cycle of performing audits of its consulting actuary every five years. Segal has acted as OCERS consulting actuary since 2004. The most recent audit was completed in 2012 by Milliman.

The audit will determine the accuracy of the December 31, 2015 valuation performed by Segal. The audit will also assess the actuarial assumptions and funding methodologies used, including a comparison to industry standards. The purpose of the audit is to provide an opinion regarding the reasonableness and accuracy of the actuarial assumptions, actuarial cost methods, valuation results, and contribution rates.

The audit will be a full replication parallel valuation audit, including a full re-run of the December 31, 2015 actuarial valuation and a review of detailed output on certain select test lives from the valuation group.

The full replication parallel valuation should allow the auditing firm to determine whether:

1. The current valuation system used by Segal is accurately applying the assumptions as stated and is accurately valuing the appropriate benefits;
2. The current valuation system used by Segal is properly allocating the present value of benefits between normal cost and actuarial accrued liability; and

Memorandum

3. The current valuation system used by Segal is adding together liabilities appropriately for each decrement, for each member, and over the entire population so that there is reasonable assurance that no segment of the population is being ignored and no particular liabilities are being omitted.

Submitted by:

ORANGE COUNTY
OCERS D.J. - Approved
EMPLOYEES RETIREMENT SYSTEM

David James, CPA
Director of Internal Audit



Actuarial Audit Services

Prepared for OCERS

Daniel Wade, FSA, EA, MAAA
Mark Olleman, FSA, EA, MAAA
June 9, 2017

Discussion topics

- About Milliman
- Our understanding of OCERS' needs
- Public sector and audit expertise
- Project approach

Who's here today



CO-LEAD ACTUARY

Daniel Wade, FSA, EA, MAAA
Principal & Consulting Actuary

Tel: +1 206 504 5695
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PEER REVIEW ACTUARY

Mark Olleman, FSA, EA, MAAA
Principal & Consulting Actuary

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Exceptional service team

An encore performance



AUDIT CO-LEAD ACTUARY

Daniel Wade
FSA, EA, MAAA
Principal & Consulting Actuary



AUDIT CO-LEAD ACTUARY

Nick Collier
ASA, EA, MAAA
Principal & Consulting Actuary



SUPPORT ACTUARY

Julie Smith
FSA, EA, MAAA
Actuary



PEER REVIEW ACTUARY

Mark Olleman
FSA, EA, MAAA
Principal & Consulting Actuary

Who we are

Fully **independent** and wholly owned and managed by approximately **400 principals**

60 offices worldwide staffed by more than 3,000 employees, including **1,600 qualified actuaries** and **consultants**

9,000 clients in the public and private sectors, including **4,500 pension clients**

\$940 million in firm revenue in 2016



Our understanding of OCERS' needs

The request: Independent audit of work performed by the Consulting Actuary including:

- Comprehensive audit of the December 31, 2015 actuarial valuation report
- Full replication, using the same census data, assumptions, methods, asset statements, and benefit plan provisions used by the Consulting Actuary
- Review of methods, assumptions, and communication

The purpose: Express an opinion on the accuracy and reasonableness of the actuarial valuation

The approach: Verify results independently, but work cooperatively with staff and Consulting Actuary to resolve material differences (if any) and enhance the actuarial consulting received by the Board

Public sector expertise

A commitment to retirement systems



Serving the pension actuarial needs of the public sector for **70 years** and providing actuarial auditing services for approximately **30 years**

Working with California county retirement systems governed by the **1937 Act** - the proposed team having worked with **12 of the 20 systems**, either as the retained or audit actuary

Keeping consultants and clients up to date with publications such as *PERiScope* produced by **Milliman's Employee Benefit Research Group** in Washington, D.C.

Public sector expertise

Sample client list

Ongoing Full Service Clients	Year Retained	Assets	Members
California State Teachers' Retirement System	1985	\$169.1 billion	896,000
Florida Retirement System	1986	\$142 billion	1,031,000
Los Angeles County Employees Retirement Association	1999	\$47.8 billion	171,000
Oregon Public Employees Retirement System	2012	\$54.4 billion	347,000
Public Employees Retirement System of Idaho	1965	\$15.5 billion	140,000
San Mateo County Employees' Retirement Association	2006	\$3.5 billion	11,400
Seattle City Employees' Retirement System	1991	\$2.3 billion	17,300
State of Washington Dept. of Retirement Systems*	2014	\$74.5 billion	523,000
Tacoma Employees' Retirement System	1976	\$1.5 billion	5,800
Texas County and District Retirement System	1999	\$ 24.4 billion	271,000

* Audit Client with 6-year contract

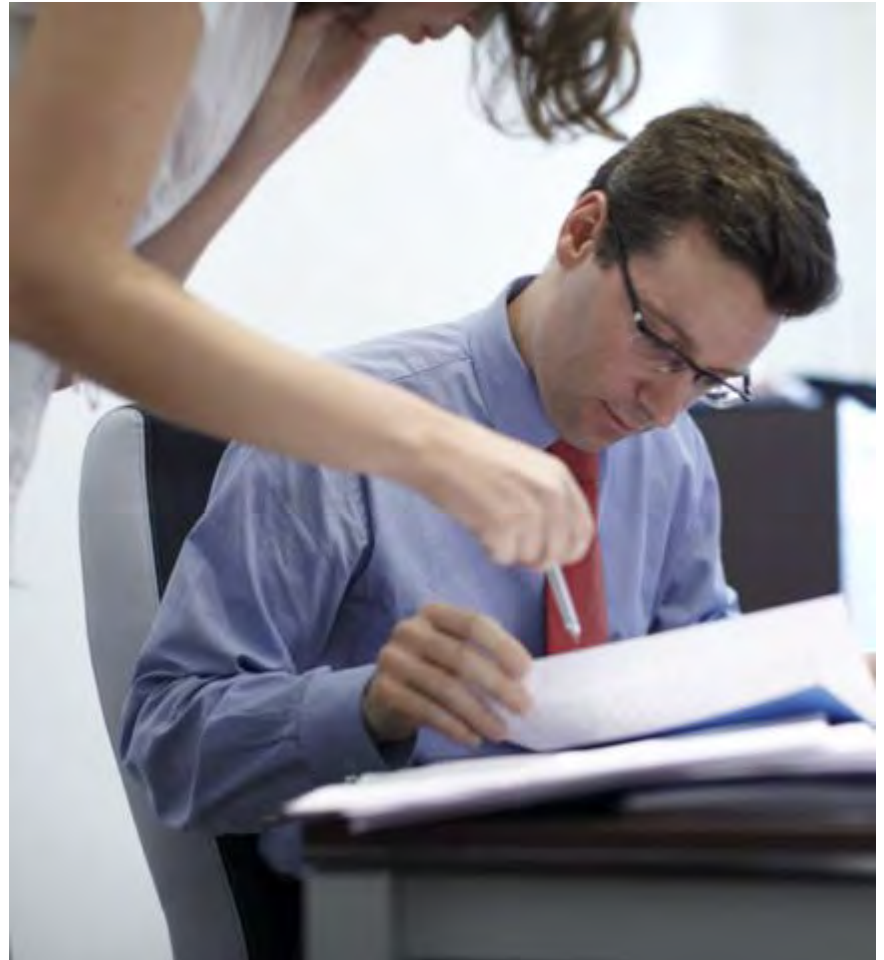
Audit expertise

In the past **10 years**, Milliman has completed over **40 actuarial audits**

The proposed service team has been involved with **15 of those audits**

A few **examples**:

- Orange County ERS
- Santa Barbara County ERS
- State of Washington Retirement Systems
- San Diego County ERA
- Kern County ERA
- Contra Costa County ERA
- Stanislaus County ERA
- Alameda County ERA



Project approach

Step 1: Background – Gather information necessary to perform the audit. Identify areas of concern from staff and Board.

Step 2: Data – Verify the accuracy and appropriateness of demographic data used in valuations.

Step 3: Actuarial Assumptions – Confirm that actuarial assumptions are reasonable and appropriate, utilizing the Segal Experience Study report as the primary source.

Step 4: Actuarial Calculations – Independently reproduce and confirm actuarial valuation results.

Step 5: Funding – Review funding of OCERS.

Step 6: Additional Analysis – Review communication in the report and perform additional analysis specific to the OCERS situation.

Step 7: Report of Findings – Produce written report of audit results and present to the Board.

Identifying and reconciling differences

Types of differences

- Objective
 - Data
 - Benefit provisions (including PEPRA)
 - Application of assumptions
 - Actuarial cost method or asset smoothing method
- Subjective
 - Actuarial judgment
 - Setting of assumptions and methods

Reconciliation methods

- Numerical differences
 - Direct interaction with Consulting Actuary
 - Step-by-step comparison of calculations
- Discussion of subjective issues
 - Ensure we understand why the Consulting Actuary made its decision
 - Respect opinion of Consulting Actuary
 - Discussion with staff
- Put differences in perspective

OCERS' needs

- Public sector and audit expertise
- Depth of resources
- Quality of work
- Added value

Milliman solution

Confidence in consulting services

- Complete and accurate
- Stable firm, committed to relationships with clients
- Continuity of consultants

Experienced and proactive partner

- Public sector and audit experts
- Accessible team
- Smooth processes
- Innovative solutions

Clear and timely communication



Thank you

Orange County Employees Retirement System



Proposal to Provide Actuarial Audit Services

June 9, 2017

Anne Harper, FSA, EA, MAAA

Graham Schmidt, ASA, EA, FCA, MAAA



- About Cheiron
- Our Staff
- Relevant Experience
- Key Audit Questions



- Formed in 2002 by former Milliman consultants over concerns on liability limitations
- Employee-owned with nine offices nationwide
- Highest percentage of fully credentialed actuaries in the industry
- 100% revenue from actuarial consulting with most clients being public and jointly-trusted pension and health funds
- National reputation for being proactive, responsive, and innovative

Our Staff – Proposed Personnel



Anne Harper Co-Lead Actuary San Diego, CA	Graham Schmidt Co-Lead Actuary Oakland, CA
David Holland Backup Consultant, Audit Team Los Angeles, CA	Michael Moehle Audit Team Oakland, CA
Actuarial Support	
Administrative Support	

- The Co-Lead Actuaries and Audit Team Actuaries have significant experience with '37 Act and other large California systems

About Cheiron – Public Sector Experience



Statewide Plans:

- CalPERS
- CalSTRS
- Connecticut
- Delaware
- Florida
- Illinois
- Idaho
- Kansas
- Louisiana
- Maine
- Maryland
- Montana
- New Jersey
- New York State Teachers
- Oregon
- Pennsylvania
- Rhode Island
- Texas ERS & TRS
- Utah
- Vermont Municipals
- Washington State Investment Board
- Washington
- West Virginia

Federal:

- US Army
- US Court of Appeals
- US Tax Court
- US Department of the Treasury

Local Government Plans:

- Alexandria (VA)
- Allentown (PA)
- Arlington County (VA)
- Baltimore (MD)
- Chesterfield County Schools (VA)
- City of Annapolis (MD)
- City of Hampton (VA)
- City of Los Angeles (CA)
- Chattanooga (TN)
- District of Columbia
- Fairfax County (VA)
- Fresno County (CA)
- Kansas City (MO)
- Los Angeles (LACERS and LAFPP)
- **Marin County (CA)**
- **Merced County (CA)**
- Metropolitan Washington Council of Governments
- Miami (FL)
- Milwaukee County (WI)
- Newport News (VA)
- Norfolk (VA)
- Philadelphia (PA)
- Phoenix (AZ)
- Saint Louis (MO)
- San Diego (CA)
- San Francisco (CA)
- San José (CA)
- **San Joaquin County (CA)**
- San Luis Obispo (CA)
- **Santa Barbara County (CA)**
- **Stanislaus County (CA)**
- **Tulare County (CA)**
- Wichita (KS)
- Wilmington (DE)

480/485

OPEB:

- Arkansas
- Alexandria (VA)
- Annapolis (MD)
- Delaware
- Greater Richmond Transit Company (VA)
- Hampton (VA)
- Knoxville Utilities Board (TN)
- Maine Municipal Employees Health Trust
- Maine Public Employees Retirement System Health and Life Plans
- Multnomah County (OR)
- Norfolk (VA)
- Newport News (VA)
- Oakland (CA)
- Pennsville Township (NJ)
- Philadelphia (PA)
- San Francisco (CA)
- San José (CA)
- Springfield Area Transit Co. (MA)
- US Army Community & Family Support Center
- Vienna (VA)
- Wilmington (DE)
- Westchester Medical Center (NY)

Actuarial Audit Experience



- One of Cheiron's key lines of business
- Cheiron staff have audited eight '37 Act plans over the last six years
 - Alameda, Fresno, Imperial, Kern, Mendocino, Sacramento, Santa Barbara, Sonoma
- Other CA audit experience (directed by your team members):
 - CalPERS, CalSTRS, University of California
 - LACERS, LA Police and Fire, LA Water and Power
 - San Luis Obispo
- Other recent Cheiron audits:
 - District of Columbia Retirement Board
 - Illinois Office of the Auditor General
 - Municipal Employees' Retirement System of Michigan
 - Retirement Systems of Alabama
 - Texas State Auditor's Office

Key Questions to Consider for Audit



- Is actuarial valuation reasonable and accurate?
- Are the current assumptions and methods reasonable and appropriate?
- Do the current methods and assumptions achieve the Board's objectives and meet required Actuarial Standards of Practice?
- Does the valuation report provide usable information on short and long term risks?

Questions Specific to '37 Act Audits



- Are actual retirement benefits close to those predicted?
 - Accurately reflect terminal pay and service adjustments, reciprocal benefits
- Are the COLA benefits accurately modelled?
 - Reflect mechanics of CPI adjustments and caps
- Do the mortality assumptions reflect current recommended actuarial practices and plan experience?
 - Consider generational mortality
 - Benefit-weighting vs. life-weighting
- Do optional form elections create potentials for gains/losses?
 - Review impact of COLA

Questions Specific to '37 Act Audits



- Are the employee contribution rates properly calculated?
 - Review methodology for 50% COLA cost-sharing, impact of 30-year exemption
- Are there policies that may have unexpected consequences on achieving the funding objectives?
 - Review excess earnings and other policies
- Does the report contain information necessary to understand the dynamics of different rate groups?
 - Projections by Class/Tier
- Are there data issues that may have been created as a result of a transition in the pension administrative software?



CHEIRON



Classic Values, Innovative Advice.

***Cheiron** (pronounced kī·ron), the immortal centaur from Greek mythology, broke away from the pack and was educated by the gods. Cheiron became a mentor to classical Greek heroes, then sacrificed his immortality and was awarded in eternity as the constellation Sagittarius.*