ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
BOARD OF RETIREMENT
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CALIFORNIA

REGULAR MEETING
Monday, June 12, 2017
9:00 a.m.

AGENDA

The Orange County Board of Retirement welcomes you to this meeting. This agenda contains a brief general description of each item to be considered. The Board of Retirement encourages your participation. The public, plan members, beneficiaries, and/or representatives may speak to any subject matter contained in the agenda at the time the item is addressed. Except as otherwise provided by law, no action shall be taken on any item not appearing in the following agenda. Persons wishing to address items on the agenda should provide written notice to the Secretary of the Board prior to the Board's discussion on the item by filling out the Public Comment Form located in the back of the room. Members of the public may also comment during the Public Comment period at the end of Open Session. When addressing the Board, please state your name for the record prior to providing your comments. Speakers will be limited to three (3) minutes.

Pledge of Allegiance

CONSENT AGENDA

All matters on the Consent Agenda are to be approved by one action unless a Board Member or a member of the public requests separate action on a specific item.

BENEFITS

C-1 MATERIAL DISTRIBUTED

Application Notices	June 12, 2017
Death Notices	June 12, 2017

Recommendation: Receive and file.

ADMINISTRATION

C-2 BOARD MEETINGS AND COMMITTEE MEETINGS

Regular Board Meeting Minutes	May 15, 2017

Recommendation: Authorize meeting and approve minutes.

C-3 **CEO FUTURE AGENDAS AND 2017 OCERS BOARD WORK PLAN**

Recommendation: Receive and file.

C-4 **DIRECTIVE TO REVIEW OCERS INVESTMENT FEE REPORT**

Recommendation: Receive and file.

C-5 **DIRECTIVE TO REVIEW NEW YORK STATE COMMON RETIREMENT FUND'S SCANDAL**

Recommendation: Receive and file.

C-6 **2017 STRATEGIC PLANNING WORKSHOP – PROPOSED AGENDA TOPICS**

Recommendation: Receive and file.

C-7 **2017 – 2019 STRATEGIC PLAN – QUARTERLY REVIEW**

Recommendation: Receive and file.

C-8 **QUIET PERIOD – NON-INVESTMENT CONTRACTS**

Recommendation: Receive and file.

C-9 **LEGISLATIVE UPDATE**

Recommendation: Receive and file.

C-10 **BOARD COMMUNICATIONS**

Recommendation: Receive and file.

*** * * * * * END OF CONSENT AGENDA * * * * * * ***

INDIVIDUAL ITEMS AGENDA

I-1 INDIVIDUAL ACTION ON ANY ITEM TRAILED FROM THE CONSENT AGENDA

I-2 AOCDS POST MANDATORY TRAINING BENEFIT CORRECTION

Presentation by Steve Delaney, Chief Executive Officer, OCERS; and Suzanne Jenike, Assistant Chief Executive Officer External Operations, OCERS

Recommendation: Staff recommends the Board correct the underpaid benefits by:

1. Correcting (increasing) the monthly benefit going forward; and
2. Reimbursing members the full amount of the underpaid benefits retroactive to their effective date of retirement; and
3. Paying the members 3% interest compounded annually on the underpaid benefits; and
4. Collecting the underpaid benefits and interest thereon from the County by including the amount in the 2017 UAAL amortization as an actuarial loss.

Staff recommends the Board correct the overpaid benefits, effective July 1, 2017, by:

1. Correcting (decreasing) the monthly benefit going forward; and
2. Continuing to collect the full amount of the overpaid benefits retroactive to the effective date of retirement from the County by leaving the amount in the County's UAAL.

In addition, staff recommends that the Board direct staff to work with the County payroll department so that:

1. The employer properly reports pensionable pay items to OCERS in the future; and
2. Employee and employer contributions are charged and collected on those pensionable pay items on a biweekly basis.

I-3 ACTUARIAL DECEMBER 31, 2016 VALUATION

Presentation by Paul Angelo and Andy Yeung, Segal Consulting

Recommendation: Approve the Actuarial Valuation and Review as of December 31, 2016 and adopt contribution rates for Fiscal Year 2018 – 2019 as recommended by Segal Consulting.

I-4 GASB 68 VALUATION AND AUDIT REPORT

Presentation by Brenda Shott, Assistant Chief Executive Officer and Tracy Bowman, Director of Finance

Recommendation: Approve the following recommendations from the Audit Committee during a meeting held on June:

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.

I-5 **2016 AUDITED FINANCIAL STATEMENTS AND COMPREHENSIVE ANNUAL FINANCIAL REPORTS**
Presentation by Brenda Shott, Assistant Chief Executive Officer and Tracy Bowman, Director of Finance

Recommendation: Approve the following recommendations presented to the Audit Committee during a meeting held on June 9, 2017:

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)
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*."

I-6 **BUSINESS CONTINUITY AND DISASTER RECOVERY PLAN UPDATE**
Presentation by Jenny Sadoski, Director of Information Technology, and Jon Gossard, I.T. Manager, OCERS

Recommendation: Receive and file.

I-7 **CYBER SECURITY OVERVIEW**
Presentation by Jenny Sadoski, Director of Information Technology, and Jon Gossard, I.T. Manager, OCERS

Recommendation: Receive and file.

I-8 **ANNUAL BUSINESS PLAN PROGRESS – MID-YEAR REVIEW**
Presentation by Steve Delaney, Chief Executive Officer, OCERS

Recommendation: Receive and file.

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

DISABILITY APPLICATIONS/MEMBER APPEALS AGENDA

1:00 P.M.

NOTE: WHEN CONSIDERING DISABILITY RETIREMENT APPLICATIONS OR MEMBER APPEALS OF BENEFIT OR DISABILITY RETIREMENT DETERMINATIONS, THE BOARD MAY ADJOURN TO CLOSED SESSION TO DISCUSS MATTERS RELATING TO THE MEMBER'S APPLICATION OR APPEAL,

PURSUANT TO GOVERNMENT CODE SECTIONS 54957 OR 54956.9. IF THE MATTER IS A DISABILITY APPLICATION UNDER SECTION 54957, THE MEMBER MAY REQUEST THAT THE DISCUSSION BE IN PUBLIC.

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D-1: Nicholas Casson
Firefighter, Orange County Fire Authority
Date of employee filed application for service connected disability retirement: 05/05/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF THE DAY FOLLOWING THE LAST DAY OF COMPENSATION. (SAFETY MEMBER) (D-1)

D-2: Jesse Gonzales
Landfill Equipment Operator, Orange County Waste and Recycling
Date of employee filed application for service connected disability retirement: 05/03/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF MAY 3, 2016. (GENERAL MEMBER) (D-2)

D-3: Amadeo Guerrero
Laborer, Orange County Waste and Recycling
Date of employee filed application for service and non-service connected disability retirement: 06/22/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF JUNE 22, 2016. (GENERAL MEMBER) (D-3)

D-4: Wendy Kahapea
Group Counselor II, Orange County Social Services Agency
Date of employer filed application for service and non-service connected disability retirement: 03/03/2016
Date of employee filed application for service and non-service connected disability retirement: 03/23/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF MARCH 4, 2016, THE DAY FOLLOWING THE LAST DAY OF REGULAR COMPENSATION AS A GROUP COUNSELOR I. FIND THE APPLICANT IS CAPABLE OF PERFORMING OTHER DUTIES IN THE SERVICE OF THE COUNTY OF ORANGE PURSUANT TO GOVERNMENT CODE SECTION 31725.65. GRANT A SUPPLEMENTAL DISABILITY RETIREMENT PAYMENT ALLOWANCE IN THE AMOUNT OF THE SALARY DIFFERENCE BETWEEN THE HIGHER AND LOWER PAYING POSITIONS EFFECTIVE MARCH 4, 2016, THE DATE OF THE POSITION CHANGE UNTIL THE LAST DAY OF COMPENSATION. (GENERAL MEMBER) (D-4)

D-5: Joseph McClintock
Sergeant, Orange County Sheriff's Department

Date of employee filed application for service and non-service connected disability retirement: 05/23/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF SEPTEMBER 4, 2015. (SAFETY MEMBER) (D-5)

D-6: Carl Pollitt
Deputy Sheriff II, Orange County Sheriff's Department
Date of employee filed application for service connected disability retirement: 08/25/2015

STAFF RECOMMENDATION IS TO DENY SERVICE CONNECTED DISABILITY RETIREMENT DUE TO INSUFFICIENT EVIDENCE OF PERMANENT INCAPACITY AND JOB CAUSATION.DENY THE APPLICATION AS IT WAS NOT FILED TIMELY PURSUANT TO GOVERNMENT CODE SECTION 31722. (SAFETY MEMBER) (D-6)

D-7: Shayla Moore
Coach Operator, Orange County Transportation Authority
Date of employee filed application for service connected disability retirement: 09/16/2008

STAFF RECOMMENDATION IS FOR THE BOARD TO DISMISS THE APPEAL WITHOUT PREJUDICE PURSUANT TO THE ADMINISTRATIVE HEARING PROCEDURES, RULE 23. (GENERAL MEMBER) (D-7)

D-8: Rick Edgmon

AFFIRM STAFF'S DETERMINATION THAT MR. EDGMON SHOULD BE REQUIRED TO REPAY THE TOTAL AMOUNT OF THE BENEFITS OVERPAID TO HIM SINCE HE RETIRED ON NOVEMBER 11, 2005 IN THE APPROXIMATE AMOUNT OF $237,107.79. STAFF ALSO RECOMMENDS THAT OCERS FORGO THE COLLECTION OF INTEREST ON THE OVERPAYMENT, AND THAT MR. EDGMON BE GIVEN 20 YEARS TO REPAY THE OVERPAYMENT THROUGH MONTHLY DEDUCTIONS TO HIS RETIREMENT ALLOWANCE.

(MEMBER) (D-8)

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PUBLIC COMMENTS: At this time members of the public may address the Board of Retirement regarding any items within the subject matter jurisdiction of the Board, provided that no action may be taken on non-agendized items unless authorized by law.

BOARD MEMBER COMMENTS

CHIEF EXECUTIVE OFFICER/STAFF COMMENTS

COUNSEL COMMENTS

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CLOSED SESSION ITEMS

E-1 CONFERENCE REGARDING SIGNIFICANT EXPOSURE TO LITIGATION (ONE MATTER) (GOVERNMENT CODE SECTION 54956.9)
Adjourn pursuant to Government Code section 54956.9(d)(2)

Recommendation: Take appropriate action.

E-2 CONFERENCE REGARDING INITIATION OF LITIGATION (ONE MATTER) (GOVERNMENT CODE SECTION 54956.9)
Adjourn pursuant to Government Code section 54956.9(d)(4) to consider whether to initiate litigation.

Recommendation: Take appropriate action.

E-3 CONFERENCE REGARDING LITIGATION THAT HAS BEEN INITIATED (GOVERNMENT CODE SECTION 54956.9(d)(1)) O.C. Department of Education v. OCERS, CA Superior Court, Orange County, (Case No. 30-2016-00836897)
Adjourn pursuant to Government Code Section 54956.9(d)(1).

Recommendation: Take appropriate action.

NOTICE OF NEXT MEETINGS

INVESTMENT COMMITTEE MEETING
June 28, 2017
9:00 A.M.

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CA 92701

REGULAR BOARD MEETING
July 17, 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 call 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.

Orange County Employees Retirement System
Retirement Board Meeting
June 12, 2017
Application Notices

Member Name	*Agency/Employer*	*Retirement Date*
Aldana, Avelino	Social Services Agency	3/31/2017
Alley, Dillion	District Attorney	3/30/2017
Anderson, Sharron	County Executive office (CEO)	3/31/02017
Angelotti-Ripley, Ariane	OCTA	3/24/2017
Barnes, Paul	OC Waste and Recycling	3/3/2017
Batchik, Dan	Sheriff's Department	3/31/2017
Bennett, Eddie	OCTA	3/15/2017
Bischoff, Gary	Superior Court	4/1/2017
Bond, Patricia	Transportation Corridor Agency (TCA)	4/1/2017
Boyd, Andra	OCTA	4/4/2017
Brown, Naomi	District Attorney	3/31/2017
Bryant, Aleta	District Attorney	3/31/2017
Burnham, Karen	Probation	4/1/2017
Burton, Ellen Sue	OCTA	3/31/2017
Cadotte, Jacqueline	OC Public Works	3/17/2017
Camarena, Maria	Superior Court	4/14/2017
Campos, Alfred	OC Waste and Recycling	3/31/2017
Chavez, Amarante	Social Services Agency	3/31/2017
Chavez, Daniel	Sheriff's Department	3/31/2017
Chay, Jose	Health Care Agency	4/14/2017
Contreras, Angie	Social Services Agency	4/1/2017
Cook, Leonard	Child Support Services	3/31/2017
Cooper, John	Sheriff's Department	3/31/2017
Davidson, James	Fire Authority (OCFA)	3/31/2017
Davis, Elsa	Health Care Agency	3/1/2017
Davis, Robert	OC Public Works	3/31/2017
De Anda, Bernardo	Sanitation District	3/30/2017
De Leon, Judith	County Executive office (CEO)	3/31/2017
Deisner, Vadette	Social Services Agency	4/14/2017
Delos Reyes, Glenn	Sheriff's Department	3/31/2017
Deveaux, Margaret	Social Services Agency	3/31/2017
Diep, Gina	Social Services Agency	3/31/2017
Diiorio, Christine	City of San Juan Capistrano	2/4/2017
Dinh, Kimberly	District Attorney	3/31/2017
Do, Anh	Social Services Agency	3/31/2017
Du Monceau De Bergendal, Janet	Sheriff's Department	3/31/2017
Dunkel, Cheryl	Social Services Agency	4/16/2017
Engelberg, Barry	OCTA	3/25/2017
Escamillo, Felton	Fire Authority (OCFA)	12/31/2017
Fermin, Virgilio	Health Care Agency	3/31/2017
Figueroa, Jane	Superior Court	4/1/2017
Fincher, Christine	OC Community Resources	3/31/2017
Fincher, Kevin	OC Community Resources	3/31/2017
Fletcher, Ann	County Counsel	3/31/2017
Franklin, Angela	Social Services Agency	2/7/2017
Frick, Brian	OC Community Resources	3/31/2017
Gorski, James	Fire Authority (OCFA)	3/31/2017
Gregor, Carolyn	Superior Court	3/31/2017
Griffin, Ramona	Social Services Agency	3/31/2017

Member Name	Agency/Employer	Retirement Date
Guerrero, Terry	Superior Court	3/31/2017
Guthrie, Timothy	Probation	3/17/2017
Hanlon, John	Probation	3/31/2017
Hannah, Paul	Health Care Agency	3/31/2017
Hardeman, Yvette	Superior Court	3/31/2017
Harralson, Paul	Social Services Agency	3/31/2017
Harris, Gwendolyn	Probation	3/31/2017
Hein, Carolyn	Superior Court	4/14/2017
Hernandez, Filemon	City of San Juan Capistrano	3/30/2017
Hodge, Jack Charles	Sanitation District	3/31/2017
Horlings, Hiddo	Fire Authority (OCFA)	3/31/2017
Howard, Leslie	Superior Court	4/1/2017
Howard, Patrick	Fire Authority (OCFA)	3/31/2017
Howe, Hellen	Social Services Agency	3/31/2017
Huddleston, Randal	OCTA	3/25/2017
Huth, Howard	OC Community Resources	3/31/2017
James, Beiker	Probation	3/31/2017
Jelev, Elizabeth	Sheriff's Department	3/31/2017
Jones, Betti Lou	OC Community Resources	3/29/2017
Jones, Janice	Sheriff's Department	3/31/2017
Jones, Phillip	OC Public Works	3/31/2017
Kinsella, Richard	OC Public Works	3/31/2017
Lapes, Barry	Child Support Services	3/31/2017
Lawrence, Rebecca	Social Services Agency	3/31/2017
Lazorek, Larry	Sanitation District	4/7/2017
Lee, Albert	Sheriff's Department	3/29/2017
Lee, Ling	Treasurer Tax Collector	3/31/2017
Leveille, Claire	OC Public Works	4/1/2017
Loaiza, David	Sheriff's Department	3/31/2017
Lopez, Patricia	Sheriff's Department	3/31/2017
Madison, Robert	Sheriff's Department	4/14/2017
Magana, Irene	Health Care Agency	3/31/2017
Malinick, Mary	Health Care Agency	3/31/2017
Martinez, Hector	Sheriff's Department	3/10/2017
Mathews, Gregory	Sanitation District	8/22/2015
McBride, Janis	Health Care Agency	3/31/2017
McHugh, Paul	Sheriff's Department	3/31/2017
McIntyre, Laurie	OC Community Resources	3/17/2017
Mereness, Donna	Sheriff's Department	3/31/2017
Newe, Karen	Health Care Agency	3/31/2017
Nguyen, Hau	Registrar of Voters	3/31/2017
Nguyen, Hong	Public Defender	3/31/2017
Nguyen, Michael	OC Public Works	3/31/2017
Nguyen, Tiffany	County Clerk/Recorder	3/31/2017
Nuno, Armida	Children and Families Commission	4/1/2017
O'Connor, Linda	Superior Court	3/31/2017
Odom, Denise	Social Services Agency	3/31/2017
Palmquist, Alvin	Sanitation District	3/31/2017
Panis, Danilo	Auditor-Controller	3/31/2017
Parker-Frey, Joan	Sanitation District	3/31/2017
Perlas, Felix	OC Public Works	3/31/2017
Perry, David	Auditor-Controller	3/31/2017
Phillips, Jennifer	OC Community Resources	2/1/2017
Phillips, Marva	OCTA	3/31/2017
Pilchowski, Ronald	Sheriff's Department	3/31/2017
Popal, Safi	OC Public Works	3/31/2017
Prado, Francisco	Sheriff's Department	3/31/2017

Member Name	Agency/Employer	Retirement Date
Refowitz, Mark	Health Care Agency	3/31/2017
Riley, Christine	OC Public Works	4/1/2017
Rosa, Victor	OCTA	3/31/2017
Rosacia, William	Health Care Agency	3/31/2017
Sanchez, Abraham	Health Care Agency	3/31/2017
Sanchez, Meynardo	OC Public Works	3/31/2017
Sandberg, David	OCTA	3/31/2017
Santiago, Yolanda	Sheriff's Department	3/31/2017
Serna, Rebecca	County Executive office (CEO)	4/4/2017
Sevenandt, Wendy	Sanitation District	3/31/2017
Sobhani, Seyed	OC Public Works	3/31/2017
Sole, Jorge	Social Services Agency	3/31/2017
Sollis, Linda	Assessor	3/31/2017
Stay, Bryan	Sheriff's Department	3/31/2017
Stewart, Nancy	Transportation Corridor Agency (TCA)	4/1/2017
Stewart, Stephen	OC Public Works	3/31/2017
Streicher, James	Fire Authority (OCFA)	3/31/2017
Taras, Marion	Probation	3/31/2017
Taylor, Joane	OC Public Works	3/30/2017
Teves, Angelo	Social Services Agency	3/22/2017
Thomas, Rodney	Sheriff's Department	3/31/2017
Tintle, James	Sanitation District	3/31/2017
Tokihiro, Thu	Social Services Agency	3/31/2017
Tolle, Greg	Fire Authority (OCFA)	3/31/2017
Ton-That, Chau	Health Care Agency	4/1/2017
Torres, Christine	Probation	3/31/2017
Torres, Patricia	Child Support Services	3/31/2017
Tran, Jennifer	Social Services Agency	3/31/2017
Tran, Vinh	Child Support Services	3/31/2017
Trevino, Velma	Child Support Services	3/31/2017
Tsukerman, Ilya	Probation	3/31/2017
Ueligitone, Ianeta	Health Care Agency	4/13/2017
Ulmer, Raymond	Sheriff's Department	3/31/2017
Vernum, Richard	Social Services Agency	3/31/2017
Vu, Tony	OCTA	4/16/2017
Wagner, Michael	Sheriff's Department	3/31/2017
Waterhouse, Michael	Social Services Agency	3/31/2017
Weiss, Jeffrey	Fire Authority (OCFA)	3/31/2017
Welling, Renee	OC Community Resources	3/31/2017
Wert, Raymond	Sheriff's Department	3/31/2017
Zubiate, Christine	Child Support Services	3/31/2017

Orange County Employees Retirement
Retirement Board Meeting
June 12, 2017
Death Notices

Active Members	*Agency/Employer*	*Date of Death*
Gonzales, Cora	Assessor	4/24/2017
Ta, Grace	Social Services Agency	5/26/2017
Whitehill, Joel	Sheriff's Dept	5/6/2017

Retired Members	*Agency/Employer*	*Date of Death*
Brothwell, Bob	OC Public Works	5/22/2017
Chambers, Gregory	Fire Authority (OCFA)	4/24/2017
Cornett, Wayne	OC Public Works	4/19/2017
Criddle, Jack	OC Public Works	5/18/2017
Dickens, Jo Dell	UCI	5/17/2017
Dorman, Mary	County Clerk/Recorder	4/24/2017
Drum, Stuart	OCTA	5/19/2017
Epstein, Florence	Public Defender	5/3/2017
Fansler, Maureen	Superior Court	7/6/2016
Fernandez, Fidel	OC Community Resources	4/21/2017
Holverstott, Charles	County of Orange	4/9/2017
Horgan, Karen	OC Public Works	5/19/2017
Nichols, Edward	Sheriff's Dept	5/11/2017
Nordbak, Catherine	Superior Court	5/17/2017
Olis, Cynthia	Superior Court	5/8/2017
Puckett, Jacqueline	Sheriff's Dept	4/20/2017
Smith, Juliann	Superior Court	5/8/2017
Switzer, Barbara	County Executive Office (CEO)	4/23/2017
Tolman, Dee	Superior Court	5/8/2017
Wiest, Carlos	County of Orange	4/8/2017
Wilkinson, Michelle	County of Orange	4/30/2017
Wilson, James	Superior Court	5/3/2017

Surviving Spouses		*Date of Death*
Boutet, Helen		4/20/2017

C-2

ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM
BOARD OF RETIREMENT
2223 E. WELLINGTON AVENUE, SUITE 100
SANTA ANA, CALIFORNIA

REGULAR MEETING
Monday, May 15, 2017
9:00 a.m.

MINUTES

Chair Ball called the meeting to order at 9:00 a.m.

Attendance was as follows:

Present: David Ball, Chair; Eric Gilbert, Chuck Packard, Russell Baldwin, Shawn Dewane, Roger Hilton; Wayne Lindholm, Frank Eley and Shari Freidenrich

Also Present: Steve Delaney, Chief Executive Officer; Catherine Fairley, Director of Member Services; Jon Gossard, I.T. Manager; Jenny Sadoski, Director of Information Technology; David James, Director of Internal Audit; Gina Ratto, Chief Legal Officer; Lee Fink, Deputy Chief Legal Officer; Anthony Beltran, Visual Technician; Megan Cortez; Disability Coordinator; Brenda Vazquez, Recording Secretary.

Guests: Harvey L. Leiderman, ReedSmith LLP

Absent: Chris Prevatt, Vice Chair

Mr. Hilton led the Pledge of Allegiance.

CONSENT AGENDA

All matters on the Consent Agenda are to be approved by one action unless a Board Member or a member of the public requests separate action on a specific item.

Mr. Ball pulled items C-7, C-8, C-9, C-12 and C-13 for discussion.

Following discussion, a **motion** was made by Mr. Hilton, **seconded** by Mr. Lindholm to move the remainder of the consent calendar.

The motion carried **unanimously**.

Mr. Gilbert arrived at 9:02am
Ms. Freidenrich arrived at 9:07am

BENEFITS

C-1 MATERIAL DISTRIBUTED

Application Notices	May 15, 2017
Death Notices	May 15, 2017

Recommendation: Receive and file.

ADMINISTRATION

C-2 BOARD MEETINGS AND COMMITTEE MEETINGS

Regular Board Meeting Minutes	April 17, 2017
Governance Committee Meeting Minutes	April 5, 2017

Recommendation: Authorize meeting and approve minutes.

C-3 CEO FUTURE AGENDAS AND 2017 OCERS BOARD WORK PLAN

Recommendation: Receive and file.

C-4 QUIET PERIOD – NON-INVESTMENT CONTRACTS

Recommendation: Receive and file.

C-5 FIRST QUARTER 2017 BUDGET TO ACTUALS REPORT

Recommendation: Receive and file.

C-6 FIRST QUARTER UNAUDITED FINANCIAL STATEMENTS FOR THREE MONTHS ENDED MARCH 31, 2017

Recommendation: Receive and file.

C-7 NEW YORK STATE COMMON RETIREMENT FUND'S SCANDAL – LESSONS FOR OCERS (FUTURE CONSIDERATION BY AUDIT COMMITTEE)

Recommendation: Receive and file.

C-8 DIRECTIVE TO REVIEW OCERS INVESTMENT FEE REPORT

Recommendation: Receive and file.

C-9 BUSINESS CONTINUITY AND DISASTER RECOVERY PLAN UPDATE

Recommendation: Receive and file.

C-10 GOVERNANCE COMMITTEE OUTCOMES FROM APRIL 5, 2017 MEETING

Recommendation:
The Governance Committee recommends that the Board of Retirement adopt:
(1) The Board of Retirement Charter, with revisions as approved by the Committee;
(2) The Governance Committee Charter, with non-substantive revisions as approved by the Committee;
(3) The SACRS Voting Authority Policy, with revisions as approved by the Committee;
(4) The Communications Policy, with revisions as approved by the Committee; and
(5) The Public Records Request Policy, with revisions as approved by the Committee.

C-11 TRAVEL REPORT – 2017 PUBLIC RETIREMENT INFORMATION SYSTEM MANAGEMENT (PRISM)

Recommendation: Receive and file.

C-12 BOARD COMMUNICATIONS

Recommendation: Receive and file.

C-13 LEGISLATIVE UPDATE

Recommendation: Receive and file.

*** * * * * * END OF CONSENT AGENDA * * * * * * ***

INDIVIDUAL ITEMS AGENDA

I-1 INDIVIDUAL ACTION ON ANY ITEM TRAILED FROM THE CONSENT AGENDA

C-7

Mr. Packard pulled item C-7 and asked Mr. James to give an update on what occurred at the New York State Common Retirement Fund and review OCERS controls and recommend any additional controls that may be needed.

Mr. James briefly discussed the scandal that occurred in New York and discussed how this risk cannot occur at OCERS as OCERS has numerous policies and procedures in place to prevent such occurrence.

C-8
Mr. Ball pulled item C-8 and asked the Board members to pay particular attention to the new legislative directive regarding fee reporting.

C-9
Mr. Eley pulled item C-9 and asked Ms. Sadoski to give an update on the Cloud security.

Ms. Sadoski discussed the different secured sites.

Mr. Ball asked to bring this item back as an I-item at the June 12, 2017 Regular Board Meeting and address Mr. Eley's questions.

Mr. Ball also asked to bring Cyber Security back as an I-item in the June 12, 2017 Regular Board Meeting.

C-12
Mr. Baldwin pulled item C-12 and wanted to make sure the Board members read "Vermont Pension Investment Committee Climate Risk Divestment Discussion" an article from the Board Communication document.

C-13
Mr. Ball pulled item C-13 to bring to the board's attention an article regarding the prepayment discount and Senator Moorlach comments with respect to the amount of money that could be saved.

Following discussion, a **motion** was made by Mr. Baldwin, **seconded** by Mr. Lindholm to receive and file the balance of the consent calendar.

The motion carried **unanimously**.

I-2 AOCDS POST MANDATORY TRAINING BENEFIT CORRECTION

Presentation by Steve Delaney, Chief Executive Officer, OCERS; and Suzanne Jenike, Assistant Chief Executive Officer External Operations, OCERS

Recommendation: Take appropriate action.

Mr. Delaney and Ms. Fairley presented the AOCDS Post Mandatory Training Benefit Correction.

Ms. Fairley apologized for this error. She gave an overview of how this error was discovered. Out of 800+ retirees, 140 benefits were overstated and 71 benefits were understated. This was an error in recordkeeping.

Mr. Delaney stated that there wasn't a written policy regarding POST mandatory training but that would be remedied. He explained how Ms. Jenike found this error and brought it to management's attention.

Ms. Freidenrich asked why these errors were not revealed during the recent V3 conversion or during audits.

Mr. Delaney stated that the V3 program was not configured to calculate what was considered a manual item. Also, audits samples are randomly selected and the accounts that were selected did not contain this error. Moving forward, there will be a process in place to not have this error occur in the future.

Ms. Fairley stated that OCERS management had discussions with the Sheriff Department's Human Resources staff regarding payroll coding and the Sheriff Department will soon change their payroll process to ensure better controls on their end.

Mr. Ball directed staff to come back to the Board at a later time and address whether additional V3 changes are needed.

Ms. Ratto spoke about the different options for overpayment and underpayment corrections that will come to the Board at the June 12, 2017 Regular Board meeting.

Mr. Hilton asked Mr. Leiderman to explain the 37 Act and mandatory overtime and pensionable overtime process and the difference between the two.

Mr. Leiderman stated that it's best to look at the MOU and he gave many examples of different positions within the Sheriff's department that required overtime hours.

Mr. Delaney stated that staff will be recommending the Board leave the prior overpaid amount with the County of Orange and regarding underpayments, staff supports paying impacted members in full plus 3% interest. He also added that staff is recommending an effective date of July 1, 2017 for benefit correction.

The Board recessed for break: 10:04am
The Board reconvened from break: 10:14am

Linda Halligan, AOCDS representative read two letters from members in opposition to the repayment. She stated that the members should not be held responsible for this error.

Joe McClintock spoke about the effects and ramifications for these mistakes and asked for accountability for these mistakes. He asked the Board to not request a repayment of any overage from retired members.

Herbert Sigmund, member of the public, representative for the retirees, received a lot of calls regarding this issue. He would like to know who determined this and be more specific on the 48 hours. He wants OCERS to take accountability and not consider repayment with interest. He would like to know if individual audits can be done as this has caused a lot of hardship.

Mr. Delaney stated that this item will be brought back next month and staff will bring recommendations to the Board.

Following discussion, a **motion** was made by Mr. Packard, **seconded** by Mr. Gilbert to receive and file the AOCDS Post Mandatory Training Benefit Correction.

The motion carried **unanimously**.

I-3 PRELIMINARY DECEMBER 31, 2016 ACTUARIAL VALUATION
Presentation by Paul Angelo, Segal Consulting

Recommendation: Receive and file.

Mr. Angelo presented the Preliminary December 31, 2016 Actuarial Valuation.

Ms. Freidenrich asked why there was a decrease in service credits.

Ms. Fairley explained how this change occurred from Pension Gold to V3.

Following discussion, a **motion** was made by Mr. Packard, **seconded** by Mr. Hilton to receive and file the Preliminary December 31, 2016 Actuarial Valuation.

The motion carried **unanimously**.

The Board recessed for break: 11:29am
The Board reconvened from break: 11:33am

I-4 THE TRIENNIAL REVIEW OF ACTUARIAL ASSUMPTIONS – AN OVERVIEW
Presentation by Alan Milligan, Former CalPERS Chief Actuary

Recommendation: Receive and file.

Mr. Alan Milligan presented an overview of the Triennial Review of Actuarial Assumptions.

Following discussion, a **motion** was made by Mr. Packard, **seconded** by Mr. Lindholm to receive and file the Triennial Review of Actuarial Assumptions – An Overview.

The motion carried **unanimously**.

The Board recessed for lunch: 12:06pm
The Board reconvened from lunch: 12:47pm

I-5 ROLE OF AUDIT COMMITTEE IN SELECTING EXTERNAL AUDITORS AND PROPOSED REVISIONS TO AUDIT COMMITTEE CHARTER
Presentation by Gina Ratto, Chief Legal Officer, OCERS

Recommendation: Staff recommends that the Board of Retirement adopt revisions to the Audit Committee Charter to clarify the role of the Audit Committee in the selection and appointment of the actuarial auditor and financial auditor.

Mr. Packard spoke on behalf of Ms. Ratto in favor of the changes to the Audit Committee Charter.

Following discussion, a **motion** was made by Mr. Hilton, **seconded** by Mr. Packard to adopt revisions to the Audit Committee Charter to clarify the role of the Audit Committee in the selection and appointment of the actuarial auditor and financial auditor.

The motion carried **unanimously**.

I-6 SACRS PROPOSED BY-LAWS AMENDMENT TO ADD MEMBERSHIP CODE OF CONDUCT AND DIRECTION TO VOTING DELEGATE
Presentation by Gina Ratto, Chief Legal Officer, OCERS

Recommendation: On the SACRS By-Laws Committee's proposed amendment to the SACRS By-Laws, which would add a Membership Code of Conduct, and which will be presented to the SACRS membership for a vote at the SACRS business meeting on May 19, 2017, direct the OCERS voting delegate and alternate delegates to vote "no unless amended."

Mr. Hilton asked Mr. Delaney to send a letter to Mr. McAllister of SACRS to address OCERS concerns.

A **motion** was made by Mr. Ball, **seconded** by Mr. Dewane to authorize Mr. Hilton to be the OCERS delegate at the SACRS conference and to use his discretion on the vote related to the bylaw amendment.

The motion carried **unanimously**.

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

DISABILITY APPLICATIONS/MEMBER APPEALS AGENDA

1:00 P.M.

NOTE: WHEN CONSIDERING DISABILITY RETIREMENT APPLICATIONS, THE BOARD MAY FIND IT NECESSARY TO DISCUSS MATTERS RELATING TO THE EVALUATION OF THE WORK PERFORMANCE OF AN EMPLOYEE WHO HAS APPLIED FOR DISABILITY RETIREMENT, OR DISCUSS COMPLAINTS OR CHARGES MADE AGAINST SUCH EMPLOYEE. IF THIS OCCURS, THE BOARD MAY ADJOURN TO A CLOSED SESSION TO DISCUSS SUCH MATTERS PURSUANT TO GOVERNMENT CODE SECTION 54957, UNLESS THE EMPLOYEE REQUESTS THAT THE DISCUSSION BE IN PUBLIC.

Megan Cortez, Disability Coordinator, presented D-1 to the Board along with the staff recommendation.

D-1: Darren Brown
Firefighter/Paramedic, Orange County Fire Authority
Date of employee filed application for service and non-service connected disability retirement: 04/13/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF APRIL 13, 2016. (SAFETY MEMBER) (D-1)

Following discussion, a **motion** was made by Mr. Gilbert, **seconded** by Mr. Dewane to grant service connected disability retirement with an effective date of APRIL 13, 2016. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Gilbert			
Mr. Lindholm			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-2 to the Board along with the staff recommendation.

D-2: Dallas Ferrell
Weapons Instructor, Orange County Sheriff's Department
Date of employee filed application for service and non-service* connected disability retirement: 09/24/2015
Date of employer filed application for service and non-service* connected disability retirement: 01/20/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF SEPTEMBER 24, 2015. (SAFETY MEMBER) (D-2)

Following discussion, a **motion** was made by Mr. Packard, **seconded** by Mr. Baldwin to grant service connected disability retirement with an effective date of September 24, 2015. The motion carried **9-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Gilbert			
Mr. Lindholm			
Mr. Hilton			

Chair Ball

Megan Cortez, Disability Coordinator, presented D-3 to the Board along with the staff recommendation.

D-3: Janell Garza
Comprehensive Care Nurse II, Orange County Social Services Agency
Date of employee filed application for non-service connected disability retirement: 03/16/2016

STAFF RECOMMENDATION IS TO GRANT NON-SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF NOVEMBER 4, 2011 (GENERAL MEMBER) (D-3)

Following discussion, a **motion** was made by Mr. Packard, **seconded** by Mr. Dewane to grant service connected disability retirement with an effective date of November 4, 2011. The motion carried **9-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Gilbert			
Mr. Lindholm			
Mr. Hilton			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-4 to the Board along with the staff recommendation.

D-4: Keith Godfrey
Sergeant, Orange County Sheriff's Department
Date of employee filed application for service connected disability retirement: 03/16/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF MARCH 7, 2014. (SAFETY MEMBER) (D-4)

Following discussion, a **motion** was made by Mr. Hilton, **seconded** by Mr. Packard to grant service connected disability retirement with an effective date of March 7, 2014. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Lindholm			
Mr. Hilton			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-5 to the Board along with the staff recommendation.

D-5: Tommy Harris

Fire Apparatus Engineer, Orange County Fire Authority
Date of employee filed application for service connected disability retirement: 03/14/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF MARCH 30, 2016. (SAFETY MEMBER) (D-5)

Following discussion, a **motion** was made by Mr. Gilbert, **seconded** by Mr. Packard to grant service connected disability retirement with an effective date of March 30, 2016. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Lindholm			
Mr. Gilbert			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-6 to the Board along with the staff recommendation.

D-6: Julie Pearson

Fire Apparatus Engineer, Orange County Fire Authority
Date of employee filed application for service connected disability retirement: 04/28/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF APRIL 28, 2016. (SAFETY MEMBER) (D-6)

Following discussion, a **motion** was made by Mr. Gilbert, **seconded** by Mr. Packard to grant service connected disability retirement with an effective date of April 28, 2016. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Lindholm			
Mr. Gilbert			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-7 to the Board along with the staff recommendation.

D-7: Harry Trattner

Firefighter/Paramedic, Orange County Fire Authority
Date of employee filed application for service connected disability retirement: 04/18/2016

STAFF RECOMMENDATION IS TO GRANT SERVICE CONNECTED DISABILITY RETIREMENT WITH AN EFFECTIVE DATE OF APRIL 18, 2016. (SAFETY MEMBER) (D-7)

Ms. Cortez stated that there was a change in the effective date. It is January 20, 2017 not April 18, 2016, as stated in the recommendation.

Following discussion, a **motion** was made by Mr. Gilbert, **seconded** by Mr. Packard to grant service connected disability retirement with an effective date of January 20, 2017. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Lindholm			
Mr. Gilbert			
Chair Ball			

D-8: Teresa Geldmacher

Senior Social Worker, Orange County Social Service Agency
Date of employee filed application for service connected disability retirement: 11/03/2015

STAFF RECOMMENDATION IS TO DENY SERVICE CONNECTED DISABILITY RETIREMENT DUE TO INSUFFICIENT EVIDENCE OF PERMANENT INCAPACITY. (GENERAL MEMBER) (D-8)

This item has been pulled from the agenda.

Megan Cortez, Disability Coordinator, presented D-9 to the Board along with the staff recommendation.

D-9: Max Chance

Sergeant, Orange County Sheriff's Department
Date of employee application for service and non-service connected disability retirement: 09/20/2012

STAFF RECOMMENDATION IS TO DISMISS WITHOUT PREJUDICE THE APPLICANT'S APPEAL OF THE DENIAL OF HIS APPLICATION FOR SERVICE AND NON-SERVICE CONNECTED DISABILITY RETIREMENT. (SAFETY MEMBER) (D-9)

Following discussion, a **motion** was made by Mr. Hilton, **seconded** by Mr. Packard, to dismiss without prejudice the applicant's appeal of the denial of his application for service and non-service connected disability retirement. The motion carried **8-0** with voting as follows:

AYES	NAYS	ABSTAIN	ABSENT
Mr. Dewane			Mr. Prevatt
Mr. Eley			
Ms. Freidenrich			
Mr. Packard			
Mr. Baldwin			
Mr. Lindholm			
Mr. Hilton			
Chair Ball			

Megan Cortez, Disability Coordinator, presented D-10 to the Board along with the staff recommendation.

D-10: Olivia Garcia
Records Technician, Orange County Sheriff's Department
Date of employee filed application for service and non-service connected disability retirement: 12/05/2012

STAFF RECOMMENDATION IS TO ADOPT THE FINDINGS AND RECOMMENDATIONS OF THE HEARING OFFICER AND DENY APPLICANT'S APPLICATION FOR SERVICE AND NON-SERVICE CONNECTED DISABILITY RETIREMENT. (GENERAL MEMBER) (D-10)

This item has been pulled from the agenda.

PUBLIC COMMENTS: At this time members of the public may address the Board of Retirement regarding any items within the subject matter jurisdiction of the Board, provided that no action may be taken on non-agendized items unless authorized by law.

N/A

BOARD MEMBER COMMENTS

N/A

CHIEF EXECUTIVE OFFICER/STAFF COMMENTS

Mr. Delaney announced Molly Murphy as the new OCERS CIO. Her first day at OCERS will be June 23, 2017. OCERS will put out a press release on May 16, 2017. Mr. Delaney thanked Cynthia Hockless for her help in the recruitment process.

COUNSEL COMMENTS

N/A

****

CLOSED SESSION ITEMS

E-1 CONFERENCE REGARDING SIGNIFICANT EXPOSURE TO LITIGATION (ONE MATTER) (GOVERNMENT CODE SECTION 54956.9)
Adjourn pursuant to Government Code Section 54956.9(d)(2)

Recommendation: Take appropriate action.

No closed session held.

E-2 PUBLIC EMPLOYMENT (GOVERNMENT CODE SECTION 54957(b))
Title: Chief Investment Officer
Adjourn pursuant to Government Code section 54957(b) to consider the employment of a Chief Investment Officer

Recommendation: Take appropriate action.

No closed session held.

E-3 CONFERENCE REGARDING LITIGATION THAT HAS BEEN INITIATED (GOVERNMENT CODE SECTION 54956.9(d)(1)) O.C. Department of Education v. OCERS, CA Superior Court, Orange County, (Case No. 30-2016-00836897)
Adjourn pursuant to Government Code Section 54956.9(d)(1).

Recommendation: Take appropriate action.

No closed session held.

ADJOURNMENT: (IN MEMORY OF THE ACTIVE MEMBERS, RETIRED MEMBERS, AND SURVIVING SPOUSES WHO PASSED AWAY THIS PAST MONTH)

Active Members
Cruz, Lucille

Retired Members
Aalbu, Roy
Ayon, Rebecca
Buell, William
Fely, Linda
Howk, Claire
Icenogle, Tommie
Lawhead, Stuart
Lewis, John
Moore, Alphonso

Nickens, Margaret
Pacurar, Victor
Rivera, Felix
Roberts, Russell
Roy, Gerda
Sadler, Charles
Savala, Efrain
Schram, Lawrence
Scoles, Don
Sidebotham, James
Woodall, James
Rowe, Brenda

Surviving Spouses
Armstrong, Albert
Dalen, Mary Jane
Dean, Lola
Johnson, Barbara
Neal, Seiko
Sanders, Mildred
White, Clara

There being no further business to bring before the Board, the meeting adjourned at 1:20p.m.

Submitted by:	Approved by:
______________________	______________________
Steve Delaney	David Ball
Secretary to the Board	Chairman

C-3

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 12, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **CEO FUTURE AGENDAS AND 2017 OCERS BOARD WORK PLAN**

Recommendation

Receive and file.

AGENDA TOPICS FOR THE OCERS BOARD OF RETIREMENT

JULY

2016 Actuarial Experience Study (Economic and Demographic)
Travel and Training Expense – Final
Strategic Planning Agenda – Final
Early Payment of Contributions for fiscal year 2018-2019

AUGUST

Review of Triennial Study Report
OCERS by the Numbers
Evolution of OCERS UAAL
Employer/Employee Contribution Matrix
Member Services Annual Report
Disability Program Review
OCERS Vision and Values

SEPTEMBER

Strategic Planning Workshop

Submitted by:

Steve Delaney
Chief Executive Officer

OCERS RETIREMENT BOARD - 2017 Work Plan

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep (Offsite)	Oct	Nov	Dec
System Oversight		STAR COLA Posting **(I)**	Approve 2017 STAR COLA **(A)**		Review Budget to Actuals Financial Report **(I)**	Mid-Year Review of 2017 Business Plan Progress **(I)**	Approve Early Payment Rates for Fiscal Year 2017-18 **(A)**	Review Budget to Actuals Financial Report **(I)**	Strategic Planning Workshop **(I)**	Overview of 2017 Administrative Budget and Investment (Workshop) **(I)**	Review Budget to Actuals Financial Report **(I)**	CEO Compensation **(A)**
		Approve 2017 COLA **(A)**	Quarterly 2016-2018 Strategic Plan Review **(A)**		Receive Preliminary December 31, 2016 Actuarial Valuation& Funded Status of OCERS **(A)**	Approve December 31, 2016 Actuarial Valuation & Funded Status of OCERS **(A)**	Actuarial Experience Study **(A)**	Receive OCERS by the Numbers **(I)**		Approve 2017-2019 Strategic Plan **(A)**	Approve 2018 Administrative (Operating) Budget **(A)**	
			Review 2017 Administrative (Operating) Budget **(A)**			Approve 2016 CAFR **(A)**		Receive Evolution of the UAAL **(I)**		Approve 2017 Business Plan **(A)**	Annual CEO Performance Review **(A)**	
						Quarterly 2016-2018 Strategic Plan Review **(A)**		Quarterly CEO Performance Review **(A)**				
						Approve Financial Statements **(A)**						
Board Governance	Board Self-Review Process 2017 **(I)**	Board Self-Review Delivered **(A)**		Brown Act Training **(I)**							Adopt 2017 Board Meeting Calendar **(A)**	Adopt Annual Work Plan for 2017 **(A)**
				Conflict of Interest Training **(I)**								Vice-Chair Election **(A)**
												Appointment of Committee Members & Committee Chairs / Vice Chairs **(A)**
Regulation / Policies			Quarterly CEO Performance Review **(I)**			Quarterly CEO Performance Review **(I)**	Membership Policy **(A)**	Review Staff Retention Program **(I)**		Membership Policy **(A)**		
Compliance		State of OCERS **(A)**		Form 700 and OCERS Annual Disclosure Due **(A)**		Receive Financial Audit **(I)**					Overview of 2017 Training Courses **(I)**	

(A) = Action **(I) = Information**

C-4

Memorandum

DATE: June 1, 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

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 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:

- 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:

"(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.

(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.

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

C-5

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 2, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **DIRECTIVE TO REVIEW NEW YORK STATE COMMON RETIREMENT FUND'S SCANDAL**

Recommendation

Receive and file.

Background/Discussion

At the request of Mr. David Ball, Chair of the OCERS Board of Retirement, the OCERS Board's Audit Committee will receive a report from Mr. David James, OCERS' Internal Auditor, on a recent bribery scandal that took place at New York State Common Retirement Fund and reported on in the national press. The Chair's request is that the Audit Committee consider the circumstances of what occurred in New York, and determine if there are lessons to be learned by OCERS in order to avoid a similar situation.

The Audit Committee will receive an informational presentation on this topic when they meet on Friday, June 9. With that meeting occurring so close to the next OCERS Board meeting OCERS staff will not be able to include a summary of committee outcomes and directives with this June 12 Board meeting material. I anticipate that a verbal update will be provided on June 12, but a full report on the Audit Committee's actions will be included in the July 17 OCERS Board Meeting agenda.

Submitted by:

Steve Delaney

Chief Executive Officer

C-6

Memorandum

DATE: June 2, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **2017 STRATEGIC PLANNING WORKSHOP – PROPOSED AGENDA TOPICS**

Recommendation

Receive and file.

Background/Discussion

It's time to begin planning for OCERS' annual Strategic Planning Workshop scheduled for Wednesday, September 13 and Thursday, September 14, 2017, to be held at the Double Tree – John Wayne Airport.

The workshop has multiple goals:

- Combine both education and discussion on topics pertinent to operations and investments over the next several years. Seek consensus on Board and agency priorities for the coming calendar year.
- Focus is generally on operational issues as they relate to the agency's strategic objectives, and their funding. Investment operations and strategic goals will be covered as well.
- Presentations and discussions provide the opportunity for sharing of ideas among OCERS' trustees, staff and consultants.

Though held off-site, this is a public meeting, and has consistently had an audience of a size similar to regular OCERS Board meetings.

<u>Possible Agenda Items:</u>

The annual Strategic Planning workshop is the first occasion for the Board to review staff's proposals for the coming year's business plan goals, as well as any updates to the multi-year strategic plan.

Staff is working on crafting an agenda with a suggested theme of "*<u>Visioning the Future</u>*", as a nod to our ongoing work on OCERS' vision and values, I am suggesting the Board consider the following topics:

Memorandum

For general administration issues:

1. STAKEHOLDER COMMENTS

   For the past nine years we have started the day's sessions with presentations from both plan sponsors and labor representatives. This allows the Board of Trustees to hear directly from our stakeholders regarding the economic and life challenges being faced by employers and members in relation to the retirement benefits this Board administers.

2. TRIENNIAL REVIEW OF ACTUARIAL ASSUMPTIONS

   Paul Angelo of Segal has indicated that he needs part of this year's workshop to complete the 2017 Triennial review of Actuarial Assumptions.

3. OCFA PLAN FOR EARLY UAAL PAY OFF

   Ms. Lori Zeller of the Orange County Fire Authority recently shared with the OCERS Chair and Vice-Chair details of their multi-year plan for early payment of the OCFA UAAL. Impressed with the materials, she has agreed to the Chair's request that she present to the full Board at this year's workshop.

For Investment issues:

4. OREGON PERS INVESTMENT PROGRAM

   John Skjervem, CIO of the Oregon State Treasury (and investing approximately $60 billion in the Oregon Public Employees Retirement System fund) recently made headlines concerning changes to his program with a goal of pulling part of their investment work in-house. Mr. Skjervem has accepted my invitation to come to the workshop and share with us an outline of what Oregon is looking to do, and the impact that has on staffing and governance.

5. JIM MEKETA AND THE WORLD WE INVEST IN

   Still working to confirm, I believe Mr. Meketa will be present to provide a wide ranging overview of what he sees happening in the world, and opportunities we may wish to investigate further.

6. A FUTURE VISION FOR THE OCERS INVESTMENT PROGRAM

   Our new CIO will have been with us for nearly three months by the time the workshop rolls around, so we plan to give Ms. Molly Murphy a large block of time to outline the strengths and weaknesses she sees in the OCERS investment program, and then provide us with her early vision of where the portfolio may be going in the near as well as distant future.

Memorandum

Prior Agenda Items

Trustees may wish to recommend other topics. As a reminder of the kinds of issues that have been considered at prior Strategic Planning meetings, I've included a sampling of topics that have been discussed over the past decade or more:

Ancillary Benefits/Excess Earnings Policy

Review the history and current status of excess earnings policy and uses, and discuss future courses of action.

Employer Wellness and Hiring Screening Efforts

Enhance understanding of efforts to manage the risks of future disabilities, through presentations by plan sponsor representatives.

Disabilities – Review of Standards that Apply and Latitude Afforded to the Board

Review and discuss the standards that apply, including recent case law, focusing on stress related claims, rehabilitation and accommodation issues.

Corporate Governance Issues

Consider what issues OCERS may wish to pursue and what methods OCERS may want to adopt in the corporate governance arena.

Contribution Rate Stability

Discuss the tools currently in use, and prospective tools, to maintain relatively stable employer contribution rates. Provide foundation for future decisions.

OCERS Reserve Policies

The details behind how OCERS uses its accounting reserves, especially when distributing earnings to member accounts can be complicated. A review of the current process would assist in crafting an official Board policy guiding the use of those reserves.

Please let me know if there is a topic that you would like explored at this year's workshop and I will work with the Board Chair and Investment Committee Chair to give each request full consideration. I will return in July with a final proposed agenda for the annual Strategic Planning Workshop for the Board's final review and approval.

Memorandum

Submitted by:

Steve Delaney
Chief Executive Officer

C-7

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 2, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **2017 – 2019 STRATEGIC PLAN – QUARTERLY REVIEW**

Recommendation

Receive and file.

Background

Since 2009 OCERS has been working with and modifying the use of a multi-year strategic plan. In 2011 the Board requested that the OCERS Strategic Plan document be reviewed on a quarterly basis.

No changes or modifications have been made to the version presented here for your review.

Discussion

Regarding the issue of POST Mandatory Overtime, and the erroneous reporting that crept in to some retirement benefit calculations due in part to a lack of written procedures – in my comments to the Board on May 15, I indicated that this area of weakness had previously been identified and addressed in the Strategic Plan since 2016. Section 2, Objective A, sub-bullet 3 states that one strategic goal is that "Details of benefit qualification standards and calculations clearly documented in OCERS Administrative Procedures (OAP)." While we have subsequently looked at a number of other retirement benefit components to determine that we have no similar errors lurking in the wings, this strategic initiative remains in effect for the entire agency as it is important that we get all of these issues appropriately documented to ensure staff has the tools necessary to attain the primary goal of Section 2 Objective A – "benefits paid are accurate".

Please note as indicated in my February report, the OCERS management team will work later this year on replacing the current benchmark standards that had been crafted in-house with standards derived from the CEM Benchmarking report received earlier this year, following OCERS four year hiatus from participation in CEM.

Submitted by:

Steve Delaney
Chief Executive Officer

STRATEGIC PLAN

FY 2017-2019

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Mission Statement

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

OCERS GOALS - OBJECTIVES

1. **Excellent Customer Service**

   providing

2. **Timely & Accurate Benefits**

   based on

3. **Secure and Reliable Data**

   funded by

4. **Prudently Managed Investments**

   guided by

5. **Professional Plan Administration**

EXCELLENT CUSTOMER SERVICE

1.

Benchmark 1

95% of members surveyed are satisfied with the customer service received.

Benchmark 2

No more than 5% of benefit initiations require unplanned recalculations.

Objective A – **Trained and professional staff.**

- Explore staff training to maintain industry- accepted professional standards, such as provided by the International Foundation of Employee Benefits Plans.
- Training program for staff with monthly sessions that guide to outcomes. (Benchmark 1)
- Develop comprehensive documentation of all processes, procedures and policies and make accessible to all staff. (Benchmark 2)
- Develop appropriate performance metrics benchmarking peer comparisons.

Objective B – **Move member inquiries from phone to web whenever possible.**

- Automatically populate electronic forms with system data in accordance with acceptable security controls.
- On-line input of retiree change of address or direct deposit information, in accordance with acceptable security controls.
- Create and launch education program in use of OCERS web site.

Objective C – **Clear and timely communication with members/stakeholders.**

- Capture and monitor member/stakeholder feedback at all touch points and create management reports.
- Involve stakeholder groups in delivery of communications to members.
- Create call center for effective call management with ability to measure service.

TIMELY and ACCURATE BENEFITS

2.

Objective A – **Benefits paid are accurate.**

- Formalize effective use of Internal Audits to assist with test of agency processes.
- Develop policy for deminimus adjustments.
- Details of benefit qualification standards and calculations clearly documented in OCERS Administrative Procedures (OAP)

Objective B – **Service Retired Members are paid timely, without break in cash flow.**

- Explore methods for payment within one month of retirement date.

Objective C – **Streamlined Disability Process**

- Regular review of disability process and staffing in order to implement process improvements that will streamline the disability benefit application process leading to accepted service benchmarks. (Benchmark 3)

<u>Benchmark 3</u>

90% of Disability claims to the Board within four months of a complete medical profile.

SECURE and RELIABLE DATA

3.

Objective A – **Move to next generation pension administration software.**

- All procedures documented to ensure continuity while providing foundation to staff.
- Data integrity review.
- Post Go-Live determine V3 impact on general administration and make necessary adjustments.

Objective B – **Ensure security of data.**

- Perform mock review of OCERS internal control system per SSAE-16 (formerly SAS 70) standards to determine status of agency internal controls. Enhance periodic vulnerability assessments on critical assets.
- Deploy advanced security technologies and ensure appropriate procedures while integrating security into our investment and business processes.
- Provide security and privacy awareness training to sensitize employees to potential security and privacy issues within their particular functional areas on an annual basis.
- Mitigate risk of fraud in OCERS Investment transactions.

EFFICIENT INVESTMENT PROGRAM

4.

Objective A – **Investment program aims to achieve and maintain a fully funded status with regard to the actuarial liability of the system.**

- Assure alignment of intermediate-term and long-term funding policies with the OCERS portfolio's investment opportunity frontiers.
- Explore investment strategies to improve or protect the system's funding status at market extremes.
- Develop and implement strategies to dynamically adjust the portfolio for business cycle risks and opportunities.
- In reviewing asset allocation consider appropriate movements to contractual income in anticipation of cash flow negative status.

Objective B – **Achieve investment return objective with appropriate level of risk.**

- Ensure adoption of appropriate benchmarks for each asset class and total fund.
- Regularly measure and evaluate investment and performance risks at the manager, asset class and total fund level.
- Annually consider timely portfolio enhancement and risk mitigation strategies.

Objective C – **Board enabled to provide clear policy guidance with timely staff implementation.**

- Coordinate Board training classes and conferences into cohesive goal-centered training curriculum.
- Conduct semi-annual Board investment education sessions.

- Periodic review and communication to the Board of investment –related training and courses.
- Continued improvement and standardization of investment reports.
- Annual/biennial review of portfolio decision-making delegation and procedures.

Objective D – **Establish updated and written procedures to ensure continuity and best practices for investments.**

- Ensure due diligence and risk management activities meet best practice standards.
- Establish sound due diligence processes and clear accountability for alternative investments.
- Review, update and document all investment procedures.
- Take a leadership role for best investment practices statewide and nationally.

Objective E – **Ensure optimal investment division staffing and resources.**

- Biennially review insourcing, outsourcing and other strategic management strategies.
- Develop personalized training strategies for investment staff.
- Explore incentive and retention compensation.

Objective F – **Ensure efficiency and transparency in investment management.**

- Seek optimal cost structures throughout the investment program, with special focus on cost containment strategies as the portfolio becomes increasingly diversified with non-traditional asset classes and strategies.

- Explore public sector partnerships and opportunities to share or combine management and oversight resources with other public plans.

Objective G - **Identify viable OCERS-based defined contribution investment options. (“unitization”)**

- Identify potential qualified product providers or advisors with feasible strategies.
- Collaborate with County DC committee and staff on product design options.

5.

Objective A – **Good governance model and practices clearly delineate duties and responsibilities of Board members and OCERS staff.**

- Review of Board Governance Policies and processes in 2018.

Objective B – **Stable and sustainable contribution rates.**

- Monitor system's funding policy in order to maintain fiscal responsibility and enhance contribution rate stability.
- Outreach to non-participating Orange County employers, allowing opportunity to join OCERS and build Fund base.

Objective C – **Maintain reasonable administrative costs.**

- Implement continuous improvement processes to ensure organizational structure is most efficient model.
- Research Board actions, policies and directives that may create cost for the plan, such as the annual crediting of interest to member accounts.
- Review divisional budgets to ensure cost effectiveness. (Benchmark 4)

Benchmark 4

Annual dollar per active and annuitant figure grows by no more than CPI.

Objective D – **Implement enterprise risk management.**

- Regular review of agency Risk Assessment matrix.
- All divisions to monitor and report on operational and strategic risks, with identification of internal controls.
- Internal Audit to test controls to ensure effectiveness.

Objective E – **Maintain effective Business Continuity Plan.**

- Plan must be clearly communicated and understood by management staff.
- Plan must be routinely reviewed to ensure applicable and effective for current plan administration.

Objective F – **Ensure agency is prepared for legislative impacts.**

- Develop outreach program to ensure agency input to stakeholders considering legislation that would impact the system.

Objective G – **Maintain OCERS Tax Status**

- Work with tax counsel to maintain OCERS' favorable tax status by continuing to engage in the determination letter process and implementing IRS plan changes.

LOOKING AHEAD 10 YEARS

6.

Development A – **Fund reaches $25 billion.**

Address by developing an investment team that meets the skill set needed to manage the anticipated Portfolio

Development B – **Fund moves from cash flow positive to cash flow negative.**

Address through defensive asset allocation.

Development C – **Fund has more retired members than active members.**

Address through appropriate actuarial assumptions

Development D – **Last of "baby boomer" staff exiting agency.**

Address with Succession Plan

Development E – **End of V3 useful life.**

Address with advance planning, focused on appropriate use of IT team.

Development F – **2020 75-Year OCERS Anniversary.**

Address with plan and budget in 2019

C-8

Memorandum

DATE: May 24, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **QUIET PERIOD – NON-INVESTMENT CONTRACTS**

Recommendation

Receive and file.

Background/Discussion – Options

1. Quiet Period Policy Guidelines – Named Service Providers

The following guidelines established by the Quiet Period Policy, section 3.c, will govern a search process for Named Service Providers:

"All Board and Investment Committee Members, and staff not directly involved in the search process, shall refrain from communicating with Service Provider candidates regarding any product or service related to the search offered by the candidate throughout the quiet period,…"

2. Quiet Period Guidelines – Non-Named Service Providers

There are no policy guidelines regarding a quiet period for non-Named Service Providers. However, the following language is included in all distributed RFP's:

"From the date of issuance of this RFP until the selection of one or more respondents is completed and announced, respondents are not permitted to communicate with any OCERS staff member or Board Members regarding this procurement, except through the Point of Contact named herein. Respondents violating the communications prohibition may be disqualified at OCERS' discretion. Respondents having current business with OCERS must limit their communications to the subject of such business."

Distributed RFP's

The RFP's noted below are currently outstanding and are subject to the quiet period until such time as a contract(s) is finalized.

- An RFP for Actuarial Auditor services was sent out March 1st. Presenting two (2) finalists to the Audit Committee on June 9th for selection decision.
- An RFP for Securities Litigation Monitoring services was distributed March 15th. Received 26 responses. Currently evaluating proposals. Narrowed candidates to final seven (7). To send follow-up questions and check references.

Memorandum

Submitted by:

Steve Delaney
Chief Executive Officer

C-9

Memorandum

DATE: June 12, 2017

TO: Members of the Board of Retirement

FROM: Gina M. Ratto, General Counsel

SUBJECT: **LEGISLATIVE UPDATE**

Recommendation

Receive and file.

Background/Discussion

The California Legislature reconvened on January 4, 2017 to commence the first year of the 2017-2018 legislative session. A comprehensive list and description of the bills that staff is monitoring is attached. Below is a brief summary of the bills that may be of greater interest to the Board. **Updates and new additions to the previous report are indicated in underlined, bold text.**

SACRS Support Bills

SACRS is currently supporting two bills:

- **SB 671 (Moorlach)** would make technical amendments to clarify the section of the CERL that permits a county and district to make an advance payment of all or part of the county's or district's estimated annual contributions to the retirement fund (including OCERS); **(STATUS: Passed the Senate; forwarded to the Assembly.)**
- **AB 526 (Cooper)** would make the Sacramento County Employees Retirement System a district under the CERL. **(STATUS: Passed the Assembly; forwarded to the Senate; referred to Committee.)**

Bills That Would Amend the CERL or Other Laws That Apply to OCERS

- **ACA 15 (Brough) – NEWLY ADDED TO REPORT – ACA 15 would prohibit a government employer from enhancing employee pension benefits, as defined, without approval by the voters of the jurisdiction, and would prohibit a government employer from enrolling a new government employee, as defined, in a defined benefit pension plan without approval by the voters of the jurisdiction. The measure also would prohibit a government employer from paying more than 1/2 of the total cost of retirement benefits, as defined, for new government employees without approval by the voters of the jurisdiction. The measure would prohibit retirement boards from imposing charges or other financial conditions on a government employer that proposes to close a defined benefit pension plan to new members unless the voters or the sponsoring government employer approve those charges or conditions. The measure would require challenges to the legality of actions taken by a government employer or a retirement board to comply with its provisions to be brought in state or federal courts.**

The measure would prohibit its provisions from being interpreted to modify or limit disability benefits provided for government employees or death benefits for families of government employees, even if provided as part of a retirement benefits system, or from requiring voter approval of disability or death benefits. The measure would prescribe various requirements and prohibitions regarding its interpretation and the effect of any other competing measures, among other things. (STATUS: In Committee.)

- **AB 283 (Cooper)** would amend the CERL to require, for purposes of determining permanent incapacity of certain peace officers, that those members be evaluated by the existing procedure established by the retirement system to determine if they can perform all of the usual and customary duties of a peace officer. **(STATUS: Passed the Assembly; forwarded to the Senate; referred to Committee.)**
- **AB 1310 (Travis Allen)** would require the retirement board of a public retirement system, including county systems under the CERL, to disclose the unfunded liability and healthcare debt of the system on each member statement provided to members of the system. **(STATUS: Died in Committee; will be deleted from future reports.)**
- **SCA 8 (Moorlach)** would amend the State Constitution to permit a government employer to reduce retirement benefits that are based on work not yet performed by an employee regardless of the date that the employee was first hired. **(STATUS: In Committee.)**
- **SCA 10 (Moorlach)** would prohibit a government employer from providing public employees any retirement benefit increase until that increase is approved by a $^2/_3$ vote of the electorate of the applicable jurisdiction and that vote is certified. **(STATUS: In Committee.)**

Other Bills of Interest

- **AB 530 (Cooper)** would expand the jurisdiction of the Public Employment Relations Board to include resolving disputes and statutory duties and rights of persons who are peace officers, as defined. **(STATUS: Passed Committee.)**
- **AB 551 (Levine)** would extend the prohibition of the Political Reform Act, which prevents elected and other local officials, for a period of one year after they leave their positions, from appearing before their former local government agencies for the purpose of influencing administrative or legislative action, to independent contractors of the local government agency. **(STATUS: Passed the Assembly, forwarded to the Senate; referred to Committee.)**
- **AB 1025 (Rubio)** would repeal Government Code section 1099 which currently prohibits a public officer, including an appointed or elected member of a governmental board, from simultaneously hold two public offices that are incompatible. **(STATUS: In Committee.)**
- **AB 1479 (Bonta)** would require state and local agencies to designate a person or office to act as the agency's custodian of records who is responsible for responding to any request made pursuant to the California Public Records Act (CPRA) and any inquiry from the public about a decision by the agency to deny a request for records. It would also authorize a court to assess a civil penalty against the agency in an amount not less than $1,000, nor more than $5,000, for violations of the CPRA. **(STATUS: In Assembly.)**
- **SB 302 (Mendoza)** would clarify existing law to specifically require all property tax revenues of Orange County attributable to a rate imposed for fire protection purposes prior to June 6, 1978 (the effective

date of Proposition 13) to be allocated by Orange County to the Orange County Fire Authority. **(STATUS: In Assembly.)**

Bills that apply to CalPERS and/or CalSTRS Only:

- **AB 679 (Cooley)** would require CalPERS to take a security interest in specific types of collateral of at least 102% to secure CalPERS' securities lending agreements. **(STATUS: In Committee.)**
- **SB 32 (Moorlach)** would create the Citizens' Pension Oversight Committee to serve in an advisory role to the CalPERS and CalSTRS Boards of Administration, and would require the committee to annually review and report to the public the actual pension costs and obligations of CalPERS and CalSTRS. **(STATUS: Failed passage in Committee; reconsideration granted.)**
- **SB 525 (Pan)** would redefine the terms "disability" and "incapacity for performance of duty" as used in the Public Employees Retirement Law to specify that the duration of the disability or incapacity must be expected to last at least 12 consecutive months or result in death. **(STATUS: Passed the Senate; forwarded to the Assembly; referred to Committee.)**
- **SB 560 (Allen)** would require CalPERS and CalSTRS to consider financial climate risk, as defined, in their management of any funds they administer, and to include in their CAFRs the financial climate risks of their investments. **(STATUS: In Committee.)**

Divestment Proposals (CalPERS and CalSTRS Only)

- **AB 20 (Kalra)** would prohibit CalPERS and CalSTRS from investing in companies constructing or funding the construction of the Dakota Access Pipeline. **(STATUS: In Assembly.)**
- **AB 946 (Ting)** would prohibit new investments and require liquidation of existing investments of CalPERS and CalSTRS in border wall construction companies. **(STATUS: In Committee.)**
- **AB 1597 (Nazarian)** would prohibit new investments and require liquidation of existing investments of CalPERS and CalSTRS in investment vehicles issued, owned, controlled or managed by the government of Turkey. **(STATUS: In Assembly.)**

Attachment

Submitted by:

____

Gina M. Ratto
General Counsel

2017-2018 LEGISLATIVE SESSION BILLS OF INTEREST
LEGISLATIVE UPDATE (JUNE 12, 2017) – ATTACHMENT

ACA 15 (Brough) would prohibit a government employer from enhancing employee pension benefits, as defined, without approval by the voters of the jurisdiction, and would prohibit a government employer from enrolling a new government employee, as defined, in a defined benefit pension plan without approval by the voters of the jurisdiction. The measure also would prohibit a government employer from paying more than 1/2 of the total cost of retirement benefits, as defined, for new government employees without approval by the voters of the jurisdiction. The measure would prohibit retirement boards from imposing charges or other financial conditions on a government employer that proposes to close a defined benefit pension plan to new members unless the voters or the sponsoring government employer approve those charges or conditions. The measure would require challenges to the legality of actions taken by a government employer or a retirement board to comply with its provisions to be brought in state or federal courts. The measure would prohibit its provisions from being interpreted to modify or limit disability benefits provided for government employees or death benefits for families of government employees, even if provided as part of a retirement benefits system, or from requiring voter approval of disability or death benefits. The measure would prescribe various requirements and prohibitions regarding its interpretation and the effect of any other competing measures, among other things. **This bill has been added to the June 2017 report.**

AB 20 (Kalra): *This bill applies only to CalPERS and CalSTRS*. This bill would prohibit the boards of administration of CalPERS and CalSTRS on or after January 1, 2018, from making additional investments or renewing investments in a company constructing or funding the construction of the Dakota Access Pipeline, and would require the boards to liquidate their investments in these companies on or before July 1, 2018.

AB 168 (Eggman): Existing law imposes various restrictions on employers with respect to applicants for employment. This bill would prohibit an employer, including state and local government employers, from seeking salary history information about an applicant for employment, except as otherwise provided.

AB 241 (Dababneh): Existing law requires a person or business conducting business in California and any state or local agency, as defined, that owns or licenses computerized data that includes personal information, as defined, to disclose a breach in the security of the data to a resident of California whose unencrypted personal information was, or is reasonably believed to have been, acquired by an unauthorized person in the most expedient time possible and without unreasonable delay, as specified. Existing law requires a person or business, if it was the source of the breach, to offer to provide appropriate identity theft prevention and mitigation services at no cost to the person whose information was or may have been breached if the breach exposed or may have exposed the person's social security number, driver's license number, or California identification card number. This bill would require a state or local agency, if it was the source of the breach, to also offer to provide appropriate identity theft prevention and mitigation services at no cost to a person whose information was or may have been breached if the breach exposed or may have exposed the person's social security number, driver's license number, or California identification card number.

AB 283 (Cooper): The CERL currently provides that a member who is permanently incapacitated shall be retired for disability despite age if, among other conditions, the member's incapacity is a result of injury or disease arising out of and in the course of the member's appointment, and that employment contributes substantially to that incapacity or the member has completed five years of service and not waived retirement in respect to the particular incapacity or aggravation thereof, as specified. The bill would amend the CERL to require, for purposes of determining permanent incapacity of certain peace officers, that those members be evaluated by the existing procedure established by the retirement system to determine if they can perform all of the usual and customary duties of a peace officer.

AB 512 (Rodriguez): *This bill applies only to CalPERS*. Existing law, until January 1, 2018, provides a state safety member of CalPERS who retires for industrial disability a retirement benefit equal to the greatest amount resulting from three possible calculations. In this regard, the benefit amount is based on an actuarially reduced service retirement, a service retirement allowance, if the member is qualified, or 50% of his or her final compensation, plus an annuity purchased with his or her accumulated contributions, if any. This bill would delete the repeal of these provisions and make them indefinite.

AB 526 (Cooper). This bill would make the Sacramento County Employees Retirement System a district under the CERL.

AB 530 (Cooper): Current law requires the Public Employment Relations Board (PERB) to enforce and apply rules adopted by a public agency concerning unit determinations, representation, recognition, and elections. It also requires specified complaints to be processed as an unfair practice charge by the PERB. Current law does not apply these provisions to persons who are peace officers, as defined. AB 530 would expand the jurisdiction of the PERB to include resolving disputes and statutory duties and rights of persons who are peace officers, as defined.

AB 551 (Levine). The Political Reform Act of 1974 prohibits, for a period of one year after an official leaves his or her position, elected and other local officials who held positions with a local government agency from acting as agents or attorneys for, or otherwise representing, for compensation, any other person, by appearing before, or communicating with, that local government agency, or any committee, subcommittee, or present member of that local government agency, or any officer or employee of the local government agency, if the appearance or communication is made for the purpose of influencing administrative or legislative action or influencing any action or proceeding involving the issuance, amendment, awarding, or revocation of a permit, license, grant, or contract, or the sale or purchase of goods or property. This bill would specify that the one-year prohibition also applies to independent contractors of a local government agency or a public agency who are appearing or communicating on behalf of that agency.

AB 679 (Cooley). *This bill applies only to CalPERS*. Existing law authorizes CalPERS to enter into securities loan agreements whereby a legal owner (lender) agrees to lend specific marketable corporate or government securities for no more than one year, and the lender retains the right to collect from the borrower all dividends, interest, premiums, rights and other distributions. This bill would require a borrower with respect to any security loan agreement to provide CalPERS with collateral in the form of cash, US government debt securities, or other specified forms of collateral, and would require that the amount of the collateral be at least 102% of the market value of the loaned securities.

AB 946 (Ting). *This bill applies only to CalPERS and CalSTRS*. This bill would prohibit the boards of administration of CalPERS and CalSTRS from making new investments or renewing existing investments in a border wall construction company, defined as any company that contracts or subcontracts to build, maintain, or provide material for President Trump's Border Wall. The bill would require the boards to liquidate investments in a border wall construction company within 12 months of the company contracting or subcontracting to provide work or material for a border wall, as defined.

AB 1025 (Rubio). This bill would repeal Government Code section 1099. Government Code section 1099 prohibits a public officer, including an appointed or elected member of a governmental board, from simultaneously holding two public offices that are incompatible, and prescribes certain circumstances that result in offices being incompatible, unless the simultaneous holding of the particular offices is compelled or expressly authorized by law.

AB 1310 (Travis Allen). This bill would require the retirement board of a public retirement system, including county systems under the CERL, to disclose the unfunded liability and healthcare debt of the system on each member statement provided to members of the system. **<u>This bill died in Committee and will be deleted from subsequent reports</u>.**

AB 1479 (Bonta). This bill would require state and local agencies to designate a person or office to act as the agency's custodian of records who is responsible for responding to any request made pursuant to the California Public Records Act and any inquiry from the public about a decision by the agency to deny a request for records. The bill would also authorize a court that finds that an agency or the custodian improperly withheld from the public, public records which were clearly subject to public disclosure, unreasonably delayed providing the contents of a record subject to disclosure in whole or in part, assessed an unreasonable or unauthorized fee upon a requester, or otherwise did not act in good faith to comply with these provisions, to assess a civil penalty against the agency in an amount not less than $1,000, nor more than $5,000.

AB 1597 (Nazarian). *This bill applies only to CalPERS and CalSTRS*. This bill would prohibit the boards of administration of CalPERS and CalSTRS from making additional or new investments, or renewing existing investments, in an investment vehicle in Turkey that is issued by the government of Turkey or that is owned, controlled, or managed by the government of Turkey. The bill would also require the boards to liquidate existing investments in Turkey in these types of investment vehicles within six months of the passage of a federal law imposing sanctions on Turkey.

SB 24 (Portantino). The Political Reform of Act of 1974 requires persons holding specified public offices to file disclosures of economic interests, including investments, real property interests, and income within specified periods of assuming or leaving office and annually while holding office. The act requires the disclosures to include a statement indicating, within a specified value range, the fair market value of investments or interests in real property and the aggregate value of income received from each reportable source. This bill would revise the dollar amounts associated with these ranges to provide for eight total ranges of fair market value of investments and real property interests and ten total ranges of aggregate value of income.

SB 32 (Moorlach): *This bill applies only to CalPERS and CalSTRS*. The bill would create the Citizens' Pension Oversight Committee to serve in an advisory role to the boards of administration of CalPERS and CalSTRS. It would require the committee, on or before January 1, 2019 and annually thereafter to review the actual pension costs and obligations of CalPERS and CalSTRS and report on these costs and obligation to the public.

SB 302 (Mendoza): This bill would clarify existing law to specifically require all property tax revenues of Orange County attributable to a rate imposed for fire protection purposes prior to June 6, 1978 (the effective date of Proposition 13) to be allocated by Orange County to the Orange County Fire Authority (as the agency formed for the purpose of providing fire protection in Orange County). These funds are also known as structural fire fund property taxes, and the bill would appear to codify the holding of the court in *Orange County Fire Authority v. County of Orange*, which stated that any use of structural fire finds for any purpose other than fire protection is prohibited. The bill is supported by the Orange County Professional Firefighters Association, Local 3631.

SB 371 (Moorlach): The Meyers-Milias-Brown Act requires the governing body of a local public agency to meet and confer in good faith regarding wages, hours, and other terms and conditions of employment with representatives of a recognized employee organization. This bill would prohibit an individual who will be directly or indirectly affected by an MOU between a local public agency and a recognized public employee organization from representing the public agency in negotiations with the recognized public employee organization.

SB 525 (Pan): *This bill applies only to CalPERS*. Under existing law applicable CalPERS (the PERL), a member who is incapacitated is required to be retired for disability in accordance with certain provisions if that member meets specified requirements concerning service. Under the PERL, the terms "disability" and "incapacity for performance of duty" are defined, as a basis of retirement, to mean disability of permanent or extended and uncertain duration, as determined by the board, except with respect to certain local safety members. This bill would redefine those terms to specify that the duration of the disability or incapacity must be expected to last at least 12 consecutive months or result in death.

SB 560 (Allen): *This bill applies only to CalPERS and CalSTRS*. This bill would require the boards of administration of CalPERS and CalSTRS to consider financial climate risk in their management of any funds they administer and to include in their comprehensive annual financial reports, starting on January 1, 2020, the financial climate risks of their investments, including alignment of their portfolios with a specified climate agreement and California climate policy goals, the value at risk if these goals are achieved, and the exposure of the portfolios to long-term risks. "Financial climate risk" is defined by the bill to mean material financial risk posed to an investment by the effects of the changing climate including but not limited to intense storms, rising sea levels, higher global temperatures, economic damages from carbon emissions, and other financial risks due to public policies to address climate change, shifting consumer attitudes, changing economics of traditional carbon-intense industries, and other transition risks.

SB 571 (Pan). Existing federal law prescribes requirements for different types of tax-qualified retirement plans that permit employees to contribute portions of their pretax wages to individual retirement accounts or that provide for deferred compensation. This bill would authorize a state or local public employer participating in an employee supplemental retirement savings plan, defined to include specified deferred compensation plans and payroll deduction individual retirement account plans, to make a deduction from the wages or compensation of an employee for contributions attributable to automatic enrollment and automatic escalation in the employee retirement plan. The bill would require an employer that provides for automatic enrollment in a supplemental retirement savings plan to provide a default investment option and default investment plan that meets a variety of specified criteria, including providing employees an opportunity to opt out or withdraw. The bill would place other requirements and restrictions on these plans.

SB 657 (Bates). The California Public Records Act (CPRA) requires state and local agencies to make public records available for inspection, subject to certain exceptions. Under existing law, a person may seek injunctive or declaratory relief or a writ of mandate to enforce his or her right to inspect or receive a copy of a public record, as specified. In addition, an agency's decision to release a public record pursuant to the CPRA is reviewable by a petition for a writ of mandate on the basis that the public record was confidential, which is known as a reverse public records action. This bill would require a court in a reverse public records action to apply the provisions of the CPRA as if the action had been initiated by a person requesting disclosure of a public record; would require the requestor to be named as a real party of interest; and would require a court to allow the requestor to be heard on the merits of the action. This bill would provide that, if a court orders the public agency to disclose the records, the court shall order the person who initiated the action to pay the court costs and reasonable attorney's fees of the requestor; and would prohibit a court from requiring the requestor to pay court costs and attorney's fees to the person who initiated the reverse public records action or to the public agency if the court orders the public agency to not disclose the record.

SB 671 (Moorlach). SB 671 would clarify the section of the CERL that permits a county and district to make an advance payment of all or part of the county's or district's estimated annual contributions to the retirement fund. The bill would specify that the authority to make advance payments does not prevent the board of supervisors or governing body of a district from making advance payments for contributions for an additional year or years if certain requirements are satisfied, and would make the prepayment option available to all districts that are members of any county retirement systems.

SCA 8 (Moorlach): This measure would amend the State Constitution to permit a government employer to reduce retirement benefits that are based on work not yet performed by an employee regardless of the date that the employee was first hired, notwithstanding other provisions of the California Constitution or any other law. The measure would prohibit it from being interpreted to permit the reduction of retirement benefits that a public employee has earned based on work that has been performed, as specified. The measure would define government employer and retirement benefits for the purposes of its provisions.

SCA 10 (Moorlach). This measure would prohibit a government employer from providing public employees any retirement benefit increase until that increase is approved by a $^{2}/_{3}$ vote of the electorate of the applicable jurisdiction and that vote is certified. The measure would define retirement benefit to mean any postemployment benefit and would define benefit increase as any change that increases the value of an employee's retirement benefit. The measure would define a government employer to include, among others, the state and any of its subdivisions, cities, counties, school districts, special districts, the Regents of the University of California, and the California State University.

C-10

Memorandum

DATE: June 12, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **BOARD COMMUNICATIONS**

Recommendation

Receive and file.

Background/Discussion

To ensure that the public has free and open access to those items that could have bearing on the decisions of the Trustees of the Board of Retirement, the OCERS Board has directed that all written communications to the entire Board during the interim between regular Board meetings be included in a monthly communications summary.

News Links

The various news and informational articles that have been shared with the full Board are being provided to you here by web link address. By providing the links in this publicly available report, we comply with both the Brown Act public meeting requirements, as well as avoid any copyright issues.

The following news and informational links were received by OCERS staff for distribution to the entire Board:

From Shari Freidenrich

- **European Real Estate: A "New World of Risks and Opportunities**
  https://event.webcasts.com/starthere.jsp?ei=1147329

From Russell Baldwin

- **Get Ready for Peak Oil Demand**
  https://www.wsj.com/articles/get-ready-for-peak-oil-demand-1495419061?shareToken=sta777a318fdd94268a23ace5e767255e4&reflink=article_email_share

From Catherine Fairley

Good day Members of the Board:

Attached please find redacted email and letter from OCERS member K. McBride who submitted this correspondence to OCERS yesterday. This will be included in Board materials for item I-2b, AOCDS POST Training Benefit Correction – Member Feedback to Board. Although Board Vantage will be updated prior to the Board meeting Monday morning, May 15, 2017, I'm sharing this with you today so you can read it before the meeting, as AOCDS representatives will present it to you as public comment.

This message will be included in the Board Communications document.

Regards,

Catherine Fairley

Good morning Members of the Board:

Attached please find redacted email message from OCERS member W. Davis who submitted the correspondence to OCERS today. This will be included in the Board materials for item I-2b, AOCDS POST Training Benefit Correction – Member Feedback to Board. Although Board Vantage will be updated prior to the Board meeting this morning, I'm sharing this with you so you can read it beforehand.

This message will be included in the Board Communications document.

Catherine Fairley

From Steve Delaney

- **Oregon State Funds Seek to Beef Up Staff**

  http://www.institutionalinvestor.com/article/3719656/investors-endowments-and-foundations/oregon-state-funds-seek-to-beef-up-staff.html?utm_medium=email&utm_campaign=Essential%20II%20Daily%205242017&utm_content=Essential%20II%20Daily%205242017+CID_1d59f0dab38ddbbe8beb0cc91e5abf49&utm_source=CampaignMonitorEmail&utm_term=Oregon%20State%20Funds%20Seek%20to%20Beef%20Up%20Staff#.WSXggk0zWUk

Other Items: (See Attached)

1. Monthly summary of OCERS staff activity, starting with an overview of key customer service as well as highlights and updates for the month of April.
2. McBride Email Message and McBride OCERS Letter – Catherine Fairley
3. David Email Message – Catherine Fairley

Submitted by:

Steve Delaney
Chief Executive Officer

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: May 31, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **OCERS ACTIVITIES AND UPDATES – APRIL 2017**

The following is my regular monthly summary of OCERS staff activity, starting with an overview of key customer service statistics as well as activity highlights followed by updates for the month of APRIL 2017.

CUSTOMER SERVICE

The top three questions in the month of April as received by OCERS' counseling staff:

What is the amount of COLA this year & when will I receive it?

The Board of Retirement formally adopted COLA granting at the February Board meeting. OCERS' actuary, Segal Company, calculated the CPI of 1.89% rounded up to 2% for 2017. COLA is effective 4/1/17 and paid on the 5/1/17 benefit payment as we pay one month in arrears. Retirees and their survivors with retirement effective dates on or before 4/1/1982 received the full 3% COLA as governed by the plan as they had a COLA bank.

How do I start the retirement process?

Most members start with a phone call to the retirement specialist that handles their agency. The OCERS website has a list of agencies and the associated retirement specialist assigned to assist them in the retirement process. Comprehensive retirement counseling is conducted over the phone and continues with an appointment where we provide final average salary (FAS) information. Members are encouraged to submit their retirement applications online. During the retirement appointment, members provide original birth and marriage certificates, and the application and

MEMBER SERVICE STATS FOR APRIL 2017

Member Approval **98%**

Unplanned Recalcs **3**

Retirement Apps Received

April 2017	***47***
Mar 2017	**79**
Feb 2017	**107**
Jan 2017	**151**
Dec 2016	**62**
Nov 2016	**64**
Oct 2016	**53**
Sept 2016	**45**
Aug 2016	***61***
July 2016	***62***
June 2016	***65***
May 2016	***51***
April 2016	***61***
Mar 2016	***61***

additional forms of tax withholding and direct deposit are reviewed. The benefit options are explained thoroughly to ensure complete understanding.

How do I calculate my retirement benefit?

Staff explain the components used in calculating a benefit: plan formula x age factor x service credit x final average salary = monthly benefit amount. We advise them of the tools available to them on our website - the benefits calculator as well as the member self-service portal. Of the two, the portal benefit estimator uses the members actual account information to provide accurate estimates the member can run anytime. When members submit retirement applications, we routinely provide a comprehensive benefit estimate reflecting the monthly benefit with the retirement date they elect.

ACTIVITIES

CIO SEARCH

In March we had conducted over 20 Skype interviews with possible candidates out of our pool of 160+ applications. In April we met with eight of the primary candidates for in-person interviews at OCERS headquarters. My special thanks to both Allan Emkin of PCA, who was able to join us in half of those interviews, and to Ms. Colleen Clark, formerly of the County of Orange Finance Office, who kindly came out of retirement to assist us in the first round interview process. From those eight interviews we narrowed the field to three finalists who were to be interviewed in the month of May with the assistance of the Board's ad hoc search committee.

OCERS YEAR IN REVIEW MEETINGS

It took time to get them arranged, but we began the process of going out into the field in April, to begin the annual "OCERS YEAR IN REVIEW" meetings with our primary stakeholder groups.

On **April 13**, Ms. Jenike conducted the first of those meetings by herself, as both Ms. Shott and I were wrapped up in CIO interviews. Ms. Jenike met with the Orange County Professional Firefighters Association. This was our first time for OCERS staff to meet with the new OCPFA president.

On **April 21**, Ms. Jenike and Ms. Shott joined me in meeting with Michelle Aguirre and the rest of the County of Orange Finance team for their annual OCERS Year in Review meeting. There were no concerns beyond an in depth discussion of returns, and anticipated issues to arise during this year's Triennial review of the actuarial assumptions.

ORANGE COUNTY FIRE AUTHORITY and its UAAL

On April 18, we were happy to host Ms. Lori Zeller of OCFA who had come to meet with OCERS staff as well as the OCERS Board Chair (Ball), Vice Chair (Prevatt) and Immediate Past Chair (Hilton). Ms. Zeller was coming as a follow up to the Board's annual review of plan sponsor financial health which had been presented in March. She wanted to provide background to the work that OCFA has put into crafting a plan to speed up the payment of their agency UAAL over the next ten years. The Trustees present were very impressed, and we have arranged for Ms. Zeller to provide the same materials for the full OCERS Board at the September Strategic Planning Workshop.

UPDATES

SECOVA HEALTH INSURANCE CONVERSION

OCERS continues to partner with the County and Secova to refine the process and educate. Escalated calls still being sent to the County, and number of calls has significantly diminished. OCERS staff has asked the County and Secova to submit all questions once instead of sending individual message on a member level. OCERS has also asked the County to send all communication containing personal information via secure FTP site. The County needs to educate the vendor, not OCERS. Overall it's going in the right direction taking less time from OCERS staff.

INVESTMENT DEPARTMENT UPDATE

Ms. Chary, OCERS Director of Investment Operations, provides a report on April activities:
In the month of April the Investment Committee adopted the Global Equity sub-asset class allocation targets and ranges and voted to retain the investment managers in this space. The Committee also discussed the redeployment plan for the terminated investment managers in the GTAA and Real Return space. Staff closed on the two infrastructure managers hired in late 2016 – Argo and BlackRock, each manager has a mandate for $130 million.

APRIL STAFFING SUMMARY

Administrative Services was extremely busy with recruitments in April and on boarded the Deputy Chief Counsel and a Member Services Office Technician. The Member Services Department also completed interviews and selected two new Retirement Program Specialists, who are scheduled to start at the end of May.

As of April 30, 2017, a total of four employees left OCERS employment in 2017 (two voluntary resignations, one transfer to the County and one probationary release). The current annual turnover rate is rounded to 5%. This is calculated by dividing the number of employees that left the agency by the number of employees on payroll. OCERS has a total of seven vacancies, three of which will be filled come the end of May as mentioned above. The four remaining positions are either in the recruitment phase or the HR department is working with the department head to open the recruitment. Of the 80 budgeted positions (28 OCERS Direct and 52 County positions), 73 positions are filled.

Please find the details of our most recent recruitment activity below:

Position Type	Position Title	Department	Comments
OCERS	Chief Investment Officer	Investments	Tentative start date: TBD
County	(2) Retirement Program Specialist	Member Services	Start date 5/26/17
County	(2) Sr. Retirement Program Specialist	Member Services	New position 01/01/2017 (pending open date)
County	IT Business Analyst	Information Technology	New position 01/01/2017 (pending open date)
OCERS	Member Services Manager	Member Services	New position 01/01/2017 (pending open date)

As a reminder you will see this memo included with the BOARD COMMUNICATIONS document as part of the consent agenda for the June 12 meeting of the OCERS Board of Retirement.

From: Kent McBride [redacted]
To: Linda@aocds.org
Cc: Shiree@aocds.org; Hilton, Roger (Internet); Fairley, Catherine
Subject: [EXTERNAL] Letter for OCERS Board
Sent: Fri 5/12/2017 5:18 PM

Message | OCERS letter.docx (124 KB)

Hi Linda,

I hope all is well. I apologize for sending this out after hours on Friday, my poor day has been interrupted several times. This letter has been in the making for several days.

I have been in contact with Roger on and off for a couple weeks regarding the reduced pension issue. I am unable to make the OCERS meeting on Monday and Roger mentioned that you would be there. May I ask you to read my letter at the meeting? I would really appreciate it. If you have any questions, please feel free to call me on my cell, [redacted]

Shiree, may I ask you to give a copy of the letter to the AOCDS board members?

Catherine, may I ask you to do the same for the OCERS board members?

Thank you all very much. Obviously this issue is personal for me. It is just rotten.

Thanks again,

Kent McBride

Kent L. McBride
[redacted]

May 10, 2017

To the Board of OCERS,

Thank you for the opportunity to address you by letter, unfortunately I cannot make an appearance in person at the monthly meeting.

In the late afternoon of April 24th, I received a phone call from Suzanne Jenike stating OCERS staff had made an error in the way training overtime was calculated for one hundred forty retired members dating back eleven years. She said my overpayment was three hundred seventy-six dollars a month, and my adjustment was the largest of all the retirees. It was quite a shock. It is still difficult to process.

I retired on January 1, 2016 with the knowledge of my benefit provided by OCERS staff. I retired with twenty-six years of service in law enforcement to move on to what I thought would be a better job. Since the job was not in law enforcement and did not encompass all of my specialized training, I took a greatly reduced salary knowing I had my monthly benefit from OCERS. Unfortunately, I left the job on March 5, 2017 after fourteen months due to the extreme time demands of the job. I thought I still had the full monthly benefit coming in. So, I made **<u>two</u>** life decisions based on the belief that I would be receiving the full monthly benefit.

When I left the Sheriff's Department, I had a rewarding job and I could have easily stayed another two to five years. In fact, I have an academy classmate, from 1989, working in the same field as I who continues in the same assignment. I would not have left the Sheriff's Department knowing that my benefit would have been this much less.

I am now faced with some decisions after being told of your intention to reduce my monthly benefit, but some of the outcomes are no longer available for me to make up for something that others did wrong. For example, if I could return to the Sheriff's Department to gain extra years of service to make-up for the loss, I believe I would now fall under a different retirement formula. Additionally, if allowed to return to service, what about the specialty pay I received prior to leaving and for a now retired police canine?

This is a mess and is not of my doing. It affects me for life. It is a much larger sum of money for me than it is for all of the other affected retirees. I fear you all may think that not making me pay back the so-called overpayment will ease that pain. I think not. How about allowing me to do the reverse – I will pay the so-called overpayment and keep the entirety of the benefit. That would ease my pain.

I ask you all to consider what it would be like to be in my shoes – three hundred seventy-six dollars a month less than expected, each and every month of my life, and a reduced benefit to my wife after I pass.

I implore you all to find a way to settle this correctly. I have spoken to some of the affected retirees and their minimal adjustment is of no consequence to them. I am not in that boat. It is worth my effort to resist your intention to reduce my benefit. And if you reduce my benefit now, what happens the next time you all find another error? Do you all send out another letter and make more cuts? And, think of the impact the COLA's will have on my intended reduction over the years - ten, twenty, or thirty years from now. This was money I was counting on based on information provided by your staff.

I faithfully worked and served for twenty-six years. This is a rotten welcome to retirement to say the least. The consequences are being borne fully by retirees who did not make the mistake and I have the most to lose.

Thank you for considering my letter. I am available to speak in person with anyone who is available. I regret I am unable to attend the May board meeting. Please feel free to call my cellphone, [redacted], if you would like to meet.

Sincerely,

Kent McBride
Retired Investigator

cc: AOCDS Board

From: Bill & Raylene Davis [redacted]
To: Fairley, Catherine
Cc:
Subject: [EXTERNAL] P.O.S.T. Training Over Payment

Sent: Mon 5/15/2017 7:04 AM

Dear Ms. Fairley,

I am writing in response to your letter dated 4/20/17 regarding P.O.S.T. training over payment in my monthly retirement benefit.

The first thing that struck me was the description of the number of us affected was "several". That is a gross misrepresentation when you look at the actual number being over 140 members. "Several" to most people would mean three to five.

However to the main issue, when we (retirees) go to OCERS prior to our date of retirement we are given our paperwork showing what we will be receiving in retirement. For all practical purposes we do not have the ability or the expertise to check OCERS' calculations of our retirement payments. We rely on the expertise of OCERS to do so and it is OCERS' professional responsibility to correctly calculate the retirement payments. I have no problem that future payments do not include the amount you now say was overpayment. However, implementing any of the three "options" listed in your letter is completely unacceptable. The very proposal that OCERS might **try** to force repayment with interest is ridiculous. The only acceptable solution would be that you not pursue repayment of the overage and from this point on pay the retirees what you now say is the correct amount. I understand that people make mistakes however it is not appropriate for OCERS' mistake to be borne by the retirees.

Sincerely,
William Davis

I-2

Memorandum

DATE: June 12, 2017

TO: Members of the Board of Retirement

FROM: Suzanne Jenike, Assistant CEO External Operations

SUBJECT: **AOCDS POST MANDATORY TRAINING BENEFIT CORRECTION**

Recommendation

Staff recommends the Board correct the underpaid benefits by:

1. Correcting (increasing) the monthly benefit going forward; and
2. Reimbursing members the full amount of the underpaid benefits (including COLA) retroactive to their effective date of retirement; and
3. Paying the members 3% interest compounded annually on the underpaid benefits; and
4. Collecting the underpaid benefits and interest thereon from the County by including the amount in the 2017 UAAL amortization as an actuarial loss.

Staff recommends the Board correct the overpaid benefits, effective July 1, 2017, by:

1. Correcting (decreasing) the monthly benefit going forward; and
2. Continuing to collect the full amount of the overpaid benefits retroactive to the effective date of retirement from the County by leaving the amount in the County's UAAL.

In addition, staff recommends that the Board direct staff to work with the County payroll department so that:

1. The employer properly reports pensionable pay items to OCERS in the future; and
2. Employee and employer contributions are charged and collected on those pensionable pay items on a biweekly basis.

Background/Discussion

Certain employees of the OC Sheriff's Department in certain bargaining units are required to complete a minimum 24 hours of specified training every two years in order to remain POST certified with the State of California ("mandatory POST training"). 67% of employees in the Sheriff's Deputy bargaining unit who retired between 2006 and 2017 completed mandatory POST training outside of their normal work schedules and were paid overtime as a result.

Overtime associated with mandatory POST training is pensionable and it has been OCERS' practice to include it in the calculation of a retiring member's final average salary. Members with one-year measuring periods could potentially have up to 24 hours of salary added to their final average salary and members with three-year measuring periods could receive up to 48 hours included in the calculation of their final average salary. The

County's transmittal files to OCERS however do not distinguish between mandatory POST training, which is pensionable, and other types of mandatory training that is not pensionable; and employee and employer retirement contributions are not paid on the pensionable amounts. OCERS Member Services staff has access to the Sheriff's Department payroll system so that the hours can be verified manually, but this has resulted in an extremely burdensome task for OCERS.

In January 2017 it came to OCERS' attention that there was a discrepancy in the number of the mandatory POST training hours that Member Services staff were including in retiring members' final average salary. We immediately corrected our procedures for new retirees so that all members retiring as of January 2017 are being properly credited with the appropriate amount of mandatory POST training hours. In addition, staff reviewed the accounts of all employees in the Deputy Sheriff's bargaining unit who retired between 2006 and 2017 and identified 150 members and ex-spouses who are receiving benefits that are overstated and 75 members, survivors and ex-spouses who are receiving benefits that are understated.

For the 150 payees who have been overpaid, the monthly benefit impact is summarized as follows:

- 67 members and 8 DRO payees have been overpaid in the range of $1 to $25 per month
- 26 members and 2 DRO payees have been overpaid in the range of $26 to $50 per month
- 23 members have been overpaid in the range of $51 to $100 per month
- 13 members have been overpaid in the range of $101 to $150 per month
- 4 members have been overpaid in the range of $151 to $200 per month
- 6 members have been overpaid in the range of $201 to $250 per month
- 1 member has a monthly benefit overstated by $376

For the 75 payees that have been underpaid, the monthly benefit impact is summarized as follows:

- 35 members, 1 survivors and 3 DRO payee have been underpaid in the range of $1 to $25 per month
- 22 members, 1 survivor and 1 DRO payee have been underpaid in the range of $26 to $50 per month
- 12 members have been underpaid in the range of $51 to $100 per month

The monthly benefit impact as a percentage (%) change to the overpaid benefit is as follows:

- 113 members and DRO payees will see a monthly impact of 0.01% - 1.00%
- 28 members and DRO payees will see a monthly impact of 1.01% - 2.00%
- 7 members will see a monthly impact of 2.01% - 3.00%
- 2 members will see a monthly impact of 3.01% - 3.60%

The monthly benefit impact as a percentage (%) change to the underpaid benefit is as follows:

- 64 members, survivor and DRO payees will see a monthly impact of 0.00% - 1.00%
- 11 members, survivor and DRO payees will see a monthly impact of 1.01% - 2.00%

The amount overpaid from 2006 to 2016 totals approximately $300,000 (excluding interest) as of April 1, 2017. The amount underpaid from 2006 to 2016 totals approximately $253,000 (excluding interest) as of May 1, 2017.

Under the law, OCERS is required to recover the overpayment from the members or their employer so that the system is made whole. However, the Board has broad discretion, under its Constitutional plenary authority to administer the system, to determine whether, how and to what extent any overpayments made to the system's retirees should be repayable. In May 2016, the Board adopted the Overpaid and Underpaid Plan Benefits Policy (Policy). The Policy reflects the legal authority of the Board with respect to these matters.

The following chart sets forth the Board's options under the law, IRS guidance and the Policy with respect to the collection of the overpaid benefits.

Options for Collection of Overpayments	
Source(s) of Recovery of Past Overpayments	• From the Members, for all years/all amounts; • From the Members for a limited look back period (e.g., 3 years); with balance from the Employer; or • From the Employer, for all years/all amounts. • Recover only over threshold amount (e.g., $100 per member per Policy)
Interest rate on amount to recover	• "Appropriate" interest; or • Assumed rate of return until paid (per Policy)
Authority of CEO to compromise recovery	Policy - $1,000 or less in principal
Method for Recovery from Members	• Equal installments over same time period as overpayment recovery period; • Lump sum payment; or • Reduction of monthly benefit in equal amounts over same time period as overpayment being recovered (per Policy) • Cap on monthly reduction amounts (e.g., 15% of monthly benefit, per Policy; prior year(s) COLA; other)
Method for Recovery from Employer	• Lump sum or installment payments; or • Continue to roll into UAAL

Staff discussed this matter with Segal Consulting actuaries and they confirmed that the amount required to fund the overpaid benefits has already been accounted for in the County's UAAL. For members who have been overpaid, because the resulting increase in the UAAL has already been reflected in the County's UAAL contribution rates, collecting a lump sum payment from the County is not necessary to make the plan whole. Furthermore, when future benefit amounts are corrected in the valuation data for those members who have been overpaid, there will be a reduction in the County's UAAL at that time. That reduction in the UAAL would be used to partially offset the increase in benefit payments to the members who have been underpaid.

Whether the overpayment is collected in a lump sum or over time, from the County or from the members, Segal has confirmed that the amount is immaterial in that it will not result in a noticeable change in contribution rates. Because (i) the error was in the County payroll system and was no fault of the members, (ii) the impact of collecting the overpayment from the individual members could create financial hardship to some of the members, and (iii) the overpayment is already reflected in the County's UAAL and UAAL payments, staff recommends the overpaid amounts remain in the UAAL and that they continue to be collected through the County's regular contributions towards the UAAL.

The following chart sets forth all of the Board's options with respect to the payment of the underpaid benefits.

Options for Payment of Underpayments	
Interest on Underpayments	• Pay no interest on underpayment • Pay 3% (per Policy) or other?
Method of Recovery from Employer	• Lump sum or installment payment; or • Roll amount into UAAL

Staff recommends the Board follow the Policy and pay the members the underpaid amounts plus 3% interest per annum on the underpaid benefits; and because of the insignificant impact to the UAAL, that the underpayment amount be treated as an actuarial loss in 2017, added to the County's UAAL and paid through the County's regular contributions towards the UAAL.

In making its decisions, the Board should consider and be guided by the following principles:

1. Obligation to pay only those benefits provided by statute
2. Obligation to make the system whole
3. Responsibility for correction of errors
4. Responsibility for passage of time until correction
5. Members' reasonable reliance; absence of notice or fault
6. Members' tax consequences
7. Fairness and equity
8. Any impact on non-Members (e.g., beneficiaries and survivors)
9. Any impact on current active members if amounts forgiven
10. Cost/benefit analysis (re: minimum recoveries, and potential litigation)
11. Reliability of corrections
12. Administrative capabilities and burden

Submitted by:

SJ - APPROVED

Suzanne Jenike
Assistant CEO, External Operations

AOCDS POST Mandatory Training Benefit Correction

Presented on June 12, 2017

by

Suzanne Jenike, Assistant CEO, External Operations

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Agenda

- Overview of Pensionable Pay
- Overview of Current Issue
- Details of Members/Payees Impacted
- Staff Recommendations
- Actuarial Impact
- Moving Forward

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Pensionable Pay

Compensation Earnable (Legacy members):

- CERL 31461: Rate of pay of individuals in same grade/class, regular work schedule.
  - Specifically excludes several types of pay including payment for services rendered outside of normal working hours, i.e. overtime
- OCERS Resolution 98-001 – Gives OCERS Board of Retirement the authority to determine whether specialty pay should be considered pensionable.
  - Overtime required to be worked that is ordinarily worked by others in the same grade/class/rate of pay
- OCERS staff collaborates with Plan Sponsors to review all pay items to determine if pensionable. Employers cannot negotiate pensionability.
- Majority of pensionable pay is reported biweekly so that Employer and Employee contributions are paid and this pay is included in retirement estimates.
  - Exceptions are holidays and annual leave or other paid time off categories that are earned and cashable.

Pensionable Pay cont.

OCERS staff identified a specific instance in which overtime would be considered pensionable:

- OC Sheriff's Department safety employees are required to complete a minimum of 24 hours of POST training every two years (required and regularly scheduled)
- Majority do the training outside normal work schedule (ordinarily worked as overtime)
- All other overtime, even when mandatory, is not regularly scheduled AND required of all in grade/class = excluded from consideration in final average salary (FAS) for retirement purposes (not pensionable).
- Tier 1 employees (12 month measuring period) a maximum of 24 hours included in FAS and Tier 2 employees (36 month measuring period) a maximum of 48 hours is considered pensionable and included in FAS.

Overview of Issue

These POST training hours that are pensionable are not reported to OCERS biweekly by the Sheriff's Department. This results in:

- Manual, cumbersome process for OCERS
- Risk of error
- No distinction between pensionable overtime and non-pensionable overtime
- No employee retirement contributions paid for pensionable overtime
- No employer retirement contributions paid for pensionable overtime

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Overview of Issue

- In early 2017, OCERS management discovered there were inconsistencies in the number of POST training hours being manually added to FAS
  - New benefits from January 2017 forward have been calculated accurately, crediting the maximum of 24 or 48 hours

- Staff reviewed the FAS calculations of every Sheriff's Department safety member who retired from 2006 - 2016

- Out of 800+ retirees: 150 benefits <u>over</u>stated, 75 benefits <u>under</u>stated

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Members/Payees Impacted

150 payees that have been overpaid, the monthly benefit impact is summarized as follows:

- 67 members and 8 DRO payees = $1 to $25 per month
- 26 members and 2 DRO payees = $26 to $50 per month
- 23 members = $51 to $100 per month
- 13 members =$101 to $150 per month
- 4 members =$151 to $200 per month
- 6 members =$201 to $250 per month
- 1 member has a monthly benefit overstated by $376

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Members/Payees Impacted

The monthly benefit impact as a percentage (%) change to the overpaid benefit is as follows:

- 113 members and DRO payees = 0.01% - 1.00%
- 28 members and DRO payees = 1.01% - 2.00%
- 7 members = 2.01% - 3.00%
- 2 members = 3.01% - 3.60%

One COLA adjustment of 2% will bring the majority of all payees back up to their former benefit amount.

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Members/Payees Impacted

75 payees that have been underpaid, the monthly benefit impact is summarized as follows:

- 35 members, 1 survivors and 3 DRO payee = $1 to $25 per month
- 22 members, 1 survivor and 1 DRO payee = $26 to $50 per month
- 12 members = $51 to $100 per month

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Members/Payees Impacted

The monthly benefit impact as a percentage (%) change to the underpaid benefit is as follows:

- 64 members, survivor and DRO payees will see a monthly impact of 0.01% - 1.00%
- 11 members, survivor and DRO payees will see a monthly impact of 1.01% - 2.00%

Recommendations

Correction of Underpayments:

1. Correct (increase) the monthly benefit going forward; and
2. Reimburse members the full amount of the underpaid benefits (including COLA) retroactive to their effective date of retirement; and
3. Pay the members 3% interest compounded annually on the underpaid benefit; and
4. Collect the underpaid benefits and interest thereon from the County by including the amount in the 2017 UAAL amortization as an actuarial loss.

Recommendations

Correction of Overpayments, effective July 1, 2017:

1. Correct (decrease) the monthly benefit going forward; and
2. Continue to collect the full amount of the overpaid benefits retroactive to the effective date of retirement from the County by leaving the amount in the County's UAAL.

Please note: Any overpayments received after July 1, 2017 until date of correction will be the responsibility of the payee. Collection process will follow guidelines as stated in Overpayment/Underpayment policy.

Actuarial Impact

Segal Consulting has confirmed that the amounts (overpayment and underpayment) in question are immaterial in that any collection either via lump sum or paid over time will not result in a noticeable change in contribution rates.

Support of including the amount in the employer amortization schedule:

- the error was in the County payroll system and was no fault of the members,
- the impact of collecting the overpayment from the individual members could create financial hardship to some of the members,
- the overpayment is already reflected in the County's UAAL and UAAL payments.

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Moving Forward

- OCERS' staff have been in discussions with the OC Sheriff's Department payroll team regarding the changes needed to properly report pensionable pay on the biweekly transmittal file.
- Once reported properly on the transmittal (preferred actuarial method) employee and employer contributions will be collected biweekly.
- Member Services and Legal are working on an OCERS Administrative Procedure (OAP) regarding pensionable overtime.
- Desk manuals are being updated.

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§31459.1. Board (Los Angeles)

(a) In a county in which a board of investments has been established pursuant to Section 31520.2:

(1) As used in Sections 31453, 31453.5, 31454, 31454.1, 31454.5, 31472, 31588.1, 31589.1, 31591, 31592.3, 31594, 31595.1, 31595.9, 31596, 31596.1, 31601.1, 31607, 31610, 31611, 31612, 31613, 31616, 31618, 31621.11, 31625, 31639.26, 31784, and 31872, "board" means board of investments.

(2) As used in the first paragraph of Section 31592.2 and the first paragraph and subdivision (c) of the second paragraph of Section 31595, "board" means a board of investments.

(3) Sections 31521, 31522, 31522.1, 31522.2, 31523, 31524, 31525, 31528, 31529, 31529.5, 31535.1, 31580.2, 31614, 31680, and 31680.1, apply to both the board of retirement and board of investments, and "board" means either or both the board of retirement and board of investments.

(4) Subdivision (a) of Section 31526 and subdivisions (a) and (b) of the second paragraph of Section 31595 apply to both the board of retirement and board of investments, and "board" means either or both the board of retirement and board of investments.

(b) In Article 17 (commencing with Section 31880) of this chapter, "board" means the Board of Administration of the Public Employees' Retirement System.

(c) In all other cases, "board" means the board of retirement.

(d) This section shall apply only in a county of the first class, as defined in Section 28020, as amended by Chapter 1204 of the Statutes of 1971, and Section 28022, as amended by Chapter 43 of the Statutes of 1961.

(Amended by Stats. 2011, Ch. 48 (SB 637), Sec. 1)

§31460. "Compensation" defined

"Compensation" means the remuneration paid in cash out of county or district funds, plus any amount deducted from a member's wages for participation in a deferred compensation plan established pursuant to Chapter 8 (commencing with Section 18310) of Part 1 of Division 5 of Title 2 or pursuant to Article 1.1 (commencing with Section 53212) of Chapter 2 of Part 1 of Division 2 of Title 5, but does not include the monetary value of board, lodging, fuel, laundry, or other advantages furnished to a member.

(Amended by Stats. 1972, Ch. 1370, Sec. 10)

§31461. "Compensation earnable" defined

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

(b) "Compensation earnable" does not include, in any case, the following:

(1) Any compensation determined by the board to have been paid to enhance a member's retirement benefit under that system. That compensation may include:

(A) Compensation that had previously been provided in kind to the member by the employer or paid directly by the employer to a third party other than the retirement system for the benefit of the member, and which was converted to and received by the member in the form of a cash payment in the final average salary period.

(B) Any one-time or ad hoc payment made to a member, but not to all similarly situated members in the member's grade or class.

(C) Any payment that is made solely due to the termination of the member's employment, but is received by the member while employed, except those payments that do not exceed what is earned and payable in each 12-month period during the final average salary period regardless of when reported or paid.

(2) Payments for unused vacation, annual leave, personal leave, sick leave, or compensatory time off, however denominated, whether paid in a lump sum or otherwise, in an amount that exceeds that which may be earned and payable in each 12-month period during the final average salary period, regardless of when reported or paid.

(3) Payments for additional services rendered outside of normal working hours, whether paid in a lump sum or otherwise.

(4) Payments made at the termination of employment, except those payments that do not exceed what is earned and payable in each 12-month period during the final average salary period, regardless of when reported or paid.

(c) The terms of subdivision (b) are intended to be consistent with and not in conflict with the holdings in Salus v. San Diego County Employees Retirement Association (2004) 117 Cal.App.4th 734 and In re Retirement Cases (2003)110 Cal.App.4th 426.

(Amended by Stats. 1993, Ch. 396, Sec. 3)
(Amended by Stats. 1995, Ch. 558 (SB 226), Sec. 1)
(Amended by Stats. 2012, Ch. 297 (AB 197), Sec. 2)

§31461.1. Counties of the first class; compensation; compensation earnable; operative effect; construction of section (Los Angeles)

(a) This section applies only to a county of the first class, as defined by Section 28020, as amended by Chapter 1204 of the Statutes of 1971, and Section 28022, as amended by Chapter 43 of the Statutes of 1961.

(b) Notwithstanding Sections 31460 and 31461, neither "compensation" nor "compensation earnable" shall include any of the following: cafeteria or flexible benefit plan contributions, transportation allowances, car allowances, or security allowances, as enumerated in a resolution adopted pursuant to subdivision (c).

(c) Except as provided in subdivision (d), this section shall not be operative until the board of supervisors, by resolution adopted by a majority vote, makes this section operative with respect to any employee who becomes a member after the effective date of the resolution.

(d) Regardless of whether it has acted pursuant to subdivision (c), at any time the board of supervisors, by separate resolution adopted by a majority vote, may make this section operative with respect to any member not represented by a certified employee organization who makes an irrevocable election to become subject to this section.

(e) Nothing in this section shall be construed to affect any determination made by the board of retirement, pursuant to Section 31461, prior to the effective date of this section.

(f) Nothing in this section shall be construed to affect the validity of any memorandum of understanding or similar agreement that has been executed prior to the effective date of this section.

(Amended by Stats. 1993, Ch. 396, Sec. 4)
(Amended by Stats. 1994, Ch. 1100 (SB 2003), Sec. 1)
(Amended by Stats. 2006, Ch. 538 (SB 1852), Sec. 303)

§31461.2. "Compensation earnable" defined

"Compensation earnable" by a public administrator, coroner or coroner-public administrator member compensated by means of fees means the average compensation as determined by the board, for the period under consideration, upon the basis of the average

BOARD OF RETIREMENT
ORANGE COUNTY EMPLOYEES RETIREMENT SYSTEM

RESOLUTION

Subject: Action of the Board of Retirement With Regard to Implementing the Ventura Decision

WHEREAS, On October 1, 1997, the decision of the California Supreme Court in the case, Ventura County Deputy Sheriffs' Association v. Board of Retirement of Ventura County Employees' Retirement Association (1997) 16 Cal.4th 483 ("Ventura") became final.

WHEREAS, The Supreme Court in Ventura mandated a change in the method for calculating pension benefits for members and their beneficiaries by retirement systems governed by the County Employees Retirement Law of 1937 ("CERL").

WHEREAS, On November 18, 1997, the Board of Retirement ("Board") of the Orange County Employees Retirement System ("OCERS") established an Ad Hoc Committee of the Board to analyze Ventura and its effect on the retirement system, and to make recommendations to the Board for implementing the mandate of the Supreme Court.

WHEREAS, The Ad Hoc Committee analyzed Ventura, retained the services of independent legal counsel, its actuary and other advisors, conducted a series of open public hearings to consider the impact of Ventura on the retirement system, its members and their beneficiaries, the County of Orange and other plan sponsors, and adopted its Recommendations to this Board on January 21, 1998.

WHEREAS, The Board of Retirement is charged with the responsibility for determining "compensation" and "compensation earnable" for the purpose of calculating the "final compensation" of retiring members, pursuant to Sections 31460, 31461, 31462 and 31462.1 of the Government Code.

WHEREAS, The Board of Retirement finds that the proper exercise of its statutory duties under the Government Code requires it to prevent the improper manipulation of compensation for purposes of determining compensation earnable, and to avoid the artificial inflation of pension benefits.

WHEREAS, After considering all of the information available to the Board, the Recommendations of the Ad Hoc Committee, and exercising its judgment in the matter,

RESOLVED, (A) That the Board hereby adopts the following policies and guidelines, which shall be separate from the Board's Bylaws and the Board's Regulations:

1. Elements to be Included in "Compensation Earnable". Remuneration earned and receivable in cash (under applicable MOU) to the retiring employee during the final compensation period for working the ordinary time required of other employees in the same grade/class shall be included in "compensation earnable", including but not limited to the following items of compensation, and others substantially similar to them:

- Base Salary and Wages
- Bilingual Premium Pay
- Educational Incentive ("POST") Pay
- Aircraft Rescue Firefighting
- Paramedic Pay
- Motorcycle Bonus
- Emergency Dispatch Pay
- Field Training Officer Bonus
- Shift differential pay
- Confined Space Pay
- Longevity Incentive
- Automobile Allowance (paid in cash or to extent automobile provided for personal use and declared as income)
- Uniform Allowance
- Uniform Maintenance Allowance
- Payoffs of Vacation and Sick Leave and Holiday to the extent earned (pro-rated on a monthly basis), not taken as time off and permitted to be cashed-out (pro-rated on a monthly basis) under the applicable MOU regardless of when actually cashed-out
- Employee Contributions to Deferred Compensation Plan
- "Overtime" required to be worked that is ordinarily worked by others in same grade/class/rate of pay
- Compensatory Time (if not excluded as "true overtime" (see definition in section 2) and to the extent in excess of minimum required reserve)
- "Madera" Pay
- Additional Compensation for Scheduled Meal Periods
- Flexible Benefits ("Cafeteria Plan") to the Extent paid in Cash (applicable to members retiring before January 1, 1991)

2. Elements to be Excluded From "Compensation Earnable".
Remuneration or other value to the employee neither earned or payable in cash to the employee during the final compensation period for working the ordinary time required of other employees in the same grade/class shall be excluded from "compensation earnable", including but not limited to the following items, and others substantially similar to them:

True Overtime (amounts paid for working in excess of the time required and ordinarily worked by others in the same grade/class.)
Employer Contributions to Deferred Compensation Plan
Employer Contributions to Retirement System
Employer "Pick-up" of Employee Contributions to Retirement System
Payoffs of Vacation and Sick Leave and Holiday Pay, to the extent neither earned nor permitted to be cashed-out under the applicable MOU, regardless of when actually cashed-out
Flexible Benefits ("Cafeteria Plan") provided in-kind
Flexible Benefits ("Cafeteria Plan") paid in cash to the extent paid to members retiring on and after January 1, 1991
Terminal ("Final") Pay, to the extent not included per Sec. 1, above
Expense Reimbursements
In-kind Advantages (e.g., food, lodging, board, laundry, fuel)
Fees, Licenses, Memberships provided to member by the employer

3. Calculation of "Compensation Earnable".
The retiring employee's compensation shall be "regularized" to what would have been received had the employee been paid for a normal work schedule during the Final Compensation Period. The Board shall calculate "compensation earnable" by creating a fraction, the numerator of which is the amount of the employee's qualifying compensation and the denominator of which is the number of ordinary work hours for which the employee was actually paid. The Board shall multiply that fraction by the number of paid hours ordinarily required to be worked by others in the same grade/class. The result shall be the retiring employee's "compensation earnable" for the Final Compensation Period.

4. Application of Policies and Guidelines.
The Board shall apply these policies and guidelines to all benefit payments to members and their beneficiaries due on and after October 1, 1994, as requested by members retiring before October 1, 1997, and automatically for all members retiring thereafter.

5. Changes in Contribution Rates.
The Board shall calculate on an actuarial basis the effect on the retirement system of any increases in anticipated final compensation going forward, and shall adopt appropriate adjustments to employer and employee contribution rates effective July 1, 1998.

6. Arrears Contributions of Active Members.
The Board shall determine the shortfall, if any, in (1) each active member's Member Contribution Account, and, (2) in the future, the Member Contribution Account of each prior member returning to active status who wishes to purchase prior service. Effective July 1, 1998, the Board shall collect the shortfall by a lump-sum payment from a member, or through an extended payment program amortizing the shortfall over a period not to exceed five years. Any member who is allowed to extend the payment of arrears contributions must agree to toll the statute of limitations provided for in California Code of Civil Procedure section 338(d), as it applies to Board recovery of arrears contributions, during the period of any such extension (such agreement shall survive any revocation of the extension).

7. Interim Retirees' Final Compensation Period.
The Board shall permit all members retiring during the period October 1, 1997 through February 10, 1998 to redesignate their Final Compensation Period by no later than March 31, 1998.

8. Arrears Contributions of Retirees.
To the extent there is a shortfall in a retiree's Member Contribution Account, the Board shall collect the shortfall from the member, either by payment in full, through a voluntary assignment and offset from the retiree's past-due benefits, or through an extended payment program requiring full application of the amount of the past-due benefit check payable plus not less than 2/3 of the increase in the amount of each future benefit payment until the full arrears contribution has been satisfied. Payment or satisfactory arrangement for payment of arrears contributions thereon shall be a condition precedent to the payment of any increased benefits to a retiree.

9. Claims Procedure for Retirees; Recalculation of Benefits and Contributions.
The Board hereby directs the Administrator to establish a claims procedure for all existing retirees who wish to make a claim, for the purpose of facilitating adjustment of their monthly pension benefits. The Board shall offer the retirees the opportunity to have their final compensation recalculated, and have the Board calculate both the additional benefits, plus interest, due to them and the additional contributions, plus interest, that the Board must collect from them before they are entitled to receive the increased benefits. Adjustments in benefit payments due to retirees shall be paid as of July 1, 1998 or as soon thereafter as the retiree's claim can be processed.

10. Tolling of Statute of Limitations.
To the extent that a three-year period of limitations for commencing legal action under 'Section 338(a) of the California Code of Civil Procedure shall be applied to the claims of any member or member's beneficiaries concerning the calculation of such member's compensation earnable under these policies and guidelines, the Board hereby agrees to toll (suspend) the running of such period of limitations for the period October 1, 1997 to through June 30, 1998. After June 30, 1998, the running of the period of limitations shall recommence.

11. Member and Sponsor Education.
The Board shall make available to all members and plan sponsors these policies and guidelines, together with examples of how these policies and guidelines affect the pension benefits of typical members and their beneficiaries.

RESOLVED, (B) That this Resolution shall be effective immediately upon adoption.

I hereby certify that on the 6TH day of FEBRUARY, 1998, the Board of Retirement of the Orange County Employees Retirement System made and adopted this Resolution.

Raymond A. Fleming

Raymond A. Fleming, Secretary to the
Board of Retirement
Orange County Employees Retirement System

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Overpaid and Underpaid Plan Benefits Policy

Purpose and Background

1. The purpose of the Orange County Employees Retirement System ("OCERS," "System," or "Plan") *Overpaid and Underpaid Plan Benefits Policy* ("policy") is to provide a framework that the System can use as a basis for resolving erroneous payments of Plan benefits to members and their beneficiaries. In the event that an overpayment is the result of a felony conviction OCERS Administrative Procedure (OAP) *Felony Forfeitures* shall be used as a basis for resolution. The OCERS Board of Retirement ("Board") is charged with the responsibility of administering the System in a manner that assures appropriate and prompt delivery of benefits and related services to members and their beneficiaries and of managing the assets in a prudent manner. The Internal Revenue Service requires that operational failures be corrected in a prompt, reasonable, and consistent manner that attempts to place the retirement system in the position it would have been in had the erroneous payment not occurred.

Policy Objectives

2. Members and their beneficiaries (herein referred to as "members") have a right to accurate pension benefit payments. No member has the right to receive or retain retirement benefit payments that exceed the amounts to which a member is entitled, and no member may be deprived of any benefit payments that he or she is entitled to receive. Subject to all applicable laws and consistent with this policy and the procedures established by the Board, it shall be OCERS' policy to make every reasonable effort to recover from a member the amount of any overpaid Plan benefits, and remit to a member the amount of any underpaid Plan benefits.

Policy Guidelines

3. After discovery of overpaid or underpaid benefits, and within a reasonable period of time after written notification to the affected member, OCERS will correct the benefit payment amount prospectively and/or pay to the member, or collect from the member, through lump sum or installment payments the amounts to which the member or the Plan is entitled in accordance with this policy and applicable law.
4. These policies and procedures are designed for use when calculation and other errors affect an individual member's retirement benefits. In the event of a system-wide error that affects multiple members' benefits, the Board may implement a system-wide correction process that it determines is appropriate under the circumstances.
5. In the event of any inconsistency between applicable law (including IRS rules) and these policies and procedures, the law shall govern.

Overpaid and Underpaid Plan Benefits Policy

Policy Procedures for Overpaid Benefits

6. *Appropriate Interest.* When an overpayment of Plan benefits is discovered more than ninety (90) days after the member/payee's initial benefit payment, OCERS will make a prospective adjustment to the member's benefit and take all reasonable steps to recover the full amount of all overpayments, going back to the inception of the error, and charging "appropriate interest," as defined below, compounded annually during the period in which the benefit overpayments were made and also during any repayment period (*i.e.,* applied to the outstanding amount due until fully repaid).
   a. In cases where there is evidence that the benefit overpayment resulted from fraud or dishonest conduct by the member/payee or because the member/payee provided, or caused to be provided, inaccurate information to OCERS or the member's employer, then "appropriate interest" shall be determined using the System's actuarially assumed rate of return as of the date OCERS sets for commencing repayment, and charged to the member/payee.
   b. If the benefit overpayment was solely the result of an error by OCERS and/or the member's employer, then "appropriate interest" shall be equal to the Systems actuarial assumed rate of return as of the date OCERS sets for commencing repayment, and charged to the member's employer as an administrative expense, without amortization.
   c. Notwithstanding the above, any reduction in the member/payee's ongoing monthly benefit will be limited to a maximum of 15% of the gross monthly benefit. The balance due will be paid over time, subject to this limitation.
7. The Board believes that considerations of cost effectiveness make it prudent and reasonable to pursue recovery of overpaid benefits only where the cumulative total amount of overpaid benefits is $100 or more. Accordingly, OCERS is authorized to not seek recovery of any such overpaid benefits where the total amount overpaid to the member less than $100.
8. When recovering benefit overpayments, the following apply:
   a. *Director of Member Services:* When the total amount of such overpaid benefits, not including interest, is $10,000 or less, the Director of Member Services shall have authority to agree to extend the time period for the member's installment payments to a period not exceeding the expected lifetime of the member as determined by the actuary.
   b. CEO:
      i. Regardless of the amount of the Plan's claim against the member, the CEO shall have the authority to agree to extend the time period for the member's installment payments to a period not exceeding the expected lifetime of the member as determined by the actuary.
      ii. In addition, when the total amount of the Plan's claim against the member, not including interest, is $1,000 or less, the CEO, on the advice of legal counsel, shall have the authority to compromise the claim.
   c. *Board:* Only the Board may compromise claims in which the total amount of such overpaid benefits, not including interest, is greater than $1,000.

d. *Compromising claims:* The amount of the Plan's claim for overpaid benefits is the difference between the amounts actually paid to the member for the recovery period and the amounts that should have been paid, together with "appropriate interest" from the dates of the actual payments to the date(s) the correction is effective. The likelihood of collection, the cost of collection, the amount of possible recovery and extreme hardship to the member will be considered by the CEO and/or the Board when determining whether to compromise a claim. Compromising a claim may include a different method of repayment than is otherwise provided by this Policy and/or forgiveness or partial forgiveness of principal and/or interest.

e. *Reporting:* Every year, for cases involving benefit overpayments the Director of Member Services shall provide a report to the Board.

9. The Board adopts the following procedures for accomplishing the recovery of overpaid Plan benefits:

a. Upon discovery of the benefit overpayment, OCERS will send a letter by certified mail, return receipt requested, or by express delivery service, to the member. Subject to the provisions of this Policy, the letter will provide the following information to the member regarding the overpaid benefits:

i. Provide notice of the prospective adjustment to the member's benefit payment (to reflect the correct amount);

ii. Request payment to OCERS of the amount of overpaid benefits with appropriate interest; and

iii. Unless otherwise determined by the Board, the CEO, or the Director of Member Services (see sections 8.a. and 8.b., above) or, if a repayment plan for a longer period is needed due to the limitation described section 6.b.ii., above, the letter will set a repayment plan with two options:

- *Option 1* – equal installments deducted from the member's monthly benefit over the same length of time that the overpaid benefits occurred, with "appropriate interest" (as that phrase is defined in section 6 above) applied during the overpayment period and during the repayment period; and

- *Option 2* – lump sum payment to the Plan for the full amount overpaid, with "appropriate interest" (as that phrase is defined in section 6 above) applied during the overpayment period.

b. OCERS may pursue all legal remedies to collect such overpaid Plan benefits, including making a claim on an estate or trust. In addition, if the member dies before the full amount of principal and interest is paid, OCERS may recover the remaining principal and interest from any lump sum amount OCERS is obligated to pay to the member's estate or named beneficiaries of the member; provided, however, OCERS shall not seek to recover any such remaining amounts from any continuation payments made to a surviving spouse or an optional beneficiary of the member, unless an erroneous payment is made to the surviving spouse or optional beneficiary.

c. OCERS will maintain a permanent record of all amounts of such overpaid Plan benefits and the repayment to OCERS of those overpaid benefits.

Overpaid and Underpaid Plan Benefits Policy

Policy Procedures for Underpaid Benefits

10. When the Plan has underpaid benefits to the member, and the underpayment is discovered more than 90 days after the member/payee's initial benefit payment, the member shall be entitled to a prospective adjustment to his or her retirement benefits necessary to correct the error, as well as a lump sum payment for all past amounts owed as a result of the error, with interest compounded annually at the rate of 3%. Interest shall accrue on the amounts owed from the date of each underpaid benefit to the date of the lump sum corrective payment. The payment shall be made within forty-five (45) days of discovery and receipt of all information needed to correct the account.
11. If a member who was underpaid benefits has died prior to payment of the lump sum amount due, the payment will be made according to OCERS' standard procedures for paying residual amounts following the death of the member (*e.g.,* to the designated beneficiary, estate, personal representative, trustee of the member trust, etc.).
    a. If, after following its standard procedures, Plan staff has not been able locate a person entitled to payment, the Plan shall hold the funds on behalf of that person for five years. If the funds are not claimed within five years, the funds may be transferred into the System's pension reserve fund. If someone later appears to claim the funds, the Board or the CEO will consider such claims on a case-by-case basis.
    b. The Plan will maintain a permanent record of all amounts of outstanding refunds of underpaid benefits and any amounts that have been transferred into the pension reserve fund.
12. If the total amount that the Plan owes to the member is $75 or less, the Plan is not required to make the corrective distribution if the reasonable direct costs of processing and delivering the distribution to the member would exceed the amount of the distribution.

Member Appeal Rights

13. A member shall have the right to appeal any decision regarding corrective actions that the plan takes with respect to recovering and/or returning over and underpayments of Plan benefits.
14. The appeal process will generally follow the same pattern as benefit appeals.
    a. The member will first appeal a staff decision regarding an erroneous payment to the Director of Member Services. The Director of Member Services shall respond to the member in writing.
    b. If the member does not agree with the decision of the Director of Member Services, the member may appeal that decision, in writing and within forty-five (45) days of mailing of the decision by the Director of Member Services, to the CEO. The CEO shall respond to the member in writing.
    c. If the member does not agree with the decision of the CEO, the member may appeal the matter, in writing and within forty-five (45) days of mailing of the decision by the CEO, to the Board.
    d. The Board will hear the matter at a regularly scheduled meeting giving reasonable notice to the member so the member may appear at the meeting. Staff will provide background information and documentation to the Board to assist it in making its decision. After due consideration, the

Board shall vote on the matter and instruct Member Services staff to notify the member in writing of the Board's determination.

e. If the member disagrees with the determination of the Board, the member may request, in writing and within forty-five (45) days of the date of mailing of the Board's decision, an administrative hearing of the matter.

f. The matter will then be scheduled for administrative hearing pursuant to OCERS' Board of Retirement Policy for Administrative Hearings.

g. The findings and recommendations of the hearing officer shall be reviewed by staff, and staff shall make a recommendation to the Board to take action pursuant to Government Code Section 31534. If the Board adopts the recommendation of the hearing officer, that decision of the Board shall be final, and Member Services staff will inform the member of the Board's decision in writing with a proof of service attached. Notice to the member of the Board's final decision shall signify exhaustion of the member's administrative remedies.

h. This process may be adjusted in cases where the initial determination is made by the CEO.

i. Offsets and other collection efforts will be stayed during the pendency of the above-outlined appeals process; provided, however, that the Board shall have the discretion to suspend implementing its recovery from the member in whole or in part during any ensuing court action. Interest will continue to accrue on all amounts owed to OCERS during the appeals process and litigation.

Policy Review

15. The Board will review this policy at least every three (3) years to ensure that it remains relevant and appropriate.

Policy History

16. This policy was adopted by the Board of Retirement on MONTH, DATE, 2016.

Secretary's Certificate

I, the undersigned, the duly appointed Secretary of the Orange County Employees Retirement System, hereby certify the adoption of this policy.

Steve Delaney
Secretary of the Board

5/16/16
Date

I-3

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 12, 2017

TO: Members of the Board of Retirement

FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations

SUBJECT: **ACTUARIAL DECEMBER 31, 2016 VALUATION**

Recommendation

Approve the Actuarial Valuation and Review as of December 31, 2016 and adopt contribution rates for Fiscal Year 2018 – 2019 as recommended by Segal Consulting.

Background/Discussion

In May the OCERS Board of Retirement considered the preliminary results of the December 31, 2016 Actuarial Valuation in PowerPoint format with Mr. Paul Angelo from Segal Consulting.

On June 12, Mr. Angelo will present the complete Actuarial Valuation and Review as of December 31, 2016 which contains greater detail, and the Board will be requested to formally adopt that report and the contribution rates that will go into effect in Fiscal Year 2018-2019.

The Board considers the Actuarial Valuation report in this two-step process (a process shared by only two other Segal public pension clients) as a courtesy to our many stakeholders, allowing them an opportunity to consider the initial data and provide comment prior to a formal adoption. To-date we have received no comments or concerns regarding the Actuarial Valuation as of December 31, 2016.

Submitted by:

Brenda M Shott

Brenda Shott

Assistant CEO, Finance and Internal Operations

Approved by:

Steve Delaney

Steve Delaney

CEO

Orange County Employees Retirement System

Actuarial Valuation and Review as of December 31, 2016

Segal Consulting
100 Montgomery Street, Suite 500 San Francisco, CA 94104
T 415.263.8200 F 415.376.1167 www.segalco.com

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 Actuarial Valuation and Review as of December 31, 2016. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2018-2019 and analyzes the preceding year's experience.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Plan. The census and financial information on which our calculations were based was prepared by Orange County Employees Retirement System (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; 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.

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 the expectations for the Plan.

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

Sincerely,

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

By:

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

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

MYM/jl

SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

REPORTING INFORMATION

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Orange County Employees Retirement System as of December 31, 2016. The valuation was performed to determine whether the assets and contributions are expected to be sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of OCERS, as administered by the Board of Retirement;
- The characteristics of covered active members, inactive vested members, retired members, and beneficiaries as of December 31, 2016, 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.

One of the general goals of an actuarial valuation is 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. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

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

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the Board's funding policy adopted in 2014 to combine and re-amortize the outstanding balance of the unfunded actuarial accrued liability (UAAL) from the December 31, 2012 valuation over a declining 20-year period effective with the December 31, 2013 valuation. 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 rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2018 through June 30, 2019 (the rates will go into effect during the pay period which includes July 1, 2018).

Significant Issues in Valuation Year

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

- O.C. Law Library was separated from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015.

- In this valuation, there were changes made to the membership data and valuation process. There were two changes to the membership data provided by OCERS: (a) a leap year salary adjustment to include an additional eight hours of salary earned during 2016 and (b) revised benefit and eligibility service credits from the new V3 pension administration system. For the leap year salary, we changed our valuation process to include an average two hours of additional salary annually during a four-year period. We also changed our valuation process to no longer value an automatic continuance benefit for a child beneficiary reported for a current retiree if that child is already over age 22.

Ref: Pgs. 35 and 131

Ref: Pgs. 66 and 135

- The ratio of the valuation value of assets to the actuarial accrued liabilities has increased from 71.7% to 73.1%. For informational purposes only, we have also prepared in Appendix C the funded ratio for each Rate Group. The System's funded ratio measured on a market value basis increased from 67.7% to 70.6%. The System's Unfunded Actuarial Accrued Liability (UAAL), measured using the valuation value of assets, has increased from $4,822.3 million as of December 31, 2015 to $4,830.5 million as of December 31, 2016. The increase in UAAL is mainly due to (a) higher than expected salary increases, (b) unfavorable investment return (after smoothing), (c) actual contributions less than expected, and (d) other actuarial losses, offset somewhat by (e) lower than expected COLA increases, (f) changes in valuation data and process, and (g) additional UAAL payments made by certain employers. A reconciliation of the System's UAAL is provided in Section 3, Exhibit H. A schedule showing the reconciliation of the UAAL by Rate Group is provided in Appendix E.

- The Board approved a three-year phase-in of the employer cost impact due to assumption changes for the Safety Rate Groups starting with the December 31, 2014 valuation. This is the final year of the phase-in. The employer contribution rates for Safety Rate Groups shown in this report as of December 31, 2015 are those with two-thirds of the phase-in, as in the prior valuation.

Ref: Pgs. 32 and 132 - 134

- The aggregate employer rate calculated in this valuation has decreased from 36.97% of payroll to 36.56% of payroll. The 36.97% rate was calculated after adjusting for the additional UAAL contributions made by O.C. Sanitation District and Law Library during 2016 and the phase-in adjustment for Safety Rate Groups. The December 31, 2015 contribution rate without adjustment for the additional UAAL contributions and the phase-in adjustment was 37.47% of payroll.

The reasons for the decreases in the aggregate employer rate between the 2015 and 2016 valuations are: (a) growth in total payroll more than expected, (b) lower than expected COLA increases, (c) changes in valuation data and process, (d) additional UAAL payments made by certain employers, and (e) other actuarial gains, offset somewhat by (f) higher than expected salary increases, (g) unfavorable investment return (after smoothing), (h) recognizing one-third of the cost impact of changes in actuarial assumptions for Safety Rate Groups, and (i) actual contributions less than expected. A reconciliation of the System's aggregate employer rate is provided in Section 2, Subsection D (see Chart 15). A reconciliation of the employer contribution rate by Rate Group is provided in Appendix D.

Ref: Pg. 15

The Board approved a policy for use in determining UAAL contribution rate for employers with declining payroll (i.e., University of California-Irvine (U.C.I.) and the Department of Education). Similar to the presentation used in the December 31, 2014 and December 31, 2015 valuation reports, we have included a footnote to Chart 13 to show what the UAAL contribution rates would be for the other employers (i.e., the County and O.C. IHSS Public Authority) when calculated after excluding the UAAL for U.C.I. and Department of Education.

Ref: Pg. 99

The UAAL amounts of $31.550 million and $3.723 million allocated to U.C.I. and the Department of Education, respectively, as of December 31, 2015 were provided in our December 31, 2015 valuation report. The UAAL amounts for U.C.I. and Department of Education have decreased to $28.533 million and $2.848 million, respectively, as of December 31, 2016 primarily as of result of actuarial gains on the UAAL and UAAL contributions made by U.C.I.. We have not included the level dollar amount required to amortize the new UAAL under the Board's policy for employers with declining payroll. We would be glad provide such amount in a side letter if directed to do so by the Board.

Ref: Pg. 33

- The aggregate member rate calculated in this valuation has remained unchanged at 12.01% of payroll. A reconciliation of the System's aggregate member rate is provided in Section 2, Subsection D (see Chart 16).

Ref: Pg. 5

- As indicated in Section 2, Subsection B (see Chart 7) of this report, the total net unrecognized investment loss as of December 31, 2016 is $445,648,000 (as compared to a net unrecognized loss of $679,569,000 as of December 31, 2015). This deferred investment loss will be recognized in the determination of the actuarial value of assets for funding purposes over the next four years as shown on Line 7 of Chart 7, along with any future gains or losses that occur after December 31, 2016 if the System does not earn the assumed rate of investment return of 7.25% per year (net of expenses) on a market value basis.

  The deferred losses of $445.6 million represent about 3.5% of the market value of assets (as compared to 5.9% in the prior valuation). The potential impact associated with the deferred investment losses may be illustrated as follows:

  - If the deferred losses were recognized immediately in the valuation value of assets, the funded ratio would decrease from 73.1% to 70.6%.

For comparison purposes, if all the deferred losses in the December 31, 2015 valuation had been recognized immediately in the valuation value of assets, the funded ratio would have decreased from 71.7% to 67.7%.

- If the deferred losses were recognized immediately in the valuation value of assets, the aggregate employer rate would increase from 36.56% of payroll to about 38.6% of payroll.

  For comparison purposes, if all the deferred losses in the December 31, 2015 valuation had been recognized immediately in the valuation value of assets, the aggregate employer rate would have increased from 37.25% of payroll to 40.2% or payroll. Note that both of the 37.25% and the 40.2% rates are before reflecting the last one-third of the phase-in adjustment for Safety Rate Groups.

➤ The actuarial valuation report as of December 31, 2016 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.

➤ This report reflects the $5.6 million additional contributions made by O.C. Sanitation District to pay off their UAAL. The $5.6 million[1] of additional contributions made by O.C. Sanitation District has been used to eliminate their UAAL rates starting 2017/2018. In addition, O.C. Sanitation District made a $33.5 million additional contribution to go towards paying their deferred investment losses as they arise in future valuations to continue to eliminate their UAAL rate in those valuations. Those additional contributions are maintained in a new O.C. Sanitation District UAAL Deferred Account. As of December 31, 2016, no transfer was required from this account to pay off their UAAL as the District remained over 100% funded. The balance in the O.C. Sanitation District UAAL Deferred Account as of December 31, 2016 is $34.1 million.

  This report also reflects the $1.5 million additional contributions made by Law Library towards their UAAL. The $1.5 million[2] of additional contributions made by Law Library has been amortized as a level percent of pay over a period of twenty years effective on December 31, 2015 and used to reduce their UAAL rates starting 2017/2018. Law Library's amortization bases established prior to December 31, 2016 were combined and reamortized over a single equivalent 17-year period effective with this valuation. The single 17-year period is chosen to essentially replicate the total UAAL rate paid by Law Library for 2017/2018 (which was made up of the various UAAL layers allocated to Law Library when they were included in Rate Group #3 plus the UAAL credit they received from making the $1.5 million additional contributions).

[1] *$5.6 million in additional contributions were made by O.C. Sanitation District on November 1, 2016. After adjusting with interest, those contributions have a value of $5.7 million as of December 31, 2016.*

[2] *$1.5 million in additional contributions were made by Law Library on December 16, 2016. After adjusting with interest, those contributions have a value of $1.5 million as of December 31, 2016.*

This report also reflects the $5.1 million additional contributions made by O.C. Fire Authority towards their UAAL. The $5.1 million[3] of additional contributions made by O.C. Fire Authority has been amortized as a level percent of pay over a period of twenty years effective on December 31, 2016 and used to reduce their UAAL rates for 2018/2019.

Impact of Future Experience on Contribution Rates

Future contribution requirements may differ from those determined in the valuation because of:

- difference between actual experience and anticipated experience;
- changes in actuarial assumptions or methods;
- changes in statutory provisions; and
- difference between the contribution rates determined by the valuation and those adopted by the Board.

[3] *$5.1 million in additional contributions were made by O.C. Fire Authority continuously throughout the year. After adjusting with interest, those contributions have a value of $5.2 million as of December 31, 2016.*

Summary of Key Valuation Results (Dollar Amounts in Thousands)

	December 31, 2016		December 31, 2015	
Aggregate Employer Contribution Rates:		Estimated		Estimated
General	Total Rate	Annual Amount[1]	Total Rate[2]	Annual Amount[1]
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	16.37%	$13,623	18.51%	$15,401
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	33.66%	358,235	34.38%	365,983
Rate Group #3 – Plans B, G, H and U (OCSD)	11.61%	7,588	11.65%	7,616
Rate Group #5 – Plans A, B and U (OCTA)	25.48%	26,529	26.18%	27,253
Rate Group #9 – Plans M, N and U (TCA)	23.82%	1,629	26.30%	1,798
Rate Group #10 – Plans I, J, M, N and U (OCFA)	30.54%	8,197	32.58%	8,743
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	10.88%	152	11.45%	160
Rate Group #12 – Plans G, H, future service, and U (Law Library)	22.74%	264	22.11%	258
Safety				
Rate Group #6 – Plans E, F and V (Probation)	47.79%	$31,125	44.92%[3]	$29,258
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	62.81%	137,868	61.71%[3]	135,458
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	47.81%	58,248	48.03%[3]	58,511
All Groups Combined	36.56%	$643,458	36.97%	$650,439
Average Member Contribution Rates:		Estimated		Estimated
General	Total Rate	Annual Amount[1]	Total Rate[4]	Annual Amount[1]
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	8.62%	$7,173	8.65%	$7,198
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	11.10%	118,151	11.10%	118,151
Rate Group #3 – Plans B, G, H and U (OCSD)	11.52%	7,531	11.52%	7,531
Rate Group #5 – Plans A, B and U (OCTA)	9.35%	9,734	9.31%	9,693
Rate Group #9 – Plans M, N and U (TCA)	10.08%	689	9.95%	680
Rate Group #10 – Plans I, J, M, N and U (OCFA)	11.03%	2,960	11.04%	2,963
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	8.87%	124	8.88%	124
Rate Group #12 – Plans G, H, future service, and U (Law Library)	13.06%	152	13.05%	152
Safety				
Rate Group #6 – Plans E, F and V (Probation)	15.53%	$10,115	15.44%	$10,057
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	16.39%	35,977	16.40%	35,999
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	15.44%	18,810	15.48%	18,859
All Groups Combined	12.01%	$211,416	12.01%	$211,407

(1) *Based on December 31, 2016 projected annual compensation.*

(2) *For those Rate Groups with tier specific contribution rates, the total rates shown above have been recalculated by applying the tier specific contribution rates determined in the December 31, 2015 valuation to the corresponding projected payrolls reported as of December 31, 2016.*

(3) *These rates reflect two-thirds of the phase-in of the rate impact from the changes in actuarial assumptions starting with the December 31, 2014 valuation.*

(4) *Average rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2015 valuation to the System membership as of December 31, 2016.*

Summary of Key Valuation Results (Dollar Amounts in Thousands)

	December 31, 2016	December 31, 2015
Funded Status:		
Actuarial accrued liability (AAL)	$17,933,461	$17,050,357
Valuation value of assets (VVA)[(1)]	13,102,978	12,228,009
Market value of assets (MVA)[(1),(2)]	12,657,330	11,548,440
Funded percentage on a VVA basis	73.06%	71.72%
Funded percentage on a MVA basis	70.58%	67.73%
Unfunded Actuarial Accrued Liability on a VVA basis	$4,830,483	$4,822,348
Unfunded Actuarial Accrued Liability on a MVA basis	5,276,131	5,501,917
Key Assumptions:		
Interest rate	7.25%	7.25%
Inflation rate	3.00%	3.00%
Across-the-board real salary increase	0.50%	0.50%

(1) *Excludes County Investment Account (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions account, O.C. Sanitation District UAAL Deferred Account and non-valuation reserves.*

(2) *Based on the preliminary unaudited financial statement provided by OCERS for this valuation.*

Summary of Key Valuation Demographic and Financial Data

	December 31, 2016	December 31, 2015	Percentage Change
Active Members:			
Number of members	21,746	21,525	1.0%
Average age	45.4	45.5	N/A
Average service	12.9	13.1	N/A
Projected total compensation	$1,759,833,297	$1,633,110,601	7.8%
Average projected compensation	$80,927	$75,870	6.7%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	12,767	12,271	4.0%
Disability retired	1,419	1,404	1.1%
Beneficiaries	2,183	2,135	2.2%
Total	16,369	15,810	3.5%
Average age	69.7	69.5	N/A
Average monthly benefit(1)	$3,637	$3,560	2.2%
Vested Terminated Members:			
Number of vested terminated members(2)	5,370	5,091	5.5%
Average age	44.8	44.8	N/A
Summary of Financial Data (dollar amounts in thousands)**:**			
Market value of assets(3)	$12,657,418	$11,548,529	9.6%
Return on market value of assets	8.72%	-0.45%	N/A
Actuarial value of assets(3)	$13,103,066	$12,228,098	7.2%
Return on actuarial value of assets	6.33%	5.26%	N/A
Valuation value of assets(3)	$13,102,978	$12,228,009	7.2%
Return on valuation value of assets	6.33%	5.26%	N/A

(1) *Excludes monthly benefits payable from the STAR COLA.*

(2) *This includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

(3) *The market value excludes $117,723,000 and $108,789,000 as of December 31, 2016 and December 31, 2015, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS), $222,524,000 and $227,166,000 as of December 31, 2016 and December 31, 2015, respectively, in the prepaid employer contributions account and $34,067,000 as of December 31, 2016 in the O.C. Sanitation District UAAL Deferred Account.*

Note that the above market values and actuarial values include the non-valuation reserves, which are excluded from the valuation values.

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 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 OCERS. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The

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

- If 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 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.

A. MEMBER DATA

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

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

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

A historical perspective of how the member population has changed over the past ten valuations can be seen in this chart.

CHART 1

Member Population: 2007 – 2016

Year Ended December 31	Active Members	Vested Terminated Members(1)	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2007	23,618	3,646	11,421	0.64
2008	23,720	3,881	11,778	0.66
2009	22,633	4,094	12,243	0.72
2010	21,742	4,308	12,762	0.79
2011	21,421	4,406	13,289	0.83
2012	21,256	4,415	13,947	0.86
2013	21,368	4,613	14,505	0.89
2014	21,459	4,789	15,169	0.93
2015	21,525	5,091	15,810	0.97
2016	21,746	5,370	16,369	1.00

(1) *Includes terminated members due a refund of member contributions.*

Active Members
Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 21,746 active members with an average age of 45.4, average years of service of 12.9 years, and average compensation of $80,927. The 21,525 active members in the prior valuation had an average age of 45.5, average service of 13.1 years, and average compensation of $75,870.

Inactive Members
In this year's valuation, there were 5,370 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 5,091 in the prior valuation.

These graphs show a distribution of active members by age and by years of service.

CHART 2

Distribution of Active Members by Age as of December 31, 2016

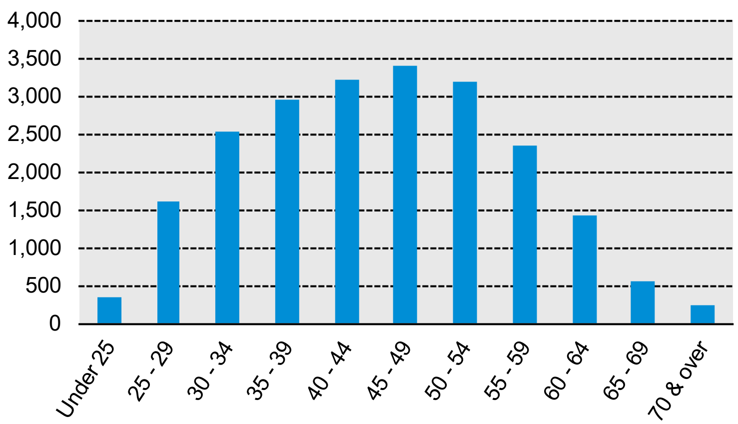
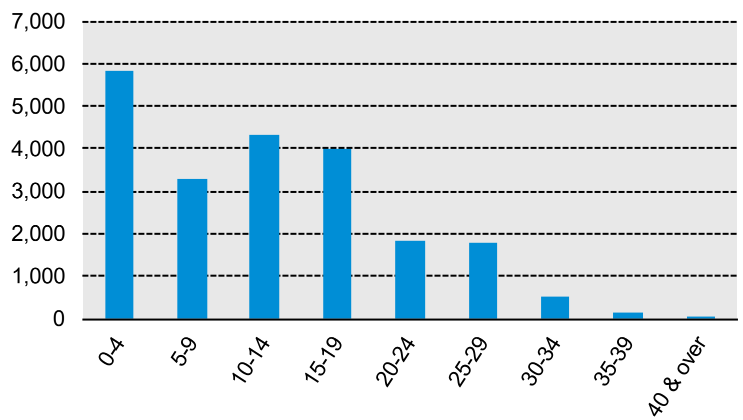


CHART 3

Distribution of Active Members by Years of Service as of December 31, 2016



Retired Members and Beneficiaries
As of December 31, 2016, 14,186 retired members and 2,183 beneficiaries were receiving total monthly benefits of $59,529,794. For comparison, in the previous valuation, there were 13,675 retired members and 2,135 beneficiaries receiving total monthly benefits of $56,291,151. These monthly benefits exclude benefits payable from the Supplemental Targeted Adjustment for Retirees Cost of Living Adjustment (STAR COLA).

These graphs show a distribution of the current retired members based on their monthly amount and age, by type of pension.

CHART 4

Distribution of Retired Members (Excl. Beneficiaries) by Type and by Monthly Amount as of December 31, 2016

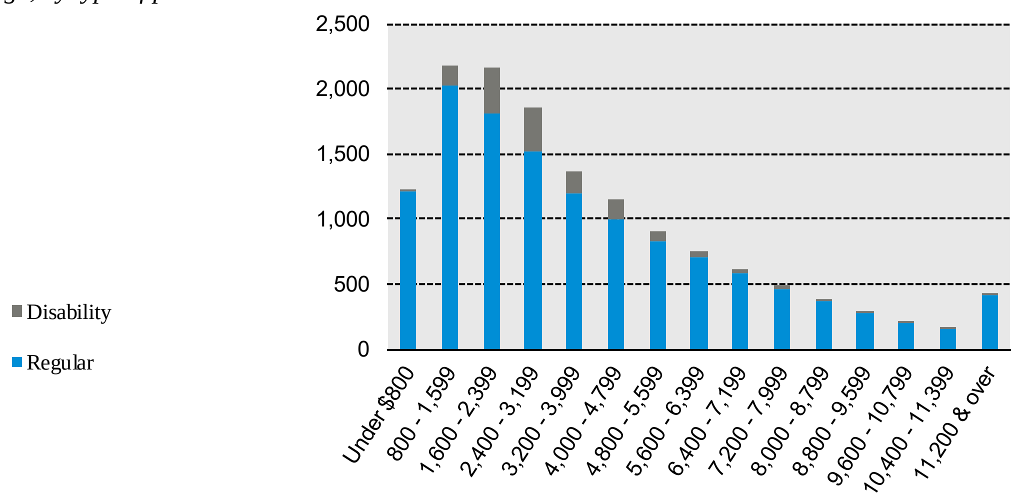
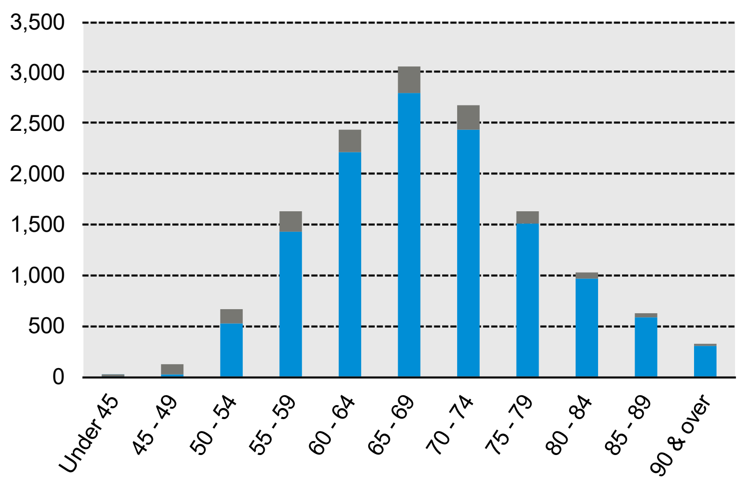


CHART 5

Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of December 31, 2016



B. FINANCIAL INFORMATION

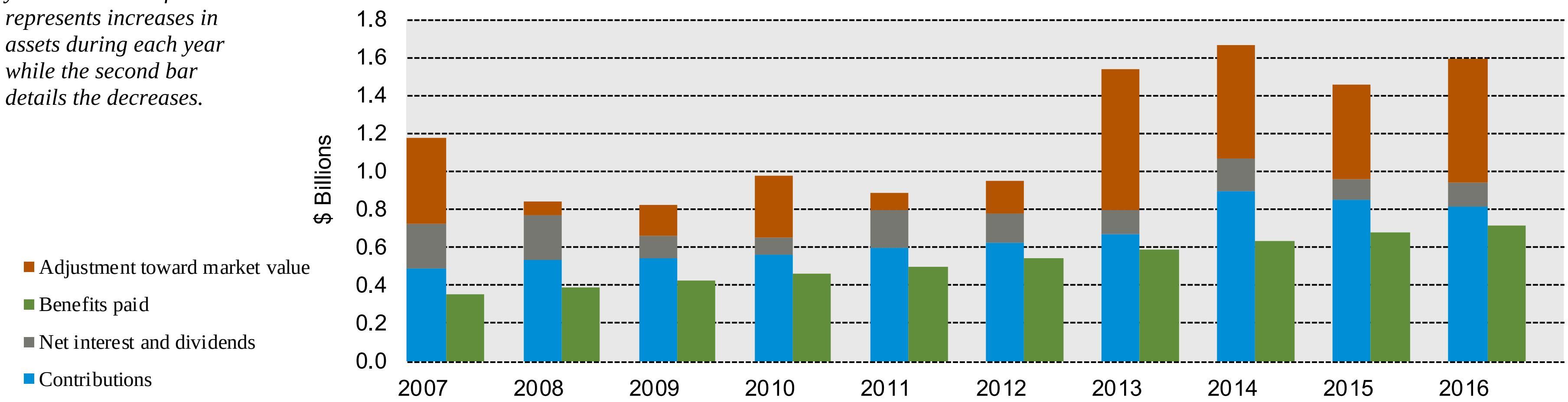
Retirement plan funding anticipates that, over the long term, both contributions and net investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. The adjustment toward market value shown in the chart is the "non-cash" earnings on investments implicitly included in the actuarial value of assets. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D and E.

The chart depicts the components of changes in the actuarial value of assets over the past ten years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.

CHART 6

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 – 2016



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Retirement has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets does not have an immediate effect on the actuarial value of assets. The determination of the Actuarial Value of Assets and Valuation Value of Assets is provided below.

The chart shows the determination of the actuarial value of assets as of the valuation date.

CHART 7

Determination of Actuarial and Valuation Value of Assets for Year Ended December 31, 2016

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	0.0	$0
2013	1,031,118,000	696,553,000	334,565,000	0.2	66,913,000
2014	487,104,000	780,627,000	(293,523,000)	0.4	(117,409,000)
2015	(51,601,000)	833,757,000	(885,358,000)	0.6	(531,215,000)
2016	1,010,548,000	840,469,000	170,079,000	0.8	136,063,000

1.	Total Deferred Return	$(445,648,000)
2.	Net Market Value Of Assets (Excludes $117,723,000 in County Investment Account (funded by pension obligation bond proceeds held by OCERS), $222,524,000 in Prepaid Employer Contributions and $34,067,000 in O.C. Sanitation District UAAL Deferred Account)	$12,657,418,000[(1)]
3.	Actuarial Value of Assets (2) – (1)	$13,103,066,000
4.	Ratio of Actuarial Value To Market Value (3) / (2)	103.5%
5.	Non-valuation Reserves	
	(a) Unclaimed member deposit	$0
	(b) Medicare medical insurance reserve	88,000
	(c) Subtotal	$88,000
6.	Valuation value of assets (3) – (5)(c)	$13,102,978,000
7.	Deferred Return Recognized in Each of the Next 4 years	
	(a) Amount recognized on 12/31/2017	$(134,848,000)
	(b) Amount recognized on 12/31/2018	(201,760,000)
	(c) Amount recognized on 12/31/2019	(143,056,000)
	(d) Amount recognized on 12/31/2020	34,016,000
	(e) Subtotal (may not total exactly due to rounding)	$(445,648,000)

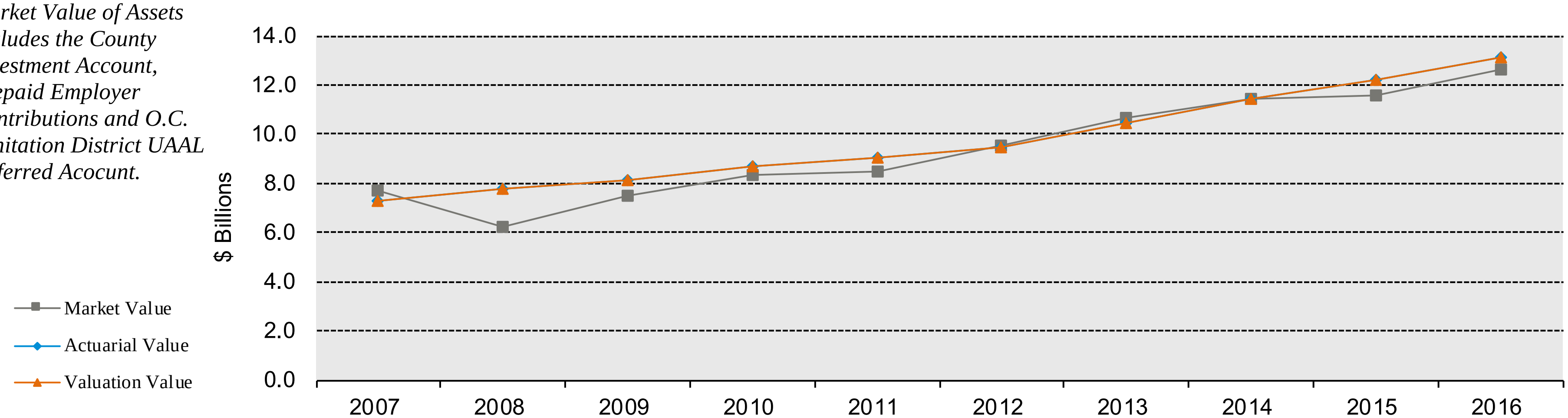
(1) *Based on the preliminary unaudited financial statement provided by OCERS for this valuation.*

The market value, actuarial value, and valuation value of assets are representations of OCERS' financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets, but with less volatility. The valuation value of assets is the actuarial value, excluding any non-valuation reserves. The valuation value of assets is significant because OCERS' liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

This chart shows the change in market value, actuarial value and valuation value over the past ten years. Note: Market Value of Assets excludes the County Investment Account, Prepaid Employer Contributions and O.C. Sanitation District UAAL Deferred Acocunt.

CHART 8

Market Value, Actuarial Value and Valuation Value of Assets as of December 31, 2007 – 2016



C. ACTUARIAL EXPERIENCE

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

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

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total experience loss was $43.2 million, a loss of $113.1 million from investments, a gain of $8.5 million from contribution experience (includes a gain of $13.7 million from additional UAAL payments and a loss of $5.1 million from all other contribution experience) and a gain of $61.4 million from all other sources. A discussion of the major components of the actuarial experience is on the following pages.

This chart provides a summary of the actuarial experience during the past year.

CHART 9

Actuarial Experience for Year Ended December 31, 2016 (Dollar Amounts in Thousands)

1.	Net gain/(loss) from investments[1]	$(113,103,000)
2.	Net gain/(loss) from contribution experience	8,512,000
3.	Net gain/(loss) from other experience[2]	61,392,000
4.	Net experience gain/(loss): (1) + (2) + (3)	$(43,199,000)

[1] *Details in Chart 10.*

[2] *See Section 3, Exhibit H.*

Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on OCERS' investment policy. For valuation purposes, the assumed rate of return on the valuation value of assets was 7.25% (based on the December 31, 2015 valuation). The actual rate of return on a valuation basis for the 2016 plan year was 6.33%.

Since the actual return for the year was less than the assumed return, OCERS experienced an actuarial loss during the year ended December 31, 2016 with regard to its investments.

This chart shows the gain/(loss) due to investment experience.

CHART 10

Investment Experience for Year Ended December 31, 2016 – Valuation Value, Actuarial Value and Market Value of Assets

	Valuation Value	Actuarial Value	Market Value
1. Actual return	$776,628,000	$776,627,000	$1,010,548,000
2. Average value of assets	$12,272,157,000	$12,272,246,000	$11,592,677,000
3. Actual rate of return: (1) ÷ (2)	6.33%	6.33%	8.72%
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	$889,731,000	$889,738,000	$840,469,000
6. Actuarial gain/(loss): (1) – (5)	$(113,103,000)	$(113,111,000)	$170,079,000

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

CHART 11

Investment Return – Valuation Value, Actuarial Value and Market Value: 2007 - 2016 (Dollar Amounts in Thousands)

Year Ended December 31	Valuation Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2007	$683,212	10.45%	$685,780	10.49%	$769,613	11.18%
2008	312,821	4.25%	311,887	4.23%	(1,617,791)	-20.76%
2009	282,764	3.62%	281,360	3.60%	1,092,660	17.32%
2010	412,046	5.02%	411,960	5.02%	787,215	10.47%
2011	287,241	3.29%	286,585	3.28%	3,236	0.04%
2012	318,043	3.49%	318,033	3.49%	1,014,471	11.92%
2013	866,402	9.11%	866,402	9.11%	1,031,118	10.73%
2014	771,174	7.34%	771,049	7.34%	487,104	4.52%
2015	606,191	5.26%	606,190	5.26%	(51,601)	-0.45%
2016	776,628	6.33%	776,627	6.33%	1,010,548	8.72%
5-Year Average Return		6.29%		6.29%		6.99%
10-Year Average Return		5.79%		5.79%		4.82%

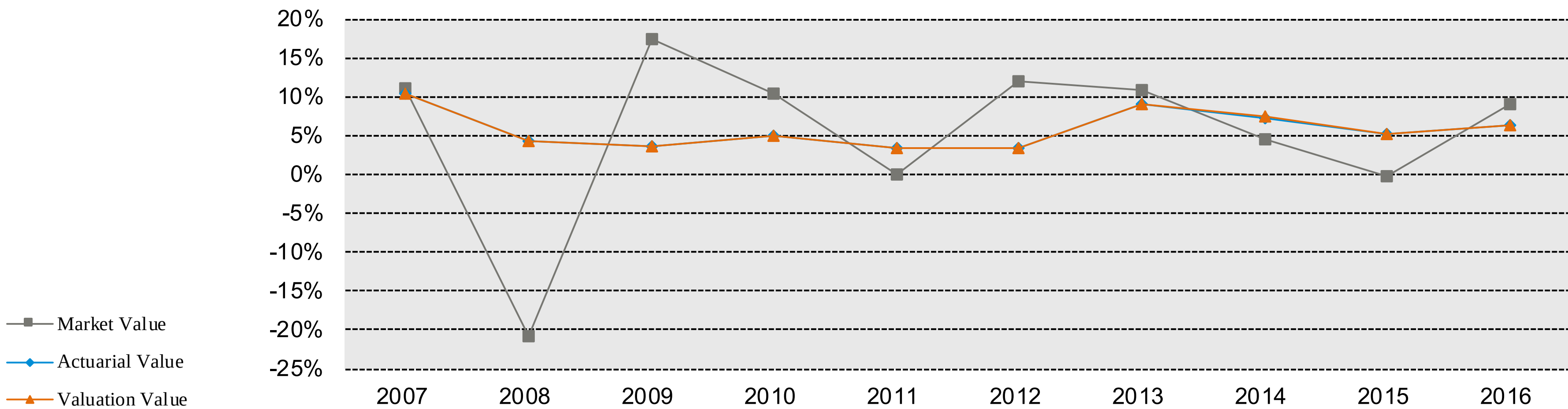
Note: The dollar amount of return on market value is net of the return on the County Investment Account (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions account and O.C. Sanitation District UAAL Deferred Account. Furthermore, due to differences in how returns are calculated, these market value rates of return will generally differ somewhat from the return reported by OCERS and its investment consultant.

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

This chart illustrates how this leveling effect has actually worked over the past ten years.

CHART 12

Market, Actuarial, and Valuation Value Rates of Return for Years Ended December 31, 2007 – 2016



Other Experience

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

- actual turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the year ended December 31, 2016 amounted to $61.4 million which is 0.34% of the actuarial accrued liability. See Exhibit H in Section 3 for a detailed development of the Unfunded Actuarial Accrued Liability.

D. EMPLOYER AND MEMBER CONTRIBUTIONS

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation.

For Probation Safety members who have prior benefit service in the other OCERS plan, the normal cost rate for their current plan is calculated based on the entry date for their current plan.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL)

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative unfunded actuarial accrued liability) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.50% (i.e., 3.00% inflation plus 0.50% across-the-board salary increase). The outstanding balance of the December 31, 2012 UAAL was combined and re-amortized over a declining 20-year period effective with the December 31, 2013 valuation. 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 recommended employer contributions are provided in Chart 13.

Member Contributions

Non-CalPEPRA Members

Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for General members and Safety members, respectively. The basic contribution rate is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient to fund an annuity at that age that is equal to:

- 1/200 of Final Average Salary for General Plan A;
- 1/120 of Final Average Salary for General Plan B;
- 1/100 of Final Average Salary for General Plans G, H, I, J, and S;
- 1/120 of Final Average Salary for General Plans M, N, O, and P;
- 1/200 of Final Average Salary for Safety Plans E and Q, and;
- 1/100 of Final Average Salary for Safety Plans F and R.

The annuity age is 60 for General Plans A, B, M, N, O, P and S, 55 for Plans G, H, I, and J, and 50 for Safety Plans E, F, Q, and R. It is assumed that contributions are made annually at the same rate, starting at entry age. In addition to the basic contributions, members pay one-half of the total normal cost necessary to fund cost-of-living benefits. Accumulation includes crediting of interest at the assumed investment earnings rate.

Effective with the December 31, 2014 valuation, for determining the cost of the total benefit (i.e., basic and COLA components), the effect of the assumed additional cashouts are recognized in the valuation as an employer and member cost.

CalPEPRA Members

Pursuant to Section 7522.30(a) of the Government Code, CalPEPRA members in Plans T, U, V and W are required to contribute at least 50% of the Normal Cost rate. We have assumed that exactly 50% of the Normal Cost would be paid by the new members. Also of note is that based on our recommendation, OCERS decided to use the discretion made available by AB1380 to not round the member's contribution rate to the nearest ¼% as previously required by the California Public Employees' Pension Reform Act of 2013 (CalPEPRA).

Note that for members in Plan T and Plan W, their basic rates have been calculated using a methodology similar to that used for Plan P. For members in Plan U or Plan V, their basic rates have been calculated using a methodology outlined in our letter dated December 4, 2012 that was previously approved by the Board.

Member contribution rates are provided in Appendix B.

CHART 13

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #1 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – non-OCTA, non-OCSD)				
Normal Cost	9.51%	$4,409	9.58%	$4,441
UAAL[(2),(3)]	7.25%	3,361	9.22%	4,274
Total Contribution	16.76%	$7,770	18.80%	$8,715
Rate Group #1 – Plan U (2.5% @ 67 PEPRA) [4]				
Normal Cost	8.63%	$3,181	8.92%	$3,288
UAAL[(2),(3)]	7.25%	2,672	9.22%	3,398
Total Contribution	15.88%	$5,853	18.14%	$6,686
Rate Group #1 – Plans A, B and U Combined				
Normal Cost	9.12%	$7,590	9.29%	$7,729
UAAL[(2),(3)]	7.25%	6,033	9.22%	7,672
Total Contribution	16.37%	$13,623	18.51%	$15,401

(1) *See page 27 for projected annual compensation.*

(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

(3) *The net UAAL contribution rates for County and IHSS Public Authority when calculated after excluding the UAAL for U.C.I. and Department of Education are 4.18% and 5.57% for the December 31, 2016 and 2015 valuations, respectively.*

(4) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA)				
Normal Cost	13.19%	$113,496	13.19%	$113,496
UAAL[2]	21.72%	186,894	22.45%	193,175
Total Contribution	34.91%	$300,390	35.64%	$306,671
Rate Group #2 – Plans O and P (1.62% @ 65)				
Normal Cost	5.53%	$818	5.46%	$808
UAAL[2]	21.72%	3,215	22.45%	3,323
Total Contribution	27.25%	$4,033	27.91%	$4,131
Rate Group #2 – Plan S (2.0% @ 57)				
Normal Cost	10.35%	$121	11.40%	$133
UAAL[2]	21.72%	253	22.45%	262
Total Contribution	32.07%	$374	33.85%	$395

(1) *See page 27 for projected annual compensation.*

(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

Note: For employers with future service only benefit improvements under 2.7% @ 55, refer to the employer rates on page 28.

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #2 – Plan T (1.62% @ 65 PEPRA) [3]				
Normal Cost	6.58%	$11,457	6.56%	$11,422
UAAL[2]	21.72%	37,817	22.45%	39,088
Total Contribution	28.30%	$49,274	29.01%	$50,510
Rate Group #2 – Plan U (2.5% @ 67 PEPRA) [4]				
Normal Cost	8.28%	$1,149	8.35%	$1,159
UAAL[2]	21.72%	3,015	22.45%	3,117
Total Contribution	30.00%	$4,164	30.80%	$4,276
Rate Group #2 – Plan W (1.62% @ 65 PEPRA) [5],[6]				
Normal Cost	6.68%	$0	6.68%	$0
UAAL[2]	21.72%	0	22.45%	0
Total Contribution	28.40%	$0	29.13%	$0
Rate Group #2 – Plans I, J, O, P, S, T, U and W Combined				
Normal Cost	11.94%	$127,041	11.93%	$127,018
UAAL[2]	21.72%	231,194	22.45%	238,965
Total Contribution	33.66%	$358,235	34.38%	$365,983

(1) *See page 27 for projected annual compensation.*

(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

(3) *Applicable for members hired on or after January 1, 2013 except for County Attorneys, San Juan Capistrano members and OCERS management members.*

(4) *Applicable for County Attorneys, San Juan Capistrano members and OCERS management members hired on or after January 1, 2013.*

(5) *Applicable for San Juan Capistrano members hired on or after January 1, 2016 if they elect to be covered under Plan W (1.62% @ 65 formula).*

(6) *No active members yet as the plan became effective on January 1, 2017.*

Note: For employers with future service only benefit improvements under 2.7% @ 55, refer to the employer rates on page 28.

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #3 – Plans G and H (2.5% @ 55 – OCSD)				
Normal Cost	12.28%	$6,026	12.33%	$6,051
UAAL[2]	0.00%[3]	0	0.00%[4]	0
Total Contribution	12.28%	$6,026	12.33%	$6,051
Rate Group #3 – Plan B (1.64% @ 57 – OCSD)				
Normal Cost	10.21%	$556	10.30%	$561
UAAL[2]	0.00%[3]	0	0.00%[4]	0
Total Contribution	10.21%	$556	10.30%	$561
Rate Group #3 – Plan U (2.5% @ 67 PEPRA) [5]				
Normal Cost	9.27%	$1,006	9.25%	$1,004
UAAL[2]	0.00%[3]	0	0.00%[4]	0
Total Contribution	9.27%	$1,006	9.25%	$1,004
Rate Group #3 – Plans B, G, H and U Combined				
Normal Cost	11.61%	$7,588	11.65%	$7,616
UAAL[2]	0.00%[3]	0	0.00%[4]	0
Total Contribution	11.61%	$7,588	11.65%	$7,616

(1) *See page 27 for projected annual compensation.*
(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(3) *These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2016.*
(4) *These rates are after adjustment to the contribution rates for the FY 17-18 for additional UAAL contributions made during calendar year 2016.*
(5) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #5 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – OCTA)				
Normal Cost	10.76%	$10,369	10.70%	$10,312
UAAL[2]	14.76%	14,224	15.52%	14,957
Total Contribution	25.52%	$24,593	26.22%	$25,269
Rate Group #5 – Plan U (2.5% @ 67 PEPRA) [3]				
Normal Cost	10.25%	$793	10.12%	$783
UAAL[2]	14.76%	1,143	15.52%	1,201
Total Contribution	25.01%	$1,936	25.64%	$1,984
Rate Group #5 – Plans A, B and U Combined				
Normal Cost	10.72%	$11,162	10.66%	$11,095
UAAL[2]	14.76%	15,367	15.52%	16,158
Total Contribution	25.48%	$26,529	26.18%	$27,253

(1) *See page 27 for projected annual compensation.*

(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

(3) *Applicable for members hired on or after January 1, 2015.*

CHART 13 (Continued)
Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #9 – Plans M and N (2.0% @ 55 – TCA)				
Normal Cost	13.30%	$617	13.44%	$623
UAAL[2]	11.46%	532	13.79%	640
Total Contribution	24.76%	$1,149	27.23%	$1,263
Rate Group #9 – Plan U (2.5% @ 67 PEPRA) [3]				
Normal Cost	10.40%	$228	10.57%	$232
UAAL[2]	11.46%	252	13.79%	303
Total Contribution	21.86%	$480	24.36%	$535
Rate Group #9 – Plans M, N and U Combined				
Normal Cost	12.36%	$845	12.51%	$855
UAAL[2]	11.46%	784	13.79%	943
Total Contribution	23.82%	$1,629	26.30%	$1,798

(1) *See page 27 for projected annual compensation.*
(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(3) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #10 – Plans I and J (2.7% @ 55 – OCFA)				
Normal Cost	13.61%	$2,108	13.44%	$2,081
UAAL[2]	18.35%	2,842	20.53%	3,179
Total Contribution	31.96%	$4,950	33.97%	$5,260
Rate Group #10 – Plans M and N (2.0% @ 55 – OCFA)				
Normal Cost	12.64%	$497	12.72%	$500
UAAL[2]	18.35%	722	20.53%	807
Total Contribution	30.99%	$1,219	33.25%	$1,307
Rate Group #10 – Plan U (2.5% @ 67 PEPRA) [3]				
Normal Cost	8.99%	$667	8.81%	$653
UAAL[2]	18.35%	1,361	20.53%	1,523
Total Contribution	27.34%	$2,028	29.34%	$2,176
Rate Group #10 – Plans I, J, M, N and U Combined				
Normal Cost	12.19%	$3,272	12.05%	$3,234
UAAL[2]	18.35%	4,925	20.53%	5,509
Total Contribution	30.54%	$8,197	32.58%	$8,743

(1) *See page 27 for projected annual compensation.*
(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(3) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)
Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #11 – Plans M and N, future service (2.0% @ 55 – Cemetery)				
Normal Cost	11.09%	$134	11.33%	$137
UAAL[2]	0.00%	0	0.00%	0
Total Contribution	11.09%	$134	11.33%	$137
Rate Group #11 – Plan U (2.5% @ 67 PEPRA) [3]				
Normal Cost	9.98%	$18	12.23%	$23
UAAL[2]	0.00%	0	0.00%	0
Total Contribution	9.98%	$18	12.23%	$23
Rate Group #11 – Plans M, N and U Combined				
Normal Cost	10.88%	$152	11.45%	$160
UAAL[2]	0.00%	0	0.00%	0
Total Contribution	10.88%	$152	11.45%	$160

(1) *See page 27 for projected annual compensation.*
(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(3) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate	Estimated Annual Amount [1]
Rate Group #12 – Plans G and H, future service (2.5% @ 55 – Law Library)				
Normal Cost	13.32%	$149	12.33%	$138
UAAL[2],[3]	9.69%[4]	108	9.92%[5]	111
Total Contribution	23.01%	$257	22.25%	$249
Rate Group #12– Plan U (2.5% @ 67 PEPRA) [6]				
Normal Cost	7.59%	$3	9.25%	$4
UAAL[2],[3]	9.69%[4]	4	9.92%[5]	5
Total Contribution	17.28%	$7	19.17%	$9
Rate Group #12 – Plans G, H, future service, and U Combined				
Normal Cost	13.05%	$152	12.19%	$142
UAAL[2],[3]	9.69%[4]	112	9.92%[5]	116
Total Contribution	22.74%	$264	22.11%	$258

(1) *See page 27 for projected annual compensation.*
(2) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(3) *UAAL rate has been adjusted to reflect future service only benefit improvement under 2.7% @ 55.*
(4) *These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2016.*
(5) *These rates are after adjustment to the contribution rates for the FY 17-18 for additional UAAL contributions made during calendar year 2016.*
(6) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate [2],[3]	Estimated Annual Amount [1],[2]
Rate Group #6 – Plans E and F (3% @ 50 – Probation)				
Normal Cost	21.87%	$13,934	21.92%	$13,966
UAAL[4]	26.06%	16,603	23.15%	14,749
Total Contribution	47.93%	$30,537	45.07%	$28,715
Rate Group #6 – Plan V (2.7% @ 57 PEPRA) [5]				
Normal Cost	15.24%	$217	15.00%	$213
UAAL[4]	26.06%	371	23.20%	330
Total Contribution	41.30%	$588	38.20%	$543
Rate Group #6 – Plans E, F and V Combined				
Normal Cost	21.73%	$14,151	21.77%	$14,179
UAAL[4]	26.06%	16,974	23.15%	15,079
Total Contribution	47.79%	$31,125	44.92%	$29,258

(1) *See page 27 for projected annual compensation.*

(2) *These rates reflect the phase-in of the cost impact of changes in actuarial assumptions starting with the December 31, 2014 valuation.*

(3) *These employer rates after the phase-in adjustments may also be found in the December 31, 2015 CAFR Actuarial Certificate.*

(4) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

(5) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate [2],[3]	Estimated Annual Amount [1],[2]
Rate Group #7 – Plans E and F (3% @ 50 – Law Enforcement)				
Normal Cost	25.63%	$41,770	25.56%	$41,656
UAAL[4]	38.19%	62,239	36.99%	60,283
Total Contribution	63.82%	$104,009	62.55%	$101,939
Rate Group #7 – Plans Q and R (3% @ 55 – Law Enforcement)				
Normal Cost	23.00%	$8,329	23.24%	$8,416
UAAL[4]	38.19%	13,831	37.10%	13,436
Total Contribution	61.19%	$22,160	60.34%	$21,852
Rate Group #7 – Plan V (2.7% @ 57 PEPRA) [5]				
Normal Cost	19.39%	$3,940	20.04%	$4,072
UAAL[4]	38.19%	7,759	37.38%	7,595
Total Contribution	57.58%	$11,699	57.42%	$11,667
Rate Group #7 – Plans E, F, Q, R and V Combined				
Normal Cost	24.62%	$54,039	24.67%	$54,144
UAAL[4]	38.19%	83,829	37.04%	81,314
Total Contribution	62.81%	$137,868	61.71%	$135,458

(1) *See page 27 for projected annual compensation.*
(2) *These rates reflect the phase-in of the cost impact of changes in actuarial assumptions starting with the December 31, 2014 valuation.*
(3) *These employer rates after the phase-in adjustments may also be found in the December 31, 2015 CAFR Actuarial Certificate.*
(4) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(5) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [1]	Rate [2],[3]	Estimated Annual Amount [1],[2]
Rate Group #8 – Plans E and F (3% @ 50 – Fire Authority)				
Normal Cost	26.84%	$28,280	26.87%	$28,312
UAAL[4]	22.27%	23,465	22.37%	23,570
Total Contribution	49.11%	$51,745	49.24%	$51,882
Rate Group #8 – Plans Q and R (3% @ 55 – Fire Authority)				
Normal Cost	21.86%	$1,227	22.10%	$1,241
UAAL[4]	22.27%	1,250	22.37%	1,256
Total Contribution	44.13%	$2,477	44.47%	$2,497
Rate Group #8 – Plan V (2.7% @ 57 PEPRA) [5]				
Normal Cost	14.84%	$1,610	15.30%	$1,660
UAAL[4]	22.27%	2,416	22.79%	2,472
Total Contribution	37.11%	$4,026	38.09%	$4,132
Rate Group #8 – Plans E, F, Q, R and V Combined				
Normal Cost	25.54%	$31,117	25.62%	$31,213
UAAL[4]	22.27%	27,131	22.41%	27,298
Total Contribution	47.81%	$58,248	48.03%	$58,511

(1) *See page 27 for projected annual compensation.*

(2) *These rates reflect the phase-in of the cost impact of changes in actuarial assumptions starting with the December 31, 2014 valuation.*

(3) *These employer rates after the phase-in adjustments may also be found in the December 31, 2015 CAFR Actuarial Certificate.*

(4) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*

(5) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General and Safety Combined	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount [(1)]	Rate	Estimated Annual Amount [(1)]
Rate Groups #1 – #12				
Total Contribution	36.56%	$643,458	36.97%	$650,439

[(1)] *Based on December 31, 2016 projected annual compensation (also in thousands):*

Rate Group #1 – Plans A and B	*$46,360*
Rate Group #1 – Plan U	*36,859*
Rate Group #2 – Plans I and J	*860,468*
Rate Group #2 – Plans O and P	*14,800*
Rate Group #2 – Plan S	*1,166*
Rate Group #2 – Plan T	*174,111*
Rate Group #2 – Plan U	*13,882*
Rate Group #2 – Plan W	*0*
Rate Group #3 – Plans G and H	*49,075*
Rate Group #3 – Plan B	*5,444*
Rate Group #3 – Plan U	*10,852*
Rate Group #5 – Plans A and B	*96,370*
Rate Group #5 – Plan U	*7,741*
Rate Group #9 – Plans M and N	*4,639*
Rate Group #9 – Plan U	*2,196*
Rate Group #10 – Plans I and J	*15,487*
Rate Group #10 – Plans M and N	*3,933*
Rate Group #10 – Plan U	*7,417*
Rate Group #11 – Plans M and N	*1,212*
Rate Group #11 – Plan U	*185*
Rate Group #12 – Plans G and H	*1,119*
Rate Group #12 – Plan U	*46*
Rate Group #6 – Plans E and F	*63,712*
Rate Group #6 – Plan V	*1,423*
Rate Group #7 – Plans E and F	*162,972*
Rate Group #7 – Plans Q and R	*36,215*
Rate Group #7 – Plan V	*20,318*
Rate Group #8 – Plans E and F	*105,365*
Rate Group #8 – Plans Q and R	*5,615*
Rate Group #8 – Plan V	*10,849*
Total	*$1,759,831*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2016 (Dollar Amounts in Thousands)

General Employers –Local Agency Formation Commission, Orange County Employees Retirement System and Children and Families Commission

	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate [1]	Rate [2]	Rate [1]	Rate [2]
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA)				
Normal Cost	13.19%	13.19%	13.19%	13.19%
UAAL[3]	19.61%	21.72%	20.79%	22.45%
Total Contribution	32.80%	34.91%	33.98%	35.64%
Rate Group #2 – Plans O and P (1.62% @ 65)[4]				
Normal Cost	5.53%	5.53%	5.46%	5.46%
UAAL[3]	19.61%	21.72%	20.79%	22.45%
Total Contribution	25.14%	27.25%	26.25%	27.91%
Rate Group #2 – Plan T (1.62% @ 65 PEPRA)[5]				
Normal Cost	6.58%	6.58%	6.56%	6.56%
UAAL[3]	19.61%	21.72%	20.79%	22.45%
Total Contribution	26.19%	28.30%	27.35%	29.01%
Rate Group #2 – Plan U (2.5% @ 67 PEPRA)[6]				
Normal Cost	8.28%	8.28%	8.35%	8.35%
UAAL[3]	19.61%	21.72%	20.79%	22.45%
Total Contribution	27.89%	30.00%	29.14%	30.80%

(1) *These rates are after reflecting future service only benefit improvements under 2.7% @ 55.*
(2) *These rates are before reflecting future service only benefit improvements under 2.7% @ 55.*
(3) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation.*
(4) *Applicable for Local Agency Formation Commission members hired on or after July 1, 2010 but before January 1, 2013.*
(5) *Applicable for Local Agency Formation Commission members hired on or after January 1, 2013.*
(6) *Applicable for Orange County Retirement System and Children and Families Commission members hired on or after January 1, 2013.*

CHART 14

"Pick – Up" - Discount Percentages for Non-PEPRA Tier Members

For every dollar of member contribution "picked up" by the employer for non-PEPRA tier members and not deposited in the member's contribution account, the employer can contribute less than a dollar. This is because the "pick-up" amount is not deposited in the member's contribution account and so is not payable to a member who withdraws his or her contributions following termination of employment, and is not payable as an additional death benefit. The contribution discount percentages are as follows:

	December 31, 2016 Valuation Pick-Up Percentage		December 31, 2015 Valuation Pick-Up Percentage	
General Members				
Rate Group #1 Plan A/B (non-OCTA, non-OCSD)	Plan A: 100.00%	Plan B: 97.14%	Plan A: 100.00%	Plan B: 97.03%
Rate Group #1 Plan U (non-OCTA, non-OCSD)		Plan U: 92.96%		Plan U: 94.93%
Rate Group #2 (2.7% @ 55 – non-OCFA)	Plan I: 99.00%	Plan J: 97.47%	Plan I: 98.86%	Plan J: 97.38%
Rate Group #2 (1.62% @ 65)	Plan O: Not calculated	Plan P: 96.46%	Plan O: Not calculated	Plan P: 96.21%
Rate Group #2 (2.0% @ 57)		Plan S: 96.72%		Plan S: 96.37%
Rate Group #3 (2.5% @ 55 – OCSD)	Plan G: 98.21%	Plan H: 97.73%	Plan G: 98.41%	Plan H: 97.66%
Rate Group #3 (1.64% @ 57 – OCSD)		Plan B: 96.50%		Plan B: 96.24%
Rate Group #5 Plan A/B (OCTA)	Plan A: 98.17%	Plan B: 94.74%	Plan A: 97.99%	Plan B: 94.54%
Rate Group #9 (2.0% @ 55 – TCA)	Plan M: Not calculated	Plan N: 97.64%	Plan M: Not calculated	Plan N: 97.66%
Rate Group #10 (2.7% @ 55 – OCFA)	Plan I: Not calculated	Plan J: 97.72%	Plan I: Not calculated	Plan J: 97.66%
Rate Group #10 (2.0% @ 55 – OCFA)	Plan M: Not calculated	Plan N: 96.41%	Plan M: Not calculated	Plan N: 96.86%
Rate Group #11 (2.0% @ 55 – Cemetery)	Plan M: Not calculated	Plan N: 97.64%	Plan M: Not calculated	Plan N: 97.53%
Rate Group #12 (2.5% @ 55 – Law Library)	Plan G: Not calculated	Plan H: 98.04%	Plan G: 98.41%	Plan H: 97.66%

CHART 14 (Continued)

"Pick – Up" - Discount Percentages

	December 31, 2016 Valuation Pick-Up Percentage		December 31, 2015 Valuation Pick-Up Percentage	
Safety Members				
Rate Group #6 (3% @ 50 – Probation)	Plan E: 100.00%	Plan F: 98.74%	Plan E: 100.00%	Plan F: 98.68%
Rate Group #7 (3% @ 50 – Law Enforcement)	Plan E: 100.00%	Plan F: 99.60%	Plan E: 100.00%	Plan F: 99.58%
Rate Group #7 (3% @ 55 – Law Enforcement)	Plan Q: Not calculated	Plan R: 99.23%	Plan Q: Not calculated	Plan R: 99.18%
Rate Group #8 (3% @ 50 – Fire Authority)	Plan E: 100.00%	Plan F: 99.51%	Plan E: 100.00%	Plan F: 99.48%
Rate Group #8 (3% @ 55 – Fire Authority)	Plan Q: Not calculated	Plan R: 99.30%	Plan Q: Not calculated	Plan R: 99.27%

CHART 14 (Continued)
"Pick – Up" - Average Entry Age

The following table provides the average entry age by employer used in determining the "pick-up" contributions under Section 31581.1.

Employer	Code	Average Entry Age for All (non-PEPRA and PEPRA) Members
General		
Orange County	101	33
Cemetery District	102	31
Law Library	103	40
Retirement System	105	35
Fire Authority	106	34
Transportation Corridor Agency	109	39
City of San Juan Capistrano	110	37
Sanitation District	111	35
OCTA	112	36
Children & Families Commission	118	33
Local Agency Formation Commission	119	37
Superior Court	121	33
IHSS Public Authority	122	37
Safety		
Probation	101	27
Law Enforcement	101	27
Fire Authority	106	30

The contribution rates as of December 31, 2016 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions or methods.

Reconciliation of Recommended Contribution

The chart below details the changes in the recommended contribution from the prior valuation to the current year's valuation, for the entire Retirement System. A reconciliation of the recommended contribution from the prior valuation to the current year's valuation by Rate Group is provided in Appendix D.

The chart reconciles the employer contribution from the prior valuation to the amount determined in this valuation.

CHART 15

Reconciliation of Recommended Employer Contribution Rate from December 31, 2015 to December 31, 2016 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount [1]
1. Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY 17/18 rates)	37.47%	$659,275
2. Adjustment to FY17-18 rates for additional UAAL contributions from O.C. Sanitation District and Law Library	-0.06%	-1,069
3. Effect of 3-year phase-in of the cost impact of changes in actuarial assumptions for Safety Rate Groups	-0.44%	-7,767
4. Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY 17/18 rates)	36.97%	$650,439
5. Actuarial (gain)/loss items:		
(a) Effect of recognizing one-third of 3-year phase-in of the cost impact of changes in actuarial assumptions for Safety Rate Groups	0.44%	7,767
(b) Effect of investment loss (after smoothing)	0.46%	8,095
(c) Effect of additional UAAL contributions from OCFA and scheduled payment for U.C.I.	-0.03%	-528
(d) Effect of actual contributions less than expected	0.06%	1,056
(e) Effect of lower than expected COLA increases	-0.75%	-13,199
(f) Effect of higher than expected salary increases	0.83%	14,607
(g) Effect of growth in total payroll greater than expected	-0.94%	-16,542
(h) Effect of changes in data and process[2]	-0.37%	-6,511
(i) Effect of other experience (gain)/loss[3]	-0.11%	-1,726
(j) Subtotal	-0.41%	-$6,981
6. Aggregate Recommended Contribution Rate as of December 31, 2016	36.56%	$643,458

[1] *Based on December 31, 2016 projected annual compensation of $1,759,831,000.*

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

[3] *Net of an adjustment of -0.06% to reflect 18-month delay between date of valuation and date of rate implementation for the rate impact of all actuarial experience.*

The member contribution rates as of December 31, 2016 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, and changes in the actuarial assumptions or methods.

Reconciliation of Recommended Contribution Rate
The chart below details the changes in the aggregate recommended member contribution rate from the prior valuation to the current year's valuation.

The chart reconciles the member contribution from the prior valuation to the amount determined in this valuation.

CHART 16
Reconciliation of Average Recommended Member Contribution from December 31, 2015 to December 31, 2016 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount[1]
Average Recommended Contribution Rate as of December 31, 2015[2]	12.01%	$211,407
Effect of change in demographics	0.00%	$9
Average Recommended Contribution Rate as of December 31, 2016	12.01%	$211,416

(1) *Based on December 31, 2016 projected annual compensation of $1,759,831,000.*

(2) *Rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2015 valuation to the System membership as of December 31, 2016.*

E. FUNDED RATIO

A critical piece of information regarding the Plan's financial status is the funded ratio. The ratios compare the valuation value of assets and market value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors. The chart below depicts a history of the funded ratio for this plan.

CHART 17

Funded Ratio for Plan Years Ending December 31, 2007 - 2016

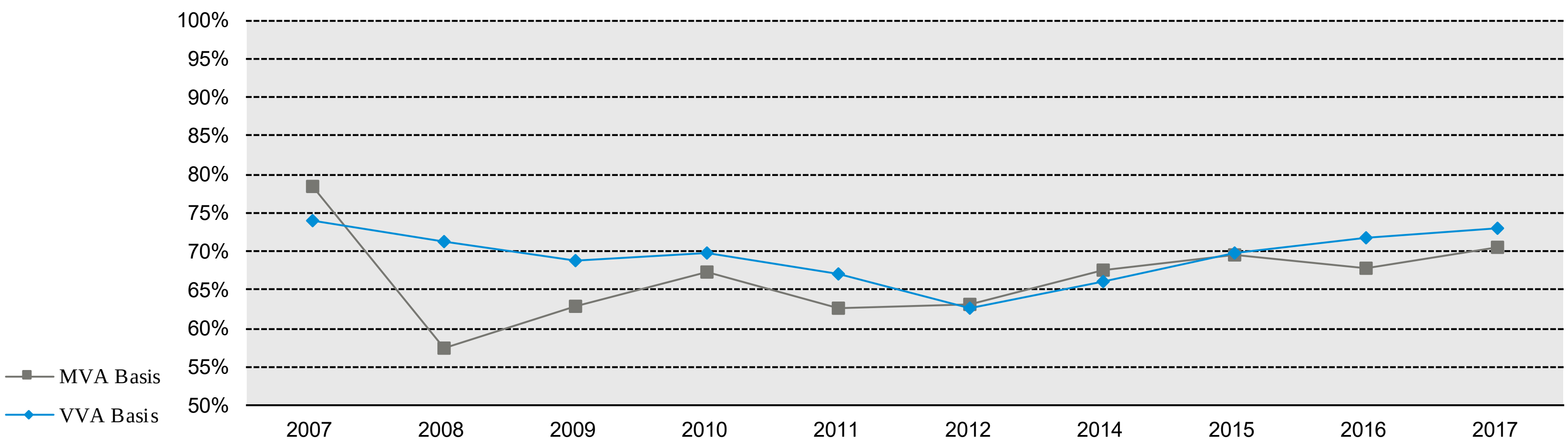


CHART 18
Schedule of Funding Progress

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)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll [(b) - (a)] / (c)
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%
2016	13,102,978,000	17,933,461,000	4,830,483,000	73.06%	1,759,831,000	274.49%

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 (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions, O.C. Sanitation District UAAL Deferred Account, unclaimed member reserve and Medicare Medical Insurance Reserve.

Actuarial Valuation Date December 31	Funded Ratio Based on Net Market Value of Assets	Actuarial Valuation Date December 31	Funded Ratio Based on Net Market Value of Assets
2007	78.43%	2012	63.17%
2008	57.51%	2013	67.65%
2009	62.94%	2014	69.63%
2010	67.25%	2015	67.73%
2011	62.60%	2016	70.58%

F. VOLATILITY RATIOS

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

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

For OCERS, the current AVR is about 7.2. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 7.2% of one-year's payroll. Since OCERS amortizes actuarial gains and losses over a 20-year period, there would be a 0.5% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the Actuarial Accrued Liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities. For example, if a plan is 50% funded on a market value basis, the liability volatility ratio would be double the asset volatility ratio and the plan sponsor should expect contribution volatility to increase over time as the plan becomes better funded.

The LVR also indicates how volatile contributions will be in response to changes in the Actuarial Accrued Liability due to actual experience or to changes in actuarial assumptions.

For OCERS, the current LVR is about 10.2. This is about 42% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

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

CHART 19

Volatility Ratios for Years Ended December 31, 2009 - 2016

	Asset Volatility Ratios			Liability Volatility Ratios		
Year Ended December 31	**General**	**Safety**	**Total**	**General**	**Safety**	**Total**
2009	4.2	6.1	4.6	6.6	10.0	7.3
2010	4.7	7.3	5.3	7.0	10.9	7.9
2011	4.7	7.1	5.2	7.6	10.9	8.4
2012	5.3	8.1	5.9	8.6	12.3	9.4
2013	6.0	8.9	6.7	9.0	12.6	9.8
2014	6.2	9.4	6.9	8.9	13.6	10.0
2015	6.3	9.6	7.1	9.3	14.3	10.4
2016	6.4	9.9	7.2	9.0	14.2	10.2

EXHIBIT A

Table of Plan Coverage

i. Rate Group #1 – General – Plans A, B and U (non-OCTA, non-OCSD)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	1,640	1,535	6.8%
Average age	42.0	42.9	N/A
Average service	8.9	9.3	N/A
Projected total compensation	$83,218,758	$74,473,543	11.7%
Projected average compensation	$50,743	$48,517	4.6%
Account balances	$49,693,494	$44,531,177	11.6%
Total active vested members	795	822	-3.3%
Vested terminated members[1]			
Number	445	403	10.4%
Average age	41.7	41.9	N/A
Retired members			
Number in pay status	617	604	2.2%
Average age	74.4	74.1	N/A
Average monthly benefit[2]	$2,626	$2,611	0.6%
Disabled members			
Number in pay status	38	38	0.0%
Average age	67.2	66.2	N/A
Average monthly benefit[2]	$2,290	$2,203	3.9%
Beneficiaries			
Number in pay status	93	90	3.3%
Average age	76.3	75.9	N/A
Average monthly benefit[2]	$1,324	$1,365	-3.0%

[1] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

ii. Rate Group #2 – General – Plans I, J, O, P, S, T, U and W

Category	Year Ended December 31		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	14,075	13,957	0.8%
Average age	45.9	46.0	N/A
Average service	13.0	13.1	N/A
Projected total compensation	$1,064,427,772	$984,353,085	8.1%
Projected average compensation	$75,625	$70,528	7.2%
Account balances	$1,833,455,161	$1,724,763,361	6.3%
Total active vested members	10,700	11,039	-3.1%
Vested terminated members[1]			
Number	3,629	3,440	5.5%
Average age	44.8	44.8	N/A
Retired members			
Number in pay status	8,772	8,475	3.5%
Average age	70.8	70.7	N/A
Average monthly benefit[2]	$3,513	$3,445	2.0%
Disabled members			
Number in pay status	569	572	-0.5%
Average age	66.7	66.5	N/A
Average monthly benefit[2]	$2,438	$2,391	2.0%
Beneficiaries			
Number in pay status	1,397	1,395	0.1%
Average age	75.2	75.1	N/A
Average monthly benefit[2]	$1,765	$1,743	1.3%

[1] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

iii. Rate Group #3 – General – Plans B, G, H and U (OCSD)

Category	Year Ended December 31 2016	Year Ended December 31 2015[3]	Change From Prior Year
Active members in valuation			
Number	578	572	1.0%
Average age	48.0	48.2	N/A
Average service	13.2	13.5	N/A
Projected total compensation	$65,370,761	$63,106,185	3.6%
Projected average compensation	$113,098	$110,325	2.5%
Account balances	$87,379,694	$85,199,783	2.6%
Total active vested members	440	447	-1.6%
Vested terminated members[1]			
Number	104	99	5.1%
Average age	47.6	46.8	N/A
Retired members			
Number in pay status	355	334	6.3%
Average age	67.6	67.3	N/A
Average monthly benefit[2]	$5,075	$4,935	2.8%
Disabled members			
Number in pay status	13	12	8.3%
Average age	66.4	65.5	N/A
Average monthly benefit[2]	$3,259	$3,126	4.3%
Beneficiaries			
Number in pay status	71	63	12.7%
Average age	70.3	70.5	N/A
Average monthly benefit[2]	$2,154	$2,127	1.3%

[1] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes monthly benefits payable from the STAR COLA.*

[3] *Membership information as of December 31, 2015 has been restated to exclude members from Law Library that are now reported in Rate Group #12.*

EXHIBIT A

Table of Plan Coverage

iv. Rate Group #5 – General – Plans A, B and U (OCTA)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	1,372	1,413	-2.9%
Average age	50.0	50.0	N/A
Average service	13.3	13.5	N/A
Projected total compensation	$104,111,593	$100,471,246	3.6%
Projected average compensation	$75,883	$71,105	6.7%
Account balances	$124,925,999	$122,679,867	1.8%
Total active vested members	1,045	1,107	-5.6%
Vested terminated members[1]			
Number	568	547	3.8%
Average age	49.6	49.6	N/A
Retired members			
Number in pay status	863	818	5.5%
Average age	69.5	69.2	N/A
Average monthly benefit[2]	$2,402	$2,343	2.5%
Disabled members			
Number in pay status	256	254	0.8%
Average age	65.4	64.6	N/A
Average monthly benefit[2]	$2,254	$2,220	1.5%
Beneficiaries			
Number in pay status	166	158	5.1%
Average age	71.5	70.8	N/A
Average monthly benefit[2]	$1,294	$1,298	-0.3%

[1] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

v. Rate Group #9 – General – Plans M, N and U (TCA)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	68	63	7.9%
Average age	49.3	49.3	N/A
Average service	10.0	9.9	N/A
Projected total compensation	$6,835,138	$6,389,323	7.0%
Projected average compensation	$100,517	$101,418	-0.9%
Account balances	$5,835,926	$5,093,016	14.6%
Total active vested members	45	41	9.8%
Vested terminated members(1)			
Number	56	55	1.8%
Average age	45.1	44.8	N/A
Retired members			
Number in pay status	40	39	2.6%
Average age	68.5	67.7	N/A
Average monthly benefit(2)	$2,768	$2,786	-0.6%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit(2)	N/A	N/A	N/A
Beneficiaries			
Number in pay status	3	2	50.0%
Average age	72.1	73.9	N/A
Average monthly benefit(2)	$427	$322	32.6%

(1) *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

(2) *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

vi. Rate Group #10 – General – Plans I, J, M, N and U (OCFA)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	302	262	15.3%
Average age	44.1	45.4	N/A
Average service[1]	10.0	11.9	N/A
Projected total compensation	$26,836,736	$23,245,637	15.4%
Projected average compensation	$88,863	$88,724	0.2%
Account balances	$26,401,200	$26,134,476	1.0%
Total active vested members	176	184	-4.3%
Vested terminated members[2]			
Number	131	114	14.9%
Average age	42.6	42.9	N/A
Retired members			
Number in pay status	141	131	7.6%
Average age	65.4	65.2	N/A
Average monthly benefit[3]	$4,446	$4,220	5.4%
Disabled members			
Number in pay status	10	10	0.0%
Average age	60.4	59.4	N/A
Average monthly benefit[3]	$2,473	$2,448	1.0%
Beneficiaries			
Number in pay status	10	8	25.0%
Average age	62.2	61.7	N/A
Average monthly benefit[3]	$1,419	$1,419	0.0%

[1] *For some former Santa Ana members, service used in calculating the average above is only used for vesting purposes. Benefit service starts to accrue only effective April 2012.*

[2] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[3] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

vii. Rate Group #11 – General – Plans M and N, future service, and U (Cemetery)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	22	21	4.8%
Average age	48.1	49.0	N/A
Average service	16.8	17.4	N/A
Projected total compensation	$1,397,215	$1,289,124	8.4%
Projected average compensation	$63,510	$61,387	3.5%
Account balances	$1,994,990	$1,951,091	2.2%
Total active vested members	18	19	-5.3%
Vested terminated members[1]			
Number	3	3	0.0%
Average age	37.2	36.2	N/A
Retired members			
Number in pay status	5	5	0.0%
Average age	74.8	73.8	N/A
Average monthly benefit[2]	$2,406	$2,383	1.0%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit[2]	N/A	N/A	N/A
Beneficiaries			
Number in pay status	4	4	0.0%
Average age	78.0	77.0	N/A
Average monthly benefit[2]	$1,567	$1,552	1.0%

[1] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

viii.Rate Group #12 – General – Plans G, H, future service, and U (Law Library)

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	15	16	-6.3%
Average age	57.1	56.7	N/A
Average service	16.5	14.6	N/A
Projected total compensation	$1,164,792	$1,192,704	-2.3%
Projected average compensation	$77,653	$74,544	4.2%
Account balances	$2,505,275	$2,226,819	12.5%
Total active vested members	14	14	0.0%
Vested terminated members(1)			
Number	4	4	0.0%
Average age	47.6	46.6	N/A
Retired members			
Number in pay status	10	10	0.0%
Average age	71.3	70.3	N/A
Average monthly benefit(2)	$2,165	$2,143	1.0%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit(2)	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit(2)	N/A	N/A	N/A

(1) *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

(2) *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

ix. Rate Group #6 – Safety – Plans E, F and V (Probation)

Category	Year Ended December 31		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	806	821	-1.8%
Average age	43.8	43.2	N/A
Average service	16.2	15.7	N/A
Projected total compensation	$65,135,279	$61,360,251	6.2%
Projected average compensation	$80,813	$74,738	8.1%
Account balances	$129,680,498	$120,052,167	8.0%
Total active vested members	760	781	-2.7%
Vested terminated members[(1)]			
Number	211	211	0.0%
Average age	40.3	39.7	N/A
Retired members			
Number in pay status	283	262	8.0%
Average age	65.9	65.5	N/A
Average monthly benefit[(2)]	$5,429	$5,499	-1.3%
Disabled members			
Number in pay status	28	25	12.0%
Average age	54.0	53.6	N/A
Average monthly benefit[(2)]	$2,821	$2,778	1.5%
Beneficiaries			
Number in pay status	26	24	8.3%
Average age	61.9	61.6	N/A
Average monthly benefit[(2)]	$2,387	$2,407	-0.8%

[(1)] *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[(2)] *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

x. Rate Group #7 – Safety – Plans E, F, Q, R and V (Law Enforcement)

	Year Ended December 31		
Category	2016	2015	Change From Prior Year
Active members in valuation			
Number	1,907	1,902	0.3%
Average age	41.7	41.6	N/A
Average service	14.1	14.2	N/A
Projected total compensation	$219,505,701	$201,875,872	8.7%
Projected average compensation	$115,105	$106,138	8.4%
Account balances	$270,051,750	$245,799,332	9.9%
Total active vested members	1,502	1,508	-0.4%
Vested terminated members[1]			
Number	170	173	-1.7%
Average age	42.6	43.1	N/A
Retired members			
Number in pay status	1,283	1,216	5.5%
Average age	63.7	63.5	N/A
Average monthly benefit[2]	$6,756	$6,652	1.6%
Disabled members			
Number in pay status	350	343	2.0%
Average age	62.9	62.3	N/A
Average monthly benefit[2]	$4,817	$4,711	2.3%
Beneficiaries			
Number in pay status	320	305	4.9%
Average age	66.9	66.7	N/A
Average monthly benefit[2]	$2,886	$2,827	2.1%

(1) Includes members who chose to leave their contributions on deposit even though they have less than five years of service.

(2) *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

xi. Rate Group #8 – Safety – Plans E, F, Q, R and V (Fire Authority)

Category	Year Ended December 31		Change From Prior Year
	2016	2015	
Active members in valuation			
Number	961	963	-0.2%
Average age	44.1	44.0	N/A
Average service[1]	14.3	14.2	N/A
Projected total compensation	$121,829,553	$115,354,130	5.6%
Projected average compensation	$126,774	$119,786	5.8%
Account balances	$122,675,043	$110,325,973	11.2%
Total active vested members	732	730	0.3%
Vested terminated members[2]			
Number	49	41	19.5%
Average age	40.0	40.9	N/A
Retired members			
Number in pay status	397	377	5.3%
Average age	63.9	63.5	N/A
Average monthly benefit[3]	$7,788	$7,694	1.2%
Disabled members			
Number in pay status	155	150	3.3%
Average age	64.6	64.0	N/A
Average monthly benefit[3]	$6,602	$6,531	1.1%
Beneficiaries			
Number in pay status	93	86	8.1%
Average age	61.7	60.6	N/A
Average monthly benefit[3]	$3,025	$2,949	2.6%

(1) *For some former Santa Ana members, service used in calculating the average above is only used for vesting purposes. Benefit service starts to accrue only effective April 2012.*

(2) *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

(3) *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT A

Table of Plan Coverage

xii. Total

Category	Year Ended December 31 2016	Year Ended December 31 2015	Change From Prior Year
Active members in valuation			
Number	21,746	21,525	1.0%
Average age	45.4	45.5	N/A
Average service	12.9	13.1	N/A
Projected total compensation	$1,759,833,297	$1,633,110,601	7.8%
Projected average compensation	$80,927	$75,870	6.7%
Account balances	$2,654,599,030	$2,488,757,062	6.7%
Total active vested members	16,227	16,692	-2.8%
Vested terminated members[(1)]			
Number	5,370	5,091	5.5%
Average age	44.8	44.8	N/A
Retired members			
Number in pay status	12,767	12,271	4.0%
Average age	69.7	69.5	N/A
Average monthly benefit[(2)]	$3,946	$3,868	2.0%
Disabled members			
Number in pay status	1,419	1,404	1.1%
Average age	65.0	64.6	N/A
Average monthly benefit[(2)]	$3,458	$3,378	2.4%
Beneficiaries			
Number in pay status	2,183	2,135	2.2%
Average age	72.8	72.7	N/A
Average monthly benefit[(2)]	$1,945	$1,914	1.6%

(1) *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

(2) *Excludes monthly benefits payable from the STAR COLA.*

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

i. Rate Group #1 – General – Plans A, B and U (non-OCTA, non-OCSD)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	71	71	- -	- -	- -	- -	- -	- -	- -	- -
	$58,329	$58,329	- -	- -	- -	- -	- -	- -	- -	- -
25-29	266	261	5	- -	- -	- -	- -	- -	- -	- -
	48,069	47,924	$55,626	- -	- -	- -	- -	- -	- -	- -
30-34	238	187	30	20	1	- -	- -	- -	- -	- -
	48,775	47,639	52,784	$52,861	$59,297	- -	- -	- -	- -	- -
35-39	225	108	35	53	29	- -	- -	- -	- -	- -
	50,077	46,548	53,304	53,132	53,738	- -	- -	- -	- -	- -
40-44	212	65	20	65	56	5	1	- -	- -	- -
	51,303	45,728	53,659	53,860	53,782	$53,026	$52,971	- -	- -	- -
45-49	189	49	22	41	36	27	14	- -	- -	- -
	51,914	45,573	53,019	54,175	53,861	55,261	54,291	- -	- -	- -
50-54	136	48	12	26	21	11	15	3	- -	- -
	50,532	45,108	51,464	52,998	53,739	53,220	55,817	$53,468	- -	- -
55-59	140	35	14	21	18	19	26	5	2	- -
	51,903	47,020	50,754	53,404	52,805	54,269	54,926	55,091	$51,752	- -
60-64	102	22	4	13	11	22	23	4	3	- -
	52,142	46,579	54,245	52,473	53,273	53,661	54,180	54,824	54,225	- -
65-69	47	6	2	7	10	8	13	- -	1	- -
	53,922	53,206	52,061	53,629	52,530	55,027	55,108	- -	53,648	- -
70 & over	14	1	1	1	2	6	3	- -	- -	- -
	52,539	43,963	53,605	53,282	50,505	53,704	53,820	- -	- -	- -
Total	1,640	853	145	247	184	98	95	12	6	- -
	$50,743	$48,053	$52,895	$53,464	$53,586	$54,252	$54,762	$54,596	$53,305	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

ii. Rate Group #2 – General – Plans I, J, O, P, S, T, U and W

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	190	190	- -	- -	- -	- -	- -	- -	- -	- -
	$47,215	$47,215	- -	- -	- -	- -	- -	- -	- -	- -
25-29	939	843	89	7	- -	- -	- -	- -	- -	- -
	55,443	54,995	$59,498	$57,781	- -	- -	- -	- -	- -	- -
30-34	1,607	871	469	259	8	- -	- -	- -	- -	- -
	64,609	63,741	67,652	61,837	$70,332	- -	- -	- -	- -	- -
35-39	1,857	489	508	637	221	2	- -	- -	- -	- -
	74,294	70,385	79,417	75,258	68,410	$72,117	- -	- -	- -	- -
40-44	2,052	369	366	590	613	103	11	- -	- -	- -
	77,891	71,330	77,350	79,795	80,489	77,265	$74,959	- -	- -	- -
45-49	2,174	255	288	437	620	346	222	6	- -	- -
	82,061	73,082	79,379	83,492	86,107	82,251	81,566	$77,323	- -	- -
50-54	2,085	205	212	349	476	293	418	123	9	- -
	82,445	80,635	80,717	78,974	82,470	84,859	85,730	80,213	$96,971	- -
55-59	1,585	145	177	246	340	207	309	123	37	1
	80,984	78,346	80,322	82,138	77,173	81,884	86,356	80,820	72,786	$69,898
60-64	980	87	92	168	257	121	156	65	31	3
	79,056	78,840	78,385	69,457	79,910	78,955	84,159	89,917	79,758	66,398
65-69	419	28	46	72	136	49	54	23	8	3
	78,570	100,440	73,794	80,487	77,808	69,639	83,578	66,954	79,482	78,575
70 & over	187	8	11	34	58	27	27	11	5	6
	68,022	48,793	61,605	81,449	70,086	64,584	59,615	70,893	49,780	72,624
Total	14,075	3,490	2,258	2,799	2,729	1,148	1,197	351	90	13
	$75,625	$65,380	$75,798	$77,144	$80,281	$81,084	$84,130	$81,013	$76,923	$72,351

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

iii. Rate Group #3 – General – Plans B, G, H and U (OCSD)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$69,779	$69,779	- -	- -	- -	- -	- -	- -	- -	- -
25-29	23	19	4	- -	- -	- -	- -	- -	- -	- -
	82,013	80,505	$89,180	- -	- -	- -	- -	- -	- -	- -
30-34	59	41	10	8	- -	- -	- -	- -	- -	- -
	95,445	93,147	100,884	$100,423	- -	- -	- -	- -	- -	- -
35-39	68	27	20	21	- -	- -	- -	- -	- -	- -
	103,635	96,557	106,777	109,744	- -	- -	- -	- -	- -	- -
40-44	68	21	16	25	4	2	- -	- -	- -	- -
	107,424	107,675	106,439	103,023	$122,618	$137,307	- -	- -	- -	- -
45-49	84	16	13	18	15	12	10	- -	- -	- -
	117,370	102,891	120,989	113,465	124,929	129,515	$116,946	- -	- -	- -
50-54	118	10	20	21	12	21	28	6	- -	- -
	123,024	97,895	110,975	122,935	122,573	140,410	130,852	$108,887	- -	- -
55-59	85	11	16	17	7	15	18	1	- -	- -
	122,802	110,122	113,091	122,234	135,932	124,080	129,872	188,937	- -	- -
60-64	50	6	5	13	3	8	12	2	1	- -
	121,339	104,264	98,234	118,140	135,586	143,175	120,246	126,936	$165,391	- -
65-69	17	2	1	4	2	2	5	- -	1	- -
	113,164	105,117	78,523	94,886	196,912	106,523	108,824	- -	104,491	- -
70 & over	5	- -	- -	- -	1	2	2	- -	- -	- -
	125,337	- -	- -	- -	124,007	118,045	133,293	- -	- -	- -
Total	578	154	105	127	44	62	75	9	2	- -
	$113,098	$97,136	$108,339	$112,606	$129,804	$132,793	$125,662	$121,792	$134,941	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

iv. Rate Group #5 – General – Plans A, B and U (OCTA)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	17	17	- -	- -	- -	- -	- -	- -	- -	- -
	$51,338	$51,338	- -	- -	- -	- -	- -	- -	- -	- -
25-29	51	48	3	- -	- -	- -	- -	- -	- -	- -
	55,786	55,371	$62,427	- -	- -	- -	- -	- -	- -	- -
30-34	68	42	17	9	- -	- -	- -	- -	- -	- -
	63,453	58,939	71,307	$69,681	- -	- -	- -	- -	- -	- -
35-39	127	45	24	48	10	- -	- -	- -	- -	- -
	75,180	74,375	75,872	73,727	$84,113	- -	- -	- -	- -	- -
40-44	154	44	19	58	28	5	- -	- -	- -	- -
	74,703	68,704	97,374	71,933	74,448	$74,923	- -	- -	- -	- -
45-49	199	51	27	59	40	11	11	- -	- -	- -
	76,581	69,467	86,667	77,513	70,513	76,217	$102,235	- -	- -	- -
50-54	248	41	29	76	52	17	26	6	1	- -
	77,366	70,243	103,269	67,136	78,820	82,770	80,180	$90,540	$76,151	- -
55-59	249	26	16	67	55	21	41	17	6	- -
	80,167	67,102	85,974	77,624	70,489	110,887	85,857	84,283	80,327	- -
60-64	191	18	20	41	31	21	29	15	13	3
	79,662	79,621	89,384	71,884	73,307	88,547	78,919	86,115	80,373	$96,694
65-69	50	3	6	18	9	5	4	1	3	1
	76,704	64,099	83,888	81,602	76,924	59,284	67,075	64,220	95,115	64,150
70 & over	18	4	2	6	2	1	2	- -	- -	1
	88,237	78,081	112,894	75,480	82,197	58,771	116,078	- -	- -	141,944
Total	1,372	339	163	382	227	81	113	39	23	5
	$75,883	$66,316	$87,716	$73,517	$74,233	$88,437	$84,235	$85,436	$82,101	$99,235

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

v. Rate Group #9 – General – Plans M, N and U (TCA)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$60,533	$60,533	- -	- -	- -	- -	- -	- -	- -	- -
25-29	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30-34	4	3	- -	1	- -	- -	- -	- -	- -	- -
	80,075	69,335	- -	$112,294	- -	- -	- -	- -	- -	- -
35-39	10	4	3	2	1	- -	- -	- -	- -	- -
	74,999	94,258	$55,820	69,408	$66,679	- -	- -	- -	- -	- -
40-44	8	3	1	2	2	- -	- -	- -	- -	- -
	87,619	107,302	78,155	93,273	57,171	- -	- -	- -	- -	- -
45-49	8	4	2	1	- -	1	- -	- -	- -	- -
	117,003	125,376	150,774	53,371	- -	$79,604	- -	- -	- -	- -
50-54	17	4	2	5	4	1	1	- -	- -	- -
	126,445	153,461	96,057	117,199	108,914	115,613	$206,348	- -	- -	- -
55-59	11	3	3	1	4	- -	- -	- -	- -	- -
	98,826	109,710	70,682	90,068	113,961	- -	- -	- -	- -	- -
60-64	7	2	- -	1	2	1	1	- -	- -	- -
	100,759	78,557	- -	170,996	101,487	94,584	79,644	- -	- -	- -
65-69	2	- -	- -	2	- -	- -	- -	- -	- -	- -
	62,687	- -	- -	62,687	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	68	24	11	15	13	3	2	- -	- -	- -
	$100,517	$107,045	$86,484	$97,564	$98,115	$96,600	$142,996	- -	- -	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

vi. Rate Group #10 – General – Plans I, J, M, N and U (OCFA)

	Years of Service									
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	9	9	- -	- -	- -	- -	- -	- -	- -	- -
	$61,462	$61,462	- -	- -	- -	- -	- -	- -	- -	- -
25-29	26	26	- -	- -	- -	- -	- -	- -	- -	- -
	65,661	65,661	- -	- -	- -	- -	- -	- -	- -	- -
30-34	44	34	7	3	- -	- -	- -	- -	- -	- -
	72,178	70,571	$86,346	$57,333	- -	- -	- -	- -	- -	- -
35-39	37	21	10	4	2	- -	- -	- -	- -	- -
	80,951	74,572	86,126	93,497	$96,955	- -	- -	- -	- -	- -
40-44	39	14	6	9	9	1	- -	- -	- -	- -
	87,609	80,516	69,158	104,161	91,116	$117,085	- -	- -	- -	- -
45-49	41	17	4	6	8	5	1	- -	- -	- -
	108,739	112,332	139,491	100,422	110,824	87,637	$63,388	- -	- -	- -
50-54	58	6	3	12	16	9	10	2	- -	- -
	94,461	97,656	117,025	88,053	88,902	102,250	100,253	$69,948	- -	- -
55-59	27	8	2	7	5	2	2	1	- -	- -
	112,920	127,960	112,623	111,335	96,046	151,616	87,670	61,762	- -	- -
60-64	16	5	1	5	4	1	- -	- -	- -	- -
	98,999	101,690	90,470	95,688	91,280	141,506	- -	- -	- -	- -
65-69	4	- -	1	- -	2	1	- -	- -	- -	- -
	91,134	- -	70,293	- -	104,074	86,096	- -	- -	- -	- -
70 & over	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	54,230	- -	- -	54,230	- -	- -	- -	- -	- -	- -
Total	302	140	34	47	46	19	13	3	- -	- -
	$88,863	$81,291	$93,402	$94,779	$95,141	$105,597	$95,481	$67,219	- -	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

vii. Rate Group #11 – General – Plans M and N, future service, and U (Cemetery)

	Years of Service									
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25-29	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$42,675	$42,675	- -	- -	- -	- -	- -	- -	- -	- -
30-34	2	1	- -	1	- -	- -	- -	- -	- -	- -
	51,105	44,905	- -	$57,306	- -	- -	- -	- -	- -	- -
35-39	3	- -	2	- -	1	- -	- -	- -	- -	- -
	56,264	- -	$51,006	- -	$66,778	- -	- -	- -	- -	- -
40-44	2	- -	1	- -	1	- -	- -	- -	- -	- -
	70,153	- -	50,036	- -	90,270	- -	- -	- -	- -	- -
45-49	3	1	- -	1	- -	- -	1	- -	- -	- -
	53,588	41,173	- -	68,525	- -	- -	$51,066	- -	- -	- -
50-54	6	1	- -	1	- -	3	1	- -	- -	- -
	74,663	56,169	- -	148,809	- -	$63,977	51,066	- -	- -	- -
55-59	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
60-64	5	- -	- -	- -	- -	2	3	- -	- -	- -
	66,899	- -	- -	- -	- -	70,939	64,205	- -	- -	- -
65-69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	22	4	3	3	2	5	5	- -	- -	- -
	$63,510	$46,231	$50,683	$91,547	$78,524	$66,762	$58,949	- -	- -	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

viii. Rate Group #12 – General – Plans G, H, future service, and U (Law Library)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25-29	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30-34	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$46,288	$46,288	- -	- -	- -	- -	- -	- -	- -	- -
35-39	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	101,037	- -	$101,037	- -	- -	- -	- -	- -	- -	- -
40-44	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	72,950	- -	- -	$72,950	- -	- -	- -	- -	- -	- -
45-49	1	- -	- -	- -	1	- -	- -	- -	- -	- -
	62,523	- -	- -	- -	$62,523	- -	- -	- -	- -	- -
50-54	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	101,037	- -	- -	101,037	- -	- -	- -	- -	- -	- -
55-59	3	- -	1	- -	1	- -	1	- -	- -	- -
	65,733	- -	52,206	- -	72,393	- -	$72,602	- -	- -	- -
60-64	3	- -	- -	1	- -	1	1	- -	- -	- -
	110,177	- -	- -	62,823	- -	$79,823	187,885	- -	- -	- -
65-69	2	- -	- -	- -	1	1	- -	- -	- -	- -
	62,673	- -	- -	- -	62,823	62,523	- -	- -	- -	- -
70 & over	2	- -	- -	1	- -	- -	- -	1	- -	- -
	63,939	- -	- -	48,056	- -	- -	- -	$79,823	- -	- -
Total	15	1	2	4	3	2	2	1	- -	- -
	$77,653	$46,288	$76,622	$71,216	$65,913	$71,173	$130,243	$79,823	- -	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

ix. Rate Group #6 – Safety – Plans E, F and V (Probation)

	Years of Service									
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	6	6	- -	- -	- -	- -	- -	- -	- -	- -
	$52,776	$52,776	- -	- -	- -	- -	- -	- -	- -	- -
25-29	22	21	- -	1	- -	- -	- -	- -	- -	- -
	57,606	57,961	- -	$50,163	- -	- -	- -	- -	- -	- -
30-34	64	11	22	31	- -	- -	- -	- -	- -	- -
	67,693	53,358	$66,044	73,949	- -	- -	- -	- -	- -	- -
35-39	171	4	20	114	33	- -	- -	- -	- -	- -
	75,769	52,751	63,832	78,003	$78,076	- -	- -	- -	- -	- -
40-44	207	2	11	50	132	12	- -	- -	- -	- -
	81,144	51,605	56,157	75,046	84,916	$92,890	- -	- -	- -	- -
45-49	183	1	1	30	74	65	12	- -	- -	- -
	85,719	53,142	70,492	73,652	83,797	91,516	$100,312	- -	- -	- -
50-54	90	1	1	6	28	17	30	7	- -	- -
	92,763	51,508	49,948	76,402	81,780	94,071	96,257	$144,581	- -	- -
55-59	41	1	1	1	8	11	10	9	- -	- -
	88,245	88,407	70,837	69,101	74,549	83,335	89,836	108,696	- -	- -
60-64	18	- -	- -	3	5	5	2	3	- -	- -
	84,951	- -	- -	83,011	74,177	93,694	97,593	81,850	- -	- -
65-69	4	- -	- -	- -	3	- -	1	- -	- -	- -
	70,801	- -	- -	- -	63,277	- -	93,373	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	806	47	56	236	283	110	55	19	- -	- -
	$80,813	$55,916	$63,190	$76,158	$82,803	$91,342	$95,971	$117,678	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

x. Rate Group #7 – Safety – Plans E, F, Q, R and V (Law Enforcement)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	34	33	1	- -	- -	- -	- -	- -	- -	- -
	$73,319	$73,009	$83,559	- -	- -	- -	- -	- -	- -	- -
25-29	209	149	58	2	- -	- -	- -	- -	- -	- -
	87,641	84,031	96,231	$107,520	- -	- -	- -	- -	- -	- -
30-34	316	125	151	40	- -	- -	- -	- -	- -	- -
	100,580	90,817	105,964	110,765	- -	- -	- -	- -	- -	- -
35-39	266	46	75	100	45	- -	- -	- -	- -	- -
	110,372	94,375	107,017	115,423	$121,092	- -	- -	- -	- -	- -
40-44	315	18	31	79	145	42	- -	- -	- -	- -
	119,724	105,956	110,331	115,164	122,426	$131,806	- -	- -	- -	- -
45-49	368	11	15	51	108	137	46	- -	- -	- -
	127,864	124,589	116,928	127,996	121,721	132,669	$132,179	- -	- -	- -
50-54	264	31	7	17	42	52	93	22	- -	- -
	132,873	129,778	123,682	124,863	125,090	127,428	138,575	$149,974	- -	- -
55-59	101	26	11	5	9	13	23	14	- -	- -
	129,993	135,789	132,231	116,999	122,716	138,827	121,453	132,619	- -	- -
60-64	28	2	5	8	- -	1	5	7	- -	- -
	135,404	114,850	157,037	140,086	- -	114,764	126,056	130,098	- -	- -
65-69	5	1	1	2	1	- -	- -	- -	- -	- -
	130,374	130,022	136,359	137,529	110,428	- -	- -	- -	- -	- -
70 & over	1	- -	- -	- -	1	- -	- -	- -	- -	- -
	135,346	- -	- -	- -	135,346	- -	- -	- -	- -	- -
Total	1,907	442	355	304	351	245	167	43	- -	- -
	$115,105	$94,603	$107,346	$118,148	$122,367	$131,663	$134,081	$141,088	- -	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

xi. Rate Group #8 – Safety – Plans E, F, Q, R and V (Fire Authority)

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	5	5	- -	- -	- -	- -	- -	- -	- -	- -
	$94,183	$94,183	- -	- -	- -	- -	- -	- -	- -	- -
25-29	61	55	6	- -	- -	- -	- -	- -	- -	- -
	96,277	95,616	$102,336	- -	- -	- -	- -	- -	- -	- -
30-34	122	64	47	11	- -	- -	- -	- -	- -	- -
	109,309	100,766	118,462	$119,902	- -	- -	- -	- -	- -	- -
35-39	179	61	55	55	8	- -	- -	- -	- -	- -
	123,292	114,647	124,669	128,765	$142,110	- -	- -	- -	- -	- -
40-44	155	36	35	50	28	6	- -	- -	- -	- -
	128,601	118,617	128,189	133,265	128,853	$150,860	- -	- -	- -	- -
45-49	137	25	9	30	28	29	16	- -	- -	- -
	140,056	141,706	125,054	129,491	135,962	147,769	$158,914	- -	- -	- -
50-54	152	33	2	11	28	25	37	16	- -	- -
	141,449	144,388	115,473	130,182	136,124	137,487	147,713	$147,404	- -	- -
55-59	109	38	2	3	9	19	26	8	4	- -
	130,338	130,816	116,878	127,277	120,474	129,701	133,615	130,039	$139,337	- -
60-64	34	16	- -	- -	2	1	3	5	7	- -
	129,725	127,402	- -	- -	114,057	118,192	125,852	139,855	135,583	- -
65-69	6	2	- -	- -	- -	1	2	- -	1	- -
	118,267	131,833	- -	- -	- -	118,666	112,658	- -	101,957	- -
70 & over	1	- -	- -	- -	1	- -	- -	- -	- -	- -
	132,706	- -	- -	- -	132,706	- -	- -	- -	- -	- -
Total	961	335	156	160	104	81	84	29	12	- -
	$126,774	$116,487	$122,534	$129,768	$132,772	$139,862	$143,868	$141,312	$134,032	- -

EXHIBIT B
Members in Active Service and Projected Average Compensation as of December 31, 2016
By Age and Years of Service

xii. Total

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	334	333	1	- -	- -	- -	- -	- -	- -	- -
	$53,739	$53,650	$83,559	- -	- -	- -	- -	- -	- -	- -
25-29	1,598	1,423	165	10	- -	- -	- -	- -	- -	- -
	60,567	58,892	74,623	$66,967	- -	- -	- -	- -	- -	- -
30-34	2,525	1,380	753	383	9	- -	- -	- -	- -	- -
	70,684	66,528	78,565	70,201	$69,106	- -	- -	- -	- -	- -
35-39	2,944	805	753	1,034	350	2	- -	- -	- -	- -
	79,561	73,153	84,406	81,845	77,166	$72,117	- -	- -	- -	- -
40-44	3,213	572	506	929	1,018	176	12	- -	- -	- -
	83,502	73,963	83,013	84,002	86,955	94,008	$73,127	- -	- -	- -
45-49	3,387	430	381	674	930	633	333	6	- -	- -
	88,827	77,853	83,333	87,046	90,455	96,794	93,402	$77,323	- -	- -
50-54	3,175	380	288	525	679	449	659	185	10	- -
	89,946	85,920	85,534	81,008	87,138	95,090	98,515	97,476	$94,889	- -
55-59	2,351	293	243	368	456	307	456	178	49	1
	85,629	88,412	83,791	82,912	78,533	90,098	90,754	88,624	78,284	$69,898
60-64	1,434	158	127	253	315	184	235	101	55	6
	81,423	81,496	83,330	74,767	79,267	80,969	84,127	93,713	87,173	81,546
65-69	556	42	57	105	164	67	79	24	14	4
	78,191	93,518	75,213	80,184	77,833	69,094	80,515	66,840	84,378	74,968
70 & over	229	13	14	43	65	36	34	12	5	7
	70,396	57,433	68,361	78,552	72,653	65,579	66,759	71,638	49,780	82,527
Total	21,746	5,829	3,288	4,324	3,986	1,854	1,808	506	133	18
	$80,927	$69,352	$82,022	$81,555	$84,723	$91,804	$92,194	$91,306	$82,778	$79,818

EXHIBIT C

Reconciliation of Member Data – December 31, 2015 to December 31, 2016

	Active Members	Vested Former Members*	Pensioners	Disableds	Beneficiaries	Total
Number as of December 31, 2015	21,525	5,091	12,271	1,404	2,135	42,426
New members	1,514	123	0	0	162	1,799
Terminations – with vested rights	-464	464	0	0	0	0
Contributions refunds	-148	-105	0	0	0	-253
Retirements	-675	-128	803	0	0	0
New disabilities	-21	-2	-30	53	0	0
Return to work	50	-47	-3	0	0	0
Deaths	-33	-25	-273	-37	-107	-475
Data adjustments	-2	-1	-1	-1	-7	-12
Number as of December 31, 2016	21,746	5,370	12,767	1,419	2,183	43,485

* *Includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

EXHIBIT D

Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Contribution income:				
Employer contributions[1]	$533,667,000		$571,298,000	
Member contributions	258,297,000		249,271,000	
Discount for prepaid contributions	24,353,000		27,301,000	
Transfer from County Investment Account[2]	0		0	
Contribution income		$816,317,000		$847,870,000
Investment income:				
Interest, dividends and other income	$220,524,000		$171,671,000	
Recognition of capital appreciation	653,783,000		501,572,000	
Less investment and administrative fees	-97,680,000		-67,053,000	
Net investment income		$776,627,000		$606,190,000
Total income available for benefits		$1,592,944,000		$1,454,060,000
Less benefit payments		-$717,976,000		-$675,963,000
Change in reserve for future benefits		$874,968,000		$778,097,000

(1) *Excludes contributions towards O.C. Sanitation District UAAL Deferred Account.*

(2) *Funded by pension obligation bond proceeds held by OCERS.*

EXHIBIT E
Summary Statement of Assets

	Year Ended December 31, 2016		Year Ended December 31, 2015	
Cash equivalents		$456,545,000		$360,180,000
Accounts receivable:				
Contributions	$19,206,000		$17,730,000	
Investment income	15,880,000		15,520,000	
Securities settlements	85,263,000		48,568,000	
Other	56,019,000		7,722,000	
Total accounts receivable		$176,368,000		$89,540,000
Investments:				
Fixed income investments	$2,051,276,000		$1,760,617,000	
Equities	4,774,008,000		4,329,171,000	
Real estate	1,096,693,000		1,109,260,000	
Alternative investments and diversified credit	4,692,664,000		4,335,000,000	
Security lending collateral	165,455,000		106,142,000	
Fixed assets net of accumulated depreciation	22,620,000		24,935,000	
Total investments at market value		$12,802,716,000		$11,665,125,000
Total assets		$13,435,629,000		$12,114,845,000
Less accounts payable:				
Securities settlements	-$157,867,000		-$50,506,000	
Security lending liability	-165,455,000		-106,142,000	
All other	-80,575,000		-73,713,000	
Total accounts payable		-$403,897,000		-$230,361,000
Net assets at market value[1]		$12,657,418,000		$11,548,529,000
Net assets at actuarial value		$13,103,066,000		$12,228,098,000
Net assets at valuation value		$13,102,978,000		$12,228,009,000

(1) *The market value excludes $117,723,000 and $108,789,000 as of December 31, 2016 and December 31, 2015, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS), $222,524,000 and $227,166,000 as of December 31, 2016 and December 31,2015, respectively, in the prepaid employer contributions account and $34,067,000 as of December 31, 2016 in the O.C. Sanitation District UAAL Deferred Account.*

Note: Results may not total exactly due to rounding.

EXHIBIT F

Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, we first determine the amount and timing of all future payments that will be made by the Plan for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. In this Exhibit only, we refer to this present value as the "liability" of the Plan.

Second, we determine how this liability will be met. These actuarial "assets" include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments.

Assets		
1.	Total valuation value of assets	$13,102,978,000
2.	Present value of future contributions by members	1,848,090,000
3.	Present value of future employer contributions for:	
	a. entry age normal cost	2,073,675,000
	b. unfunded actuarial accrued liability	4,830,483,000
4.	Total current and future assets	$21,855,226,000
Liabilities		
5.	Present value of retirement allowance for retirees and beneficiaries	$9,716,031,000
6.	Present value of retirement allowance for inactive members with vested rights[1]	393,497,000
7.	Present value of retirement allowances for active members	11,745,698,000
8.	Total liabilities	$21,855,226,000

[1] *This includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

EXHIBIT G
Summary of Reported Asset Information as of December 31, 2016

Reserves		
Included in Valuation Value of Assets		
Active Members Reserve (Book Value)		$2,893,408,000
Retired Members Reserve (Book Value)		9,384,630,000
Employer Advanced Reserve (Book Value)		2,076,384,000
ERI Contribution Reserve		9,447,000
STAR COLA Contribution Reserve		0
Unrealized Appreciation/(Depriciation) Included in Valuation Value of Assets		-1,260,891,000
Subtotal: Valuation Value of Assets		$13,102,978,000
Not Included in Valuation Value of Assets		
RMBR	$0	
Unclaimed Member Deposit	0	
Medicare Medical Insurance Reserve	88,000	
Total	$88,000	
Subtotal: Actuarial Value of Assets		$13,103,066,000
Unrecognized Investment Income		-445,648,000
Subtotal: Market Value of Assets (Net of County Investment Account[1] and Prepaid Employer Contributions)		$12,657,418,000
County Investment Account[1]		117,723,000
Prepaid Employer Contributions		222,524,000
O.C. Sanitation District UAAL Deferred Account		34,067,000
Total: Gross Market Value of Assets		$13,031,732,000

[1] *Funded by pension obligation bond proceeds held by OCERS.*

EXHIBIT H

Development of Unfunded/(Overfunded) Actuarial Accrued Liability for Year Ended December 31, 2016

1.	Unfunded actuarial accrued liability at beginning of year		$4,822,348,000
2.	Adjustment for future service improvement for Law Library		-510,000
3.	Unfunded actuarial accrued liability at beginning of year after adjustment for future service improvement for Law Library		$4,821,838,000
4.	Total normal cost at middle of year		442,698,000
5.	Expected employer and member contributions		-807,753,000
6.	Interest		330,501,000
7.	Expected unfunded actuarial accrued liability		$4,787,284,000
8.	Actuarial (gain)/loss and other changes:		
	(a) Gain from additional UAAL contributions	-$13,654,000	
	(b) Loss from actual contributions less than expected	5,142,000	
	(c) Loss from investment return	113,103,000	
	(d) Gain from lower than expected COLA increases	-186,039,000	
	(e) Loss from higher than expected salary increases	204,603,000	
	(f) Change in data and process[1]	-92,587,000	
	(g) Other experience loss	12,631,000	
	Total changes		$43,199,000
9.	Unfunded actuarial accrued liability at end of year		$4,830,483,000

Note: The sum of 8(d) through 8(g) is equal to the “other experience” gain of $61,392,000 provided on page 7.

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

EXHIBIT I

Section 415 Limitations

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar indexed for inflation. That limit is $215,000 for 2017. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Benefits for non-CalPEPRA plans that are in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contributions rates for non-CalPEPRA plans determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.

EXHIBIT J
Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions: The estimates on which the cost of the Plan is calculated including:

(a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;

(b) Mortality rates — the death rates of members and pensioners; life expectancy is based on these rates;

(c) Retirement rates — the rate or probability of retirement at a given age; and

(d) Turnover rates — the rates at which members of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost: The amount of contributions required to fund the level cost allocated to the current year of service.

Actuarial Accrued Liability For Actives: The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability For Pensioners: The single sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

Unfunded Actuarial Accrued Liability: The extent to which the actuarial accrued liability of the Plan exceeds (or is exceeded by) the assets of the Plan. There are many approaches to paying off the unfunded or overfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

Amortization of the Unfunded (Overfunded) Actuarial Accrued Liability: Payments made over a period of years equal in value to the Plan's unfunded or overfunded actuarial accrued liability.

Investment Return: The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the market gains and losses to avoid significant swings in the value of assets from one year to the next.

EXHIBIT I
Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:

1.	Retired members as of the valuation date (including 2,183 beneficiaries in pay status)		16,369
2.	Members inactive during year ended December 31, 2016 with vested rights [1]		5,370
3.	Members active during the year ended December 31, 2016		21,746

The actuarial factors as of the valuation date are as follows (amounts in 000s):

1.	Normal cost		$468,525
2.	Present value of future benefits		21,855,226
3.	Present value of future normal costs		3,921,765
4.	Actuarial accrued liability [2]		17,933,461
	Retired members and beneficiaries	$9,716,031	
	Inactive members with vested rights [1]	393,497	
	Active members	7,823,933	
5.	Valuation value of assets [3] ($12,657,418 at market value as reported by Retirement System)		13,102,978
6.	Unfunded actuarial accrued liability		$4,830,483

[1] *This includes members who chose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes liabilities held for STAR COLA.*

[3] *Excludes assets held for Medicare medical insurance reserve.*

EXHIBIT I (continued)
Summary of Actuarial Valuation Results

The determination of the recommended average employer contribution is as follows (amounts in 000s):

		Dollar Amount	% of Payroll
1.	Total normal cost	$468,525	26.62%
2.	Expected member contributions	-211,416	-12.01%
3.	Employer normal cost: (1) + (2)	$257,109	14.61%
4.	Amortization of unfunded actuarial accrued liability	386,349	21.95%
5.	Total recommended average employer contribution: (3) + (4)	$643,458	36.56%
6.	Projected compensation	$1,759,831	

EXHIBIT II
Actuarial Assumptions and Actuarial Cost Method

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 and administrative 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.

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.

Termination Rates Before Retirement:

	Rate (%)			
	Mortality			
	General		Safety	
Age	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.

Termination Rates Before Retirement (Continued):

	Rate (%)			
	Disability			
Age	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.*

Termination Rates Before Retirement (Continued):

	Rate (%) Termination			
Years of Service	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

(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.*

Retirement Rates:

	Rate (%)							
Age	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.*

Retirement Rates (Continued):

	Rate (%)			
Age	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.*

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.

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

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

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:

	Final One Year Salary	Final Three Year Salary
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.
Changes in Actuarial Assumptions and Methods:	None.

EXHIBIT III
Summary of Plan Provisions

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

Membership Eligibility: Membership with OCERS begins with the day of employment in an eligible position by the County or a participating employer.

Non-CalPEPRA General Plans

2.5% @ 55 Plans (Orange County Sanitation District 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 Members except bargaining unit AFSCME members, Orange County Superior Court, Local Agency Formation Commission[1], Orange County Employees Retirement System[2], Children and Families 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 members 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 members 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 Members, Orange County Superior Court, Local Agency Formation Commission and County Managers unit)

Plan O	County OCEA members and Superior Court members rehired on or after May 7, 2010, LAFCO members rehired on or after July 1, 2010 and County Managers unit members rehired on or after August 17, 2010 and not electing to rejoin Plan I.
Plan P	County OCEA members and Superior Court members hired on or after May 7, 2010, LAFCO members hired on or after July 1, 2010 and County Managers unit members hired on or after August 17, 2010 and not electing Plan J.

2.0% @ 57 Plan (City of San Juan Capistrano)

Plan S	General members hired on or after July 1, 2012.

All Other General Employers

Plan A	General members hired before September 21, 1979.
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

Non-CalPEPRA Safety Plans

3% @ 50 Plans (Law Enforcement, Fire Authority and Probation Members)

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 members of OCFA Executive Management, and before July 1, 2012 for other OCFA Safety members.

3% @ 55 Plans (Law Enforcement, Fire Authority)

Plan Q	Safety Law Enforcement members rehired on or after April 9, 2010, Safety members of OCFA Executive Management rehired on or after July 1, 2011, and other OCFA Safety members 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 members of OCFA Executive Management hired on or after July 1, 2011, and other OCFA Safety members hired on or after July 1, 2012.

CalPEPRA General Plans

1.62% @ 65 Plan (Orange County Members except County Attorneys, Orange County Employees Retirement System except Management Members, Children and Families 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 Members)

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 would be allowed to elect the alternative benefit under Plan W.

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.

Final Compensation for Benefit Determination:

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

Service:	Years of service. (Yrs)

Service Retirement Eligibility:

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

Benefit Formula:

General Plans

2.5% @ 55	**Retirement Age**	**Benefit Formula**
Plan G (§31676.18)	50	(2.00% x FAS1 x Yrs)
	55	(2.50% x FAS1 x Yrs)
	60	(2.50% x FAS1 x Yrs)
	62	(2.62% x FAS1 x Yrs)*
	65 or later	(2.62% x FAS1 x Yrs)*
Plan H (§31676.18)	50	(2.00% x FAS3 x Yrs)
	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.*

Benefit Formula (continued):

2.7% @ 55	**Retirement Age**	**Benefit Formula**
Plan I (§31676.19)	50	(2.00% x FAS1 x Yrs)
	55	(2.70% x FAS1 x Yrs)
	60	(2.70% x FAS1 x Yrs)
	62	(2.70% x FAS1 x Yrs)
	65 or later	(2.70% x FAS1 x Yrs)
Plan J (§31676.19)	50	(2.00% x FAS3 x Yrs)
	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)

Benefit Formula (continued):

	Retirement Age	Benefit Formula
2.0% @ 55		
Plan M (§31676.16)	50	(1.43% x FAS1 x Yrs)
	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)
	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.*

Benefit Formula (continued):

	Retirement Age	Benefit Formula
1.62% @ 65		
Plan O (§31676.01)	50	(0.79% x FAS1 x Yrs)
	55	(0.99% x FAS1 x Yrs)
	60	(1.28% x FAS1 x Yrs)
	62	(1.39% x FAS1 x Yrs)
	65 or later	(1.62% x FAS1 x Yrs)
Plan P, Plan T and Plan W	50	(0.79% x FAS3 x Yrs)
(§31676.01)	55	(0.99% x FAS3 x Yrs)
	60	(1.28% x FAS3 x Yrs)
	62	(1.39% x FAS3 x Yrs)
	65 or later	(1.62% x FAS3 x Yrs)

Benefit Formula (continued):

	Retirement Age	Benefit Formula
2.0% @ 57		
Plan S (§31676.12)	50	(1.34% x FAS3 x Yrs)
	55	(1.77% x FAS3 x Yrs)
	60	(2.34% x FAS3 x Yrs)
	62	(2.62% x FAS3 x Yrs)
	65 or later	(2.62% x FAS3 x Yrs)

Benefit Formula (continued):

	Retirement Age	Benefit Formula
Plan A (§31676.12)	50	(1.34% x FAS1 x Yrs)
	55	(1.77% x FAS1 x Yrs)
	60	(2.34% x FAS1 x Yrs)
	62	(2.62% x FAS1 x Yrs)
	65 or later	(2.62% x FAS1 x Yrs)
Plan B (§31676.1)	50	(1.18% x FAS3 x Yrs)
	55	(1.49% x FAS3 x Yrs)
	60	(1.92% x FAS3 x Yrs)
	62	(2.09% x FAS3 x Yrs)
	65 or later	(2.43% x FAS3 x Yrs)
Plan U (§7522.20(a))	52	(1.00% x FAS3 x Yrs)
	55	(1.30% x FAS3 x Yrs)
	60	(1.80% x FAS3 x Yrs)
	62	(2.00% x FAS3 x Yrs)
	65	(2.30% x FAS3 x Yrs)
	67 or later	(2.50% x FAS3 x Yrs)

Benefit Formula (continued):

Safety Plans

3% @ 50	**Retirement Age**	**Benefit Formula**
Plan E (§31664.1)	50	(3.00% x FAS1 x Yrs)
	55	(3.00% x FAS1 x Yrs)
	60 or later	(3.00% x FAS1 x Yrs)
Plan F (§31664.1)	50	(3.00% x FAS3 x Yrs)
	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
3% @ 55		
Plan Q (§31664.2)	50	(2.29% x FAS1 x Yrs)
	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)
	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)

Maximum Benefit:

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

Ordinary Disability:

General Plans

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

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

Safety Plans

Plans E, F, Q, R and V

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

Line-of-Duty Disability:	
All Members	
Eligibility	No age or service requirements. (§31720)
Benefit Formula	50% of the Final Compensation or 100% of Service Retirement benefit, if greater. (§31727.4)
Pre-Retirement Death:	
All Members	
Eligibility	None.
Benefit	Refund of member 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 the 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.

Death After Retirement:	
All Members	
Service or Ordinary Disability Retirement	60% of member's unmodified allowance continued to eligible spouse. (§31760.1) A lump sum benefit in the amount of $1,000 is payable upon the 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.
Line-of-Duty Disability	100% of member's allowance continued to eligible spouse. (§31786) A lump sum benefit in the amount of $1,000 is payable upon the death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)
Withdrawal Benefits:	
Less than Five Years of Service	Refund of accumulated member contributions with interest or earned benefit at age 70. (§31628) Effective January 1, 2003, a member may also elect to leave contributions on deposit in the retirement fund. (§31629.5)
Five or More Years of Service	If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire. (§31700)
Post-retirement Cost-of-Living Benefits:	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:	Please refer to Appendix B for the specific rates.
Non-CalPEPRA General Plans	
Plan A	
Basic	Provide for an average annuity payable at age 60 equal to 1/200 of FAS1. (§31621.5)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan B	
Basic	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3. (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans G, H, I and J	
Basic	Provide for an average annuity payable at age 55 equal to 1/100 of FAS3 (FAS1 for Plans G and I). (§31621.8)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan M, N, O and P	
Basic	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3 (FAS1 for Plans M and O). (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan S	
Basic	Provide for an average annuity at age 60 equal to 1/100 of FAS3. (§31621.2)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.

Member Contributions (Continued):

Non-CalPEPRA Safety Plans

Plans E and Q	
Basic	Provide for an average annuity payable 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 payable 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 member contributions. This also 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.*

Appendix A
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
General Members						
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Orange County and IHSS						
	12/31/2012	Restart amortization	$71,108,000	17	$70,381,000	$5,630,000
	12/31/2013	Actuarial (gain) or loss	(5,820,000)	17	(5,761,000)	(461,000)
	12/31/2014	Actuarial (gain) or loss	(2,781,000)	18	(2,767,000)	(212,000)
	12/31/2014	Assumption changes	(6,633,000)	18	(6,600,000)	(507,000)
	12/31/2015	Actuarial (gain) or loss	(1,653,000)	19	(1,651,000)	(122,000)
	12/31/2016	Actuarial (gain) or loss	(9,832,000)	20	(9,832,000)	(701,000)
Subtotal					$43,770,000	$3,627,000
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for O.C. Vector Control					$1,115,000 [1]	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Department of Education					$2,848,000 [1]	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for U.C.I.					$28,533,000 [1]	
Rate Group #1 Subtotal					$76,266,000	

Note:

[1] *In determining the UAALs 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. The AALs for these employers are obtained from internal valuation results.*

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #2 – Plans I, J, O, P, S, T, U and W						
	12/31/2012	Restart amortization	$3,438,555,000	17	$3,403,412,000	$272,259,000
	12/31/2013	Actuarial (gain) or loss	(173,790,000)	17	(172,014,000)	(13,760,000)
	12/31/2014	Actuarial (gain) or loss	(78,001,000)	18	(77,616,000)	(5,958,000)
	12/31/2014	Assumption changes	(246,714,000)	18	(245,496,000)	(18,846,000)
	12/31/2015	Actuarial (gain) or loss	(65,063,000)	19	(64,989,000)	(4,802,000)
	12/31/2016	Actuarial (gain) or loss	39,445,000	20	39,445,000	2,813,000
Subtotal					$2,882,742,000	$231,706,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #3 – Plans B, G, H and U (OCSD)						
Subtotal					$(2,522,000)	$0

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #5 – Plans A, B and U (OCTA)						
	12/31/2012	Restart amortization	$232,513,000	17	$230,137,000	$18,410,000
	12/31/2013	Actuarial (gain) or loss	(13,471,000)	17	(13,333,000)	(1,067,000)
	12/31/2014	Actuarial (gain) or loss	4,522,000	18	4,500,000	345,000
	12/31/2014	Assumption changes	(19,944,000)	18	(19,846,000)	(1,524,000)
	12/31/2015	Actuarial (gain) or loss	(933,000)	19	(932,000)	(69,000)
	12/31/2016	Actuarial (gain) or loss	(9,743,000)	20	(9,743,000)	(695,000)
Subtotal					$190,783,000	$15,400,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #9 – Plans M, N and U (TCA)						
	12/31/2012	Restart amortization	$11,906,000	17	$11,784,000	$943,000
	12/31/2013	Actuarial (gain) or loss	(684,000)	17	(677,000)	(54,000)
	12/31/2014	Actuarial (gain) or loss	496,000	18	494,000	38,000
	12/31/2014	Assumption changes	(1,032,000)	18	(1,027,000)	(79,000)
	12/31/2015	Actuarial (gain) or loss	778,000	19	777,000	57,000
	12/31/2016	Actuarial (gain) or loss	(1,535,000)	20	(1,535,000)	(109,000)
Subtotal					$9,816,000	$796,000

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #10 – Plans I, J, M, N and U (OCFA)						
	12/31/2012	Restart amortization	$72,750,000	17	$72,006,000	$5,760,000
	12/31/2013	Actuarial (gain) or loss	(2,659,000)	17	(2,632,000)	(211,000)
	12/31/2014	Actuarial (gain) or loss	(3,755,000)	18	(3,736,000)	(287,000)
	12/31/2014	Assumption changes	(4,489,000)	18	(4,467,000)	(343,000)
	12/31/2015	Actuarial (gain) or loss	626,000	19	625,000	46,000
	12/31/2016	Actuarial (gain) or loss	134,000	20	134,000	10,000
Subtotal					$61,930,000	$4,975,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #11 – Plans M and N, future service, and U (Cemetery)						
Subtotal					$(289,000)	$0

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #12 – Plans G, H, future service, and U (Law Library)						
	12/31/2015	Restart amortization[1]	$1,543,000	17	$1,533,000	$123,000
	12/31/2016	Actuarial (gain) or loss	(95,000)	20	(95,000)	(7,000)
Subtotal					$1,438,000	$116,000

Note:

[1] *Reflects $1.5 million in additional contributions made by Law Library towards their UAAL. The $1.5 million of additional contributions has been amortized as a level percent of pay over a period of twenty years effective on December 31, 2015 and used to reduce their UAAL rates starting 2017/2018. Law Library's amortization bases established prior to December 31, 2016 were combined and reamortized over a single equivalent 17-year period. The single 17-year period is chosen to essentially replicate the total UAAL rate paid by Law Library for 2017/2018 (which was made up of the various UAAL layers allocated to Law Library when they were included in Rate Group #3 plus the UAAL credit they received from making the $1.5 million additional contributions).*

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Safety Members						
Rate Group #6 – Plans E, F and V (Probation)						
	12/31/2012	Restart amortization	$192,912,000	17	$190,940,000	$15,274,000
	12/31/2013	Actuarial (gain) or loss	(14,039,000)	17	(13,896,000)	(1,112,000)
	12/31/2014	Actuarial (gain) or loss	(2,596,000)	18	(2,583,000)	(198,000)
	12/31/2014	Assumption changes	36,260,000	18	36,081,000	2,770,000
	12/31/2015	Actuarial (gain) or loss	(10,703,000)	19	(10,691,000)	(790,000)
	12/31/2016	Actuarial (gain) or loss	13,799,000	20	13,799,000	984,000
Subtotal					$213,650,000	$16,928,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)						
	12/31/2012	Restart amortization	$988,833,000	17	$978,727,000	$78,294,000
	12/31/2013	Actuarial (gain) or loss	(51,652,000)	17	(51,124,000)	(4,090,000)
	12/31/2014	Actuarial (gain) or loss	(34,729,000)	18	(34,558,000)	(2,653,000)
	12/31/2014	Assumption changes	102,262,000	18	101,757,000	7,812,000
	12/31/2015	Actuarial (gain) or loss	23,666,000	19	23,639,000	1,747,000
	12/31/2016	Actuarial (gain) or loss	39,724,000	20	39,724,000	2,833,000
Subtotal					$1,058,165,000	$83,943,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)						
	12/31/2012	Restart amortization	$399,947,000	17	$395,859,000	$31,667,000
	12/31/2013	Actuarial (gain) or loss	(20,177,000)	17	(19,971,000)	(1,598,000)
	12/31/2014	Actuarial (gain) or loss	(35,400,000)	18	(35,225,000)	(2,704,000)
	12/31/2014	Assumption changes	35,957,000	18	35,780,000	2,747,000
	12/31/2015	Actuarial (gain) or loss	(22,228,000)	19	(22,203,000)	(1,641,000)
	12/31/2016	Actuarial (gain) or loss	(15,736,000)	20	(15,736,000)	(1,122,000)
Subtotal					$338,504,000	$27,349,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
All Rate Groups Combined Excluding OCSD, Cemetery, DOE, U.C.I. and Vector Control						
	12/31/2012	Restart amortization	$5,408,524,000	17	$5,353,246,000	$428,237,000
	12/31/2013	Actuarial (gain) or loss	(282,292,000)	17	(279,408,000)	(22,353,000)
	12/31/2014	Actuarial (gain) or loss	(152,244,000)	18	(151,491,000)	(11,629,000)
	12/31/2014	Assumption changes	(104,333,000)	18	(103,818,000)	(7,970,000)
	12/31/2015	Actuarial (gain) or loss	(75,510,000)	19	(75,425,000)	(5,574,000)
	12/31/2015	Law Library restart amortization	1,543,000	17	1,533,000	123,000
	12/31/2016	Actuarial (gain) or loss	56,161,000	20	56,161,000	4,006,000
Subtotal Total					$4,800,798,000	$384,840,000
Rate Group #3 (OCSD)					$(2,522,000)	
Rate Group #11 (Cemetery)					$(289,000)	
Vector Control					$1,115,000	
DOE					$2,848,000	
U.C.I.					$28,533,000	
Grand Total					$4,830,483,000	

Appendix B
Member Contribution Rates

General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan I (2.7% @ 55 Non-OCFA)		Plan G (2.5% @ 55)		Plan M (2.0% @ 55)*		Plan A (OCTA)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
15	6.99%	9.67%	6.99%	9.51%	5.01%	7.23%	3.00%	4.90%
16	6.99%	9.67%	6.99%	9.51%	5.01%	7.23%	3.00%	4.90%
17	7.12%	9.84%	7.12%	9.68%	5.09%	7.36%	3.06%	4.99%
18	7.24%	10.01%	7.24%	9.85%	5.18%	7.49%	3.11%	5.08%
19	7.37%	10.19%	7.37%	10.02%	5.28%	7.62%	3.17%	5.17%
20	7.50%	10.37%	7.50%	10.20%	5.37%	7.75%	3.22%	5.26%
21	7.63%	10.55%	7.63%	10.38%	5.46%	7.89%	3.28%	5.35%
22	7.77%	10.73%	7.77%	10.56%	5.56%	8.03%	3.34%	5.45%
23	7.90%	10.92%	7.90%	10.75%	5.66%	8.17%	3.40%	5.54%
24	8.04%	11.12%	8.04%	10.94%	5.76%	8.31%	3.46%	5.64%
25	8.18%	11.31%	8.18%	11.13%	5.86%	8.46%	3.52%	5.74%
26	8.33%	11.51%	8.33%	11.33%	5.96%	8.61%	3.58%	5.84%
27	8.48%	11.72%	8.48%	11.53%	6.07%	8.76%	3.64%	5.94%
28	8.63%	11.92%	8.63%	11.73%	6.17%	8.92%	3.70%	6.05%
29	8.78%	12.14%	8.78%	11.94%	6.28%	9.07%	3.77%	6.15%
30	8.94%	12.35%	8.94%	12.16%	6.39%	9.23%	3.84%	6.26%
31	9.10%	12.58%	9.10%	12.38%	6.51%	9.40%	3.90%	6.37%
32	9.26%	12.80%	9.26%	12.60%	6.62%	9.56%	3.97%	6.49%
33	9.43%	13.04%	9.43%	12.83%	6.74%	9.73%	4.04%	6.60%
34	9.61%	13.28%	9.61%	13.07%	6.86%	9.91%	4.12%	6.72%
35	9.79%	13.53%	9.79%	13.31%	6.98%	10.08%	4.19%	6.84%
36	9.97%	13.79%	9.97%	13.56%	7.11%	10.26%	4.27%	6.96%
37	10.17%	14.05%	10.17%	13.83%	7.24%	10.45%	4.34%	7.09%
38	10.37%	14.33%	10.37%	14.10%	7.37%	10.64%	4.42%	7.22%
39	10.53%	14.55%	10.53%	14.32%	7.51%	10.84%	4.50%	7.35%

General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan I (2.7% @ 55 Non-OCFA)		Plan G (2.5% @ 55)		Plan M (2.0% @ 55)*		Plan A (OCTA)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total
40	10.69%	14.78%	10.69%	14.54%	7.65%	11.04%	4.59%	7.49%
41	10.86%	15.01%	10.86%	14.77%	7.79%	11.25%	4.68%	7.63%
42	11.04%	15.26%	11.04%	15.02%	7.94%	11.47%	4.77%	7.78%
43	11.23%	15.53%	11.23%	15.28%	8.10%	11.69%	4.86%	7.93%
44	11.44%	15.81%	11.44%	15.56%	8.22%	11.87%	4.93%	8.05%
45	11.66%	16.11%	11.66%	15.86%	8.35%	12.06%	5.01%	8.18%
46	11.87%	16.41%	11.87%	16.15%	8.49%	12.25%	5.09%	8.31%
47	12.06%	16.67%	12.06%	16.40%	8.63%	12.46%	5.18%	8.45%
48	12.24%	16.92%	12.24%	16.65%	8.78%	12.67%	5.27%	8.60%
49	12.35%	17.07%	12.35%	16.80%	8.94%	12.90%	5.36%	8.75%
50	12.40%	17.14%	12.40%	16.87%	9.11%	13.15%	5.47%	8.92%
51	12.40%	17.14%	12.40%	16.86%	9.28%	13.40%	5.57%	9.09%
52	12.30%	17.00%	12.30%	16.73%	9.42%	13.60%	5.65%	9.23%
53	12.08%	16.70%	12.08%	16.44%	9.57%	13.81%	5.74%	9.37%
54	11.56%	15.98%	11.56%	15.72%	9.65%	13.93%	5.79%	9.45%
55	11.56%	15.98%	11.56%	15.72%	9.69%	13.99%	5.81%	9.49%
56	11.56%	15.98%	11.56%	15.72%	9.69%	13.99%	5.81%	9.49%
57	11.56%	15.98%	11.56%	15.72%	9.61%	13.87%	5.76%	9.41%
58	11.56%	15.98%	11.56%	15.72%	9.44%	13.63%	5.67%	9.25%
59	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	5.42%	8.84%
60	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	5.42%	8.84%
COLA Loading:		*38.22%*		*36.01%*		*44.38%*		*63.22%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*
Additional Cashouts *See Exhibit II, page 82*

* Payable by members in Rate Group #9 and Rate Group #11.

General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan A (Non-OCTA)		Plan I (2.7% @ 55 OCFA)	
Entry Age	Normal	Total	Normal	Total
15	3.00%	4.80%	6.99%	9.68%
16	3.00%	4.80%	6.99%	9.68%
17	3.06%	4.89%	7.12%	9.86%
18	3.11%	4.97%	7.24%	10.03%
19	3.17%	5.06%	7.37%	10.21%
20	3.22%	5.15%	7.50%	10.39%
21	3.28%	5.24%	7.63%	10.57%
22	3.34%	5.33%	7.77%	10.75%
23	3.40%	5.43%	7.90%	10.94%
24	3.46%	5.52%	8.04%	11.14%
25	3.52%	5.62%	8.18%	11.33%
26	3.58%	5.72%	8.33%	11.53%
27	3.64%	5.82%	8.48%	11.74%
28	3.70%	5.92%	8.63%	11.95%
29	3.77%	6.03%	8.78%	12.16%
30	3.84%	6.13%	8.94%	12.38%
31	3.90%	6.24%	9.10%	12.60%
32	3.97%	6.35%	9.26%	12.83%
33	4.04%	6.47%	9.43%	13.06%
34	4.12%	6.58%	9.61%	13.30%
35	4.19%	6.70%	9.79%	13.55%
36	4.27%	6.82%	9.97%	13.81%
37	4.34%	6.94%	10.17%	14.08%
38	4.42%	7.07%	10.37%	14.35%
39	4.50%	7.20%	10.53%	14.57%
40	4.59%	7.34%	10.69%	14.80%
41	4.68%	7.47%	10.86%	15.04%
42	4.77%	7.62%	11.04%	15.29%

General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan A (Non-OCTA)		Plan I (2.7% @ 55 OCFA)	
Entry Age	Normal	Total	Normal	Total
43	4.86%	7.77%	11.23%	15.56%
44	4.93%	7.89%	11.44%	15.84%
45	5.01%	8.01%	11.66%	16.14%
46	5.09%	8.14%	11.87%	16.44%
47	5.18%	8.28%	12.06%	16.70%
48	5.27%	8.42%	12.24%	16.95%
49	5.36%	8.57%	12.35%	17.10%
50	5.47%	8.74%	12.40%	17.17%
51	5.57%	8.90%	12.40%	17.17%
52	5.65%	9.04%	12.30%	17.03%
53	5.74%	9.18%	12.08%	16.73%
54	5.79%	9.25%	11.56%	16.01%
55	5.81%	9.29%	11.56%	16.01%
56	5.81%	9.29%	11.56%	16.01%
57	5.76%	9.22%	11.56%	16.01%
58	5.67%	9.06%	11.56%	16.01%
59	5.42%	8.66%	11.56%	16.01%
60	5.42%	8.66%	11.56%	16.01%
COLA Loading:		*59.87%*		*38.47%*

Interest:	*7.25%*
Salary Increases:	*See Exhibit II, page 81*
Mortality:	*See Exhibit II, page 72*
Additional Cashouts	*See Exhibit II, page 82*

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan J (2.7% @ 55 non-OCFA)		Plan H (2.5% @ 55 OCSD)		Plan N (2.0% @ 55)*		Plan B (OCTA)		Plan B (non-OCTA, non-OCSD)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	6.66%	9.21%	6.66%	9.06%	4.77%	6.89%	4.77%	6.58%	4.77%	6.48%
16	6.66%	9.21%	6.66%	9.06%	4.77%	6.89%	4.77%	6.58%	4.77%	6.48%
17	6.78%	9.37%	6.78%	9.22%	4.85%	7.01%	4.85%	6.69%	4.85%	6.60%
18	6.90%	9.54%	6.90%	9.38%	4.94%	7.13%	4.94%	6.81%	4.94%	6.71%
19	7.02%	9.70%	7.02%	9.55%	5.03%	7.26%	5.03%	6.93%	5.03%	6.83%
20	7.14%	9.87%	7.14%	9.72%	5.12%	7.39%	5.12%	7.06%	5.12%	6.95%
21	7.27%	10.05%	7.27%	9.89%	5.21%	7.52%	5.21%	7.18%	5.21%	7.08%
22	7.40%	10.22%	7.40%	10.06%	5.30%	7.65%	5.30%	7.31%	5.30%	7.20%
23	7.53%	10.40%	7.53%	10.24%	5.39%	7.78%	5.39%	7.43%	5.39%	7.33%
24	7.66%	10.59%	7.66%	10.42%	5.48%	7.92%	5.48%	7.57%	5.48%	7.46%
25	7.79%	10.77%	7.79%	10.60%	5.58%	8.06%	5.58%	7.70%	5.58%	7.59%
26	7.93%	10.96%	7.93%	10.79%	5.68%	8.20%	5.68%	7.83%	5.68%	7.72%
27	8.07%	11.15%	8.07%	10.98%	5.78%	8.34%	5.78%	7.97%	5.78%	7.85%
28	8.21%	11.35%	8.21%	11.17%	5.88%	8.49%	5.88%	8.11%	5.88%	7.99%
29	8.36%	11.55%	8.36%	11.37%	5.98%	8.64%	5.98%	8.25%	5.98%	8.13%
30	8.51%	11.76%	8.51%	11.57%	6.09%	8.79%	6.09%	8.40%	6.09%	8.28%
31	8.66%	11.97%	8.66%	11.78%	6.20%	8.95%	6.20%	8.55%	6.20%	8.42%
32	8.82%	12.19%	8.82%	11.99%	6.31%	9.10%	6.31%	8.70%	6.31%	8.57%
33	8.98%	12.41%	8.98%	12.21%	6.42%	9.26%	6.42%	8.85%	6.42%	8.72%
34	9.14%	12.64%	9.14%	12.43%	6.53%	9.43%	6.53%	9.01%	6.53%	8.88%
35	9.31%	12.87%	9.31%	12.66%	6.65%	9.60%	6.65%	9.17%	6.65%	9.03%
36	9.49%	13.11%	9.49%	12.90%	6.77%	9.77%	6.77%	9.33%	6.77%	9.20%
37	9.65%	13.34%	9.65%	13.13%	6.89%	9.95%	6.89%	9.50%	6.89%	9.36%
38	9.81%	13.56%	9.81%	13.34%	7.01%	10.13%	7.01%	9.67%	7.01%	9.53%
39	9.96%	13.77%	9.96%	13.55%	7.14%	10.31%	7.14%	9.85%	7.14%	9.71%
40	10.11%	13.98%	10.11%	13.76%	7.27%	10.50%	7.27%	10.03%	7.27%	9.89%
41	10.27%	14.20%	10.27%	13.97%	7.41%	10.70%	7.41%	10.22%	7.41%	10.07%
42	10.44%	14.43%	10.44%	14.20%	7.54%	10.89%	7.54%	10.40%	7.54%	10.25%

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan J (2.7% @ 55 non-OCFA)		Plan H (2.5% @ 55 OCSD)		Plan N (2.0% @ 55)*		Plan B (OCTA)		Plan B (non-OCTA, non-OCSD)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
43	10.62%	14.68%	10.62%	14.44%	7.67%	11.07%	7.67%	10.57%	7.67%	10.42%
44	10.80%	14.92%	10.80%	14.69%	7.78%	11.24%	7.78%	10.73%	7.78%	10.58%
45	10.97%	15.16%	10.97%	14.92%	7.90%	11.41%	7.90%	10.90%	7.90%	10.74%
46	11.12%	15.37%	11.12%	15.12%	8.03%	11.59%	8.03%	11.07%	8.03%	10.91%
47	11.23%	15.53%	11.23%	15.28%	8.16%	11.78%	8.16%	11.25%	8.16%	11.09%
48	11.30%	15.62%	11.30%	15.37%	8.30%	11.98%	8.30%	11.44%	8.30%	11.28%
49	11.31%	15.63%	11.31%	15.38%	8.44%	12.18%	8.44%	11.64%	8.44%	11.47%
50	11.25%	15.55%	11.25%	15.30%	8.57%	12.37%	8.57%	11.82%	8.57%	11.65%
51	11.10%	15.35%	11.10%	15.10%	8.69%	12.54%	8.69%	11.98%	8.69%	11.81%
52	10.82%	14.95%	10.82%	14.71%	8.78%	12.67%	8.78%	12.11%	8.78%	11.93%
53	11.18%	15.45%	11.18%	15.20%	8.83%	12.75%	8.83%	12.18%	8.83%	12.00%
54	11.56%	15.98%	11.56%	15.72%	8.84%	12.76%	8.84%	12.19%	8.84%	12.01%
55	11.56%	15.98%	11.56%	15.72%	8.79%	12.69%	8.79%	12.12%	8.79%	11.95%
56	11.56%	15.98%	11.56%	15.72%	8.68%	12.53%	8.68%	11.97%	8.68%	11.79%
57	11.56%	15.98%	11.56%	15.72%	8.45%	12.20%	8.45%	11.66%	8.45%	11.49%
58	11.56%	15.98%	11.56%	15.72%	8.73%	12.61%	8.73%	12.05%	8.73%	11.87%
59	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	9.03%	12.46%	9.03%	12.28%
60	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	9.03%	12.46%	9.03%	12.28%
COLA Loading:		*38.22%*		*36.01%*		*44.38%*		*37.93%*		*35.92%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*
Additional Cashouts *See Exhibit II, page 82*

* Payable by members in Rate Group #9 and Rate Group #11.

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan J (2.7% @ 55 OCFA)		Plan P (1.62% @ 65)		Plan B (OCSD)		Plan N (OCFA)		Plan S (City of SJC)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	6.66%	9.23%	4.77%	5.97%	4.77%	6.53%	4.77%	6.90%	5.72%	7.78%
16	6.66%	9.23%	4.77%	5.97%	4.77%	6.53%	4.77%	6.90%	5.72%	7.78%
17	6.78%	9.39%	4.85%	6.07%	4.85%	6.65%	4.85%	7.02%	5.82%	7.92%
18	6.90%	9.55%	4.94%	6.18%	4.94%	6.76%	4.94%	7.14%	5.93%	8.06%
19	7.02%	9.72%	5.03%	6.29%	5.03%	6.88%	5.03%	7.27%	6.03%	8.20%
20	7.14%	9.89%	5.12%	6.40%	5.12%	7.01%	5.12%	7.40%	6.14%	8.35%
21	7.27%	10.06%	5.21%	6.51%	5.21%	7.13%	5.21%	7.53%	6.25%	8.50%
22	7.40%	10.24%	5.30%	6.63%	5.30%	7.25%	5.30%	7.66%	6.36%	8.64%
23	7.53%	10.42%	5.39%	6.74%	5.39%	7.38%	5.39%	7.80%	6.47%	8.80%
24	7.66%	10.60%	5.48%	6.86%	5.48%	7.51%	5.48%	7.93%	6.58%	8.95%
25	7.79%	10.79%	5.58%	6.98%	5.58%	7.64%	5.58%	8.07%	6.70%	9.11%
26	7.93%	10.98%	5.68%	7.11%	5.68%	7.78%	5.68%	8.21%	6.82%	9.27%
27	8.07%	11.17%	5.78%	7.23%	5.78%	7.91%	5.78%	8.36%	6.93%	9.43%
28	8.21%	11.37%	5.88%	7.36%	5.88%	8.05%	5.88%	8.51%	7.06%	9.60%
29	8.36%	11.57%	5.98%	7.49%	5.98%	8.19%	5.98%	8.66%	7.18%	9.77%
30	8.51%	11.78%	6.09%	7.62%	6.09%	8.34%	6.09%	8.81%	7.31%	9.94%
31	8.66%	11.99%	6.20%	7.75%	6.20%	8.49%	6.20%	8.96%	7.44%	10.11%
32	8.82%	12.21%	6.31%	7.89%	6.31%	8.63%	6.31%	9.12%	7.57%	10.29%
33	8.98%	12.43%	6.42%	8.03%	6.42%	8.79%	6.42%	9.28%	7.70%	10.47%
34	9.14%	12.66%	6.53%	8.17%	6.53%	8.94%	6.53%	9.45%	7.84%	10.66%
35	9.31%	12.89%	6.65%	8.32%	6.65%	9.10%	6.65%	9.62%	7.98%	10.85%
36	9.49%	13.14%	6.77%	8.47%	6.77%	9.27%	6.77%	9.79%	8.12%	11.04%
37	9.65%	13.37%	6.89%	8.62%	6.89%	9.43%	6.89%	9.96%	8.27%	11.24%
38	9.81%	13.59%	7.01%	8.78%	7.01%	9.61%	7.01%	10.15%	8.42%	11.45%
39	9.96%	13.79%	7.14%	8.94%	7.14%	9.78%	7.14%	10.33%	8.57%	11.66%
40	10.11%	14.00%	7.27%	9.10%	7.27%	9.96%	7.27%	10.52%	8.73%	11.87%
41	10.27%	14.23%	7.41%	9.27%	7.41%	10.15%	7.41%	10.72%	8.89%	12.10%
42	10.44%	14.46%	7.54%	9.44%	7.54%	10.33%	7.54%	10.91%	9.05%	12.31%

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan J (2.7% @ 55 OCFA)		Plan P (1.62% @ 65)		Plan B (OCSD)		Plan N (OCFA)		Plan S (City of SJC)	
Entry Age	Normal	Total	Normal	Normal	Normal	Total	Normal	Total	Normal	Total
43	10.62%	14.70%	7.67%	9.59%	7.67%	10.50%	7.67%	11.09%	9.20%	12.51%
44	10.80%	14.95%	7.78%	9.74%	7.78%	10.66%	7.78%	11.26%	9.34%	12.70%
45	10.97%	15.19%	7.90%	9.89%	7.90%	10.82%	7.90%	11.43%	9.48%	12.90%
46	11.12%	15.40%	8.03%	10.04%	8.03%	10.99%	8.03%	11.61%	9.63%	13.10%
47	11.23%	15.56%	8.16%	10.21%	8.16%	11.17%	8.16%	11.80%	9.79%	13.31%
48	11.30%	15.65%	8.30%	10.38%	8.30%	11.36%	8.30%	12.00%	9.95%	13.54%
49	11.31%	15.66%	8.44%	10.56%	8.44%	11.55%	8.44%	12.20%	10.12%	13.77%
50	11.25%	15.58%	8.57%	10.72%	8.57%	11.73%	8.57%	12.39%	10.28%	13.98%
51	11.10%	15.38%	8.69%	10.87%	8.69%	11.90%	8.69%	12.57%	10.43%	14.18%
52	10.82%	14.98%	8.78%	10.98%	8.78%	12.02%	8.78%	12.70%	10.53%	14.32%
53	11.18%	15.48%	8.83%	11.05%	8.83%	12.09%	8.83%	12.77%	10.60%	14.41%
54	11.56%	16.01%	8.84%	11.06%	8.84%	12.10%	8.84%	12.78%	10.60%	14.42%
55	11.56%	16.01%	8.79%	11.00%	8.79%	12.04%	8.79%	12.71%	10.55%	14.34%
56	11.56%	16.01%	8.68%	10.86%	8.68%	11.88%	8.68%	12.55%	10.41%	14.16%
57	11.56%	16.01%	8.45%	10.58%	8.45%	11.57%	8.45%	12.23%	10.14%	13.79%
58	11.56%	16.01%	8.73%	10.93%	8.73%	11.96%	8.73%	12.63%	10.48%	14.25%
59	11.56%	16.01%	9.03%	11.30%	9.03%	12.37%	9.03%	13.06%	10.84%	14.74%
60	11.56%	16.01%	9.03%	11.30%	9.03%	12.37%	9.03%	13.06%	10.84%	14.74%
COLA Loading:		*38.47%*		*25.13%*		*36.95%*		*44.65%*		*36.00%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*
Additional Cashouts *See Exhibit II, page 82*

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan H (2.5% @ 55 Law Library)	
Entry Age	**Normal**	**Total**
15	6.66%	9.09%
16	6.66%	9.09%
17	6.78%	9.25%
18	6.90%	9.41%
19	7.02%	9.58%
20	7.14%	9.74%
21	7.27%	9.91%
22	7.40%	10.09%
23	7.53%	10.27%
24	7.66%	10.45%
25	7.79%	10.63%
26	7.93%	10.82%
27	8.07%	11.01%
28	8.21%	11.20%
29	8.36%	11.40%
30	8.51%	11.60%
31	8.66%	11.81%
32	8.82%	12.03%
33	8.98%	12.24%
34	9.14%	12.47%
35	9.31%	12.70%
36	9.49%	12.94%
37	9.65%	13.17%
38	9.81%	13.38%
39	9.96%	13.58%
40	10.11%	13.79%
41	10.27%	14.01%
42	10.44%	14.24%

General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan H (2.5% @ 55 Law Library)	
Entry Age	Normal	Total
43	10.62%	14.48%
44	10.80%	14.73%
45	10.97%	14.96%
46	11.12%	15.17%
47	11.23%	15.32%
48	11.30%	15.42%
49	11.31%	15.43%
50	11.25%	15.34%
51	11.10%	15.15%
52	10.82%	14.75%
53	11.18%	15.25%
54	11.56%	15.77%
55	11.56%	15.77%
56	11.56%	15.77%
57	11.56%	15.77%
58	11.56%	15.77%
59	11.56%	15.77%
60	11.56%	15.77%

COLA Loading: *36.40%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*
Additional Cashouts *See Exhibit II, page 82*

General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 1 – Plan U		Rate Group 2 – Plan T		Rate Group 2 – Plan U		Rate Group 2 – Plan W		Rate Group 3 – Plan U	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	5.37%	7.29%	3.47%	4.64%	5.00%	6.79%	3.49%	4.69%	5.23%	7.09%
16	5.37%	7.29%	3.47%	4.64%	5.00%	6.79%	3.49%	4.69%	5.23%	7.09%
17	5.13%	6.96%	3.53%	4.73%	4.77%	6.48%	3.55%	4.78%	4.99%	6.77%
18	4.87%	6.60%	3.59%	4.81%	4.53%	6.15%	3.62%	4.86%	4.74%	6.42%
19	4.95%	6.72%	3.65%	4.90%	4.61%	6.26%	3.68%	4.95%	4.82%	6.54%
20	5.04%	6.84%	3.72%	4.98%	4.69%	6.37%	3.75%	5.04%	4.91%	6.66%
21	5.13%	6.96%	3.78%	5.07%	4.77%	6.48%	3.81%	5.13%	5.00%	6.78%
22	5.22%	7.09%	3.85%	5.16%	4.86%	6.60%	3.88%	5.22%	5.09%	6.90%
23	5.32%	7.22%	3.92%	5.25%	4.95%	6.72%	3.95%	5.31%	5.18%	7.02%
24	5.41%	7.34%	3.99%	5.34%	5.03%	6.84%	4.02%	5.40%	5.27%	7.14%
25	5.51%	7.47%	4.06%	5.44%	5.12%	6.96%	4.09%	5.50%	5.36%	7.27%
26	5.61%	7.61%	4.13%	5.53%	5.22%	7.08%	4.16%	5.59%	5.46%	7.40%
27	5.71%	7.74%	4.20%	5.63%	5.31%	7.21%	4.24%	5.69%	5.55%	7.53%
28	5.81%	7.88%	4.28%	5.73%	5.40%	7.33%	4.31%	5.79%	5.65%	7.66%
29	5.91%	8.02%	4.35%	5.83%	5.50%	7.46%	4.39%	5.90%	5.75%	7.80%
30	6.01%	8.16%	4.43%	5.94%	5.59%	7.59%	4.46%	6.00%	5.85%	7.94%
31	6.12%	8.30%	4.51%	6.04%	5.69%	7.73%	4.54%	6.11%	5.96%	8.08%
32	6.23%	8.45%	4.59%	6.15%	5.79%	7.87%	4.62%	6.21%	6.06%	8.22%
33	6.34%	8.60%	4.67%	6.26%	5.89%	8.00%	4.71%	6.32%	6.17%	8.36%
34	6.45%	8.75%	4.75%	6.37%	6.00%	8.14%	4.79%	6.44%	6.28%	8.51%
35	6.56%	8.90%	4.84%	6.48%	6.10%	8.29%	4.88%	6.55%	6.39%	8.66%
36	6.68%	9.06%	4.93%	6.60%	6.21%	8.43%	4.96%	6.67%	6.50%	8.81%
37	6.80%	9.22%	5.02%	6.72%	6.32%	8.58%	5.05%	6.79%	6.61%	8.97%
38	6.92%	9.38%	5.11%	6.84%	6.43%	8.74%	5.15%	6.92%	6.73%	9.13%
39	7.04%	9.55%	5.20%	6.97%	6.55%	8.89%	5.24%	7.05%	6.85%	9.29%
40	7.16%	9.72%	5.30%	7.10%	6.66%	9.05%	5.34%	7.18%	6.97%	9.46%
41	7.29%	9.90%	5.40%	7.24%	6.78%	9.21%	5.44%	7.32%	7.10%	9.63%
42	7.42%	10.07%	5.50%	7.37%	6.91%	9.38%	5.54%	7.45%	7.23%	9.80%
43	7.56%	10.26%	5.59%	7.49%	7.03%	9.55%	5.63%	7.57%	7.36%	9.98%
44	7.70%	10.44%	5.68%	7.61%	7.16%	9.72%	5.72%	7.69%	7.49%	10.16%

General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 1 – Plan U		Rate Group 2 – Plan T		Rate Group 2 – Plan U		Rate Group 2 – Plan W		Rate Group 3 – Plan U	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
45	7.84%	10.63%	5.77%	7.73%	7.29%	9.90%	5.81%	7.81%	7.63%	10.34%
46	7.98%	10.83%	5.86%	7.85%	7.43%	10.08%	5.91%	7.94%	7.77%	10.54%
47	8.13%	11.04%	5.96%	7.99%	7.57%	10.27%	6.01%	8.07%	7.92%	10.73%
48	8.29%	11.25%	6.06%	8.13%	7.71%	10.47%	6.11%	8.21%	8.07%	10.94%
49	8.44%	11.45%	6.17%	8.27%	7.85%	10.66%	6.22%	8.36%	8.21%	11.13%
50	8.58%	11.64%	6.27%	8.41%	7.98%	10.83%	6.32%	8.50%	8.35%	11.32%
51	8.71%	11.82%	6.37%	8.53%	8.10%	11.00%	6.42%	8.62%	8.48%	11.50%
52	8.85%	12.01%	6.44%	8.63%	8.23%	11.18%	6.49%	8.72%	8.61%	11.68%
53	8.99%	12.20%	6.49%	8.70%	8.36%	11.36%	6.54%	8.79%	8.75%	11.87%
54	9.14%	12.41%	6.51%	8.72%	8.51%	11.55%	6.56%	8.82%	8.90%	12.07%
55	9.30%	12.62%	6.49%	8.70%	8.65%	11.75%	6.54%	8.79%	9.06%	12.28%
56	9.47%	12.85%	6.43%	8.62%	8.81%	11.96%	6.48%	8.72%	9.22%	12.50%
57	9.63%	13.06%	6.31%	8.45%	8.95%	12.16%	6.36%	8.54%	9.37%	12.70%
58	9.77%	13.26%	6.52%	8.74%	9.09%	12.34%	6.57%	8.83%	9.51%	12.90%
59	9.88%	13.41%	6.74%	9.03%	9.19%	12.48%	6.79%	9.13%	9.62%	13.04%
60	9.96%	13.51%	6.74%	9.03%	9.26%	12.58%	6.79%	9.13%	9.69%	13.14%
61	9.99%	13.55%	6.74%	9.03%	9.29%	12.61%	6.79%	9.13%	9.72%	13.18%
62	9.96%	13.52%	6.74%	9.03%	9.27%	12.58%	6.79%	9.13%	9.70%	13.15%
63	9.87%	13.40%	6.74%	9.03%	9.18%	12.47%	6.79%	9.13%	9.61%	13.03%
64	9.68%	13.13%	6.74%	9.03%	9.00%	12.22%	6.79%	9.13%	9.42%	12.77%
65	10.00%	13.57%	6.74%	9.03%	9.30%	12.63%	6.79%	9.13%	9.74%	13.20%
66 and thereafter	10.34%	14.03%	6.74%	9.03%	9.62%	13.06%	6.79%	9.13%	10.07%	13.65%
COLA Loading:		*35.68%*		*34.01%*		*35.78%*		*34.41%*		*35.60%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*

It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula and the Plan W 1.62% at 65 formula, the compensation that can be taken into account for 2017 is equal to $142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).

General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 5 – Plan U		Rate Group 9 – Plan U		Rate Group 10 – Plan U		Rate Group 11 – Plan U		Rate Group 12 – Plan U	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	5.69%	7.81%	5.27%	7.11%	5.30%	7.20%	5.57%	7.38%	5.16%	6.98%
16	5.69%	7.81%	5.27%	7.11%	5.30%	7.20%	5.57%	7.38%	5.16%	6.98%
17	5.43%	7.45%	5.03%	6.78%	5.06%	6.86%	5.31%	7.04%	4.92%	6.66%
18	5.15%	7.08%	4.77%	6.43%	4.80%	6.52%	5.04%	6.68%	4.67%	6.32%
19	5.25%	7.20%	4.86%	6.55%	4.89%	6.63%	5.13%	6.80%	4.76%	6.43%
20	5.34%	7.33%	4.95%	6.67%	4.98%	6.75%	5.23%	6.93%	4.84%	6.55%
21	5.44%	7.46%	5.03%	6.79%	5.07%	6.87%	5.32%	7.05%	4.93%	6.67%
22	5.53%	7.60%	5.12%	6.91%	5.16%	7.00%	5.41%	7.18%	5.02%	6.79%
23	5.63%	7.73%	5.22%	7.03%	5.25%	7.12%	5.51%	7.30%	5.11%	6.91%
24	5.73%	7.87%	5.31%	7.16%	5.34%	7.25%	5.61%	7.43%	5.20%	7.03%
25	5.83%	8.01%	5.40%	7.28%	5.44%	7.38%	5.71%	7.57%	5.29%	7.15%
26	5.94%	8.15%	5.50%	7.41%	5.53%	7.51%	5.81%	7.70%	5.38%	7.28%
27	6.04%	8.29%	5.60%	7.54%	5.63%	7.64%	5.91%	7.84%	5.48%	7.41%
28	6.15%	8.44%	5.69%	7.68%	5.73%	7.77%	6.02%	7.98%	5.58%	7.54%
29	6.26%	8.59%	5.79%	7.81%	5.83%	7.91%	6.12%	8.12%	5.67%	7.67%
30	6.37%	8.74%	5.90%	7.95%	5.93%	8.05%	6.23%	8.26%	5.78%	7.81%
31	6.48%	8.90%	6.00%	8.09%	6.04%	8.19%	6.34%	8.40%	5.88%	7.95%
32	6.59%	9.05%	6.11%	8.23%	6.14%	8.34%	6.45%	8.55%	5.98%	8.09%
33	6.71%	9.21%	6.21%	8.38%	6.25%	8.48%	6.57%	8.70%	6.09%	8.23%
34	6.83%	9.38%	6.32%	8.53%	6.36%	8.63%	6.68%	8.86%	6.19%	8.37%
35	6.95%	9.54%	6.44%	8.68%	6.48%	8.79%	6.80%	9.01%	6.30%	8.52%
36	7.07%	9.71%	6.55%	8.83%	6.59%	8.94%	6.92%	9.17%	6.41%	8.67%
37	7.20%	9.88%	6.66%	8.99%	6.71%	9.10%	7.04%	9.33%	6.53%	8.83%
38	7.32%	10.06%	6.78%	9.14%	6.83%	9.26%	7.17%	9.50%	6.64%	8.98%
39	7.45%	10.23%	6.90%	9.31%	6.95%	9.42%	7.29%	9.67%	6.76%	9.14%
40	7.59%	10.42%	7.03%	9.47%	7.07%	9.59%	7.42%	9.84%	6.88%	9.30%
41	7.72%	10.60%	7.15%	9.64%	7.20%	9.76%	7.56%	10.02%	7.00%	9.47%
42	7.86%	10.79%	7.28%	9.82%	7.33%	9.94%	7.69%	10.20%	7.13%	9.64%
43	8.00%	10.99%	7.41%	9.99%	7.46%	10.12%	7.83%	10.38%	7.26%	9.82%
44	8.15%	11.19%	7.55%	10.18%	7.59%	10.30%	7.97%	10.57%	7.39%	9.99%

General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 5 – Plan U		Rate Group 9 – Plan U		Rate Group 10 – Plan U		Rate Group 11 – Plan U		Rate Group 12 – Plan U	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
45	8.30%	11.39%	7.69%	10.36%	7.73%	10.49%	8.12%	10.76%	7.53%	10.18%
46	8.45%	11.61%	7.83%	10.55%	7.88%	10.69%	8.27%	10.96%	7.67%	10.37%
47	8.61%	11.82%	7.98%	10.75%	8.03%	10.89%	8.43%	11.17%	7.81%	10.56%
48	8.78%	12.05%	8.13%	10.96%	8.18%	11.10%	8.59%	11.38%	7.96%	10.76%
49	8.93%	12.27%	8.27%	11.15%	8.33%	11.29%	8.74%	11.59%	8.10%	10.96%
50	9.08%	12.47%	8.41%	11.34%	8.46%	11.48%	8.89%	11.78%	8.24%	11.14%
51	9.22%	12.66%	8.54%	11.52%	8.59%	11.66%	9.02%	11.96%	8.36%	11.31%
52	9.37%	12.86%	8.68%	11.70%	8.73%	11.85%	9.17%	12.15%	8.50%	11.49%
53	9.52%	13.07%	8.82%	11.89%	8.87%	12.04%	9.32%	12.35%	8.64%	11.68%
54	9.68%	13.29%	8.97%	12.09%	9.02%	12.24%	9.47%	12.56%	8.78%	11.87%
55	9.85%	13.53%	9.12%	12.30%	9.18%	12.46%	9.64%	12.78%	8.94%	12.08%
56	10.03%	13.77%	9.29%	12.52%	9.34%	12.68%	9.81%	13.00%	9.09%	12.30%
57	10.19%	13.99%	9.44%	12.73%	9.50%	12.89%	9.97%	13.22%	9.24%	12.50%
58	10.35%	14.20%	9.58%	12.92%	9.64%	13.08%	10.12%	13.42%	9.38%	12.69%
59	10.47%	14.37%	9.69%	13.07%	9.75%	13.23%	10.24%	13.57%	9.49%	12.83%
60	10.55%	14.48%	9.77%	13.17%	9.83%	13.33%	10.32%	13.68%	9.56%	12.93%
61	10.58%	14.52%	9.79%	13.20%	9.85%	13.37%	10.35%	13.72%	9.59%	12.97%
62	10.55%	14.48%	9.77%	13.17%	9.83%	13.34%	10.32%	13.68%	9.57%	12.94%
63	10.45%	14.35%	9.68%	13.05%	9.74%	13.22%	10.23%	13.56%	9.48%	12.82%
64	10.25%	14.07%	9.49%	12.80%	9.55%	12.96%	10.03%	13.29%	9.30%	12.57%
65	10.59%	14.54%	9.81%	13.23%	9.87%	13.39%	10.36%	13.74%	9.61%	12.99%
66 and thereafter	10.95%	15.04%	10.14%	13.67%	10.21%	13.85%	10.72%	14.20%	9.93%	13.43%
COLA Loading:		*37.28%*		*34.82%*		*35.67%*		*32.56%*		*35.22%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*

It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula and the Plan W 1.62% at 65 formula, the compensation that can be taken into account for 2017 is equal to $142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).

Safety Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan E (Fire Authority)		Plan E (Law Enforcement)		Plan E (Probation)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
15	4.54%	10.53%	4.68%	11.02%	4.62%	10.21%
16	4.54%	10.53%	4.68%	11.02%	4.62%	10.21%
17	4.60%	10.67%	4.74%	11.17%	4.68%	10.34%
18	4.66%	10.81%	4.81%	11.31%	4.74%	10.48%
19	4.73%	10.95%	4.87%	11.46%	4.81%	10.62%
20	4.79%	11.09%	4.93%	11.61%	4.87%	10.76%
21	4.85%	11.24%	5.00%	11.77%	4.94%	10.90%
22	4.92%	11.39%	5.07%	11.92%	5.00%	11.04%
23	4.98%	11.55%	5.14%	12.08%	5.07%	11.19%
24	5.05%	11.70%	5.21%	12.25%	5.14%	11.35%
25	5.12%	11.86%	5.28%	12.42%	5.21%	11.50%
26	5.19%	12.03%	5.35%	12.59%	5.28%	11.66%
27	5.27%	12.20%	5.42%	12.76%	5.35%	11.82%
28	5.34%	12.37%	5.50%	12.95%	5.43%	11.99%
29	5.42%	12.55%	5.58%	13.13%	5.51%	12.17%
30	5.50%	12.74%	5.66%	13.32%	5.59%	12.34%
31	5.58%	12.93%	5.75%	13.52%	5.67%	12.53%
32	5.67%	13.13%	5.84%	13.73%	5.76%	12.72%
33	5.76%	13.34%	5.93%	13.95%	5.85%	12.93%
34	5.84%	13.53%	6.01%	14.15%	5.94%	13.11%
35	5.93%	13.73%	6.10%	14.35%	6.02%	13.30%
36	6.02%	13.94%	6.19%	14.57%	6.12%	13.50%
37	6.12%	14.17%	6.29%	14.81%	6.21%	13.72%
38	6.22%	14.41%	6.40%	15.06%	6.32%	13.96%
39	6.34%	14.68%	6.52%	15.34%	6.44%	14.22%
40	6.44%	14.92%	6.62%	15.58%	6.54%	14.44%
41	6.55%	15.18%	6.74%	15.85%	6.66%	14.70%
42	6.63%	15.35%	6.81%	16.02%	6.73%	14.86%

Safety Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan E (Fire Authority)		Plan E (Law Enforcement)		Plan E (Probation)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
43	6.70%	15.53%	6.88%	16.19%	6.80%	15.02%
44	6.74%	15.62%	6.92%	16.27%	6.84%	15.10%
45	6.76%	15.66%	6.93%	16.30%	6.85%	15.14%
46	6.72%	15.57%	6.87%	16.17%	6.81%	15.03%
47	6.61%	15.32%	6.74%	15.87%	6.69%	14.76%
48	6.45%	14.94%	6.54%	15.40%	6.50%	14.36%
49	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
50	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
51	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
52	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
53	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
54	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
55	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
56	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
57	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
58	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
59	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
60	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
COLA Loading:		*131.66%*		*135.32%*		*120.82%*

Interest:	*7.25%*
Salary Increases:	*See Exhibit II, page 81*
Mortality:	*See Exhibit II, page 72*
Additional Cashouts	*See Exhibit II, page 82*

Safety Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan F (Fire Authority)		Plan F (Law Enforcement)		Plan F (Probation)		Plan R (Fire Authority)		Plan R (Law Enforcement)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	8.66%	14.35%	8.87%	14.87%	8.72%	13.99%	8.66%	13.65%	8.87%	13.94%
16	8.66%	14.35%	8.87%	14.87%	8.72%	13.99%	8.66%	13.65%	8.87%	13.94%
17	8.77%	14.54%	8.98%	15.06%	8.83%	14.17%	8.77%	13.83%	8.98%	14.12%
18	8.88%	14.73%	9.10%	15.26%	8.95%	14.35%	8.88%	14.01%	9.10%	14.30%
19	9.00%	14.92%	9.22%	15.46%	9.07%	14.54%	9.00%	14.20%	9.22%	14.49%
20	9.12%	15.12%	9.34%	15.66%	9.18%	14.73%	9.12%	14.38%	9.34%	14.68%
21	9.24%	15.32%	9.46%	15.87%	9.31%	14.93%	9.24%	14.58%	9.46%	14.87%
22	9.36%	15.53%	9.59%	16.08%	9.43%	15.13%	9.36%	14.77%	9.59%	15.07%
23	9.49%	15.74%	9.72%	16.29%	9.56%	15.33%	9.49%	14.97%	9.72%	15.27%
24	9.62%	15.95%	9.85%	16.51%	9.69%	15.54%	9.62%	15.17%	9.85%	15.48%
25	9.75%	16.17%	9.98%	16.73%	9.82%	15.75%	9.75%	15.38%	9.98%	15.69%
26	9.88%	16.39%	10.12%	16.96%	9.95%	15.97%	9.88%	15.59%	10.12%	15.90%
27	10.02%	16.62%	10.26%	17.20%	10.09%	16.19%	10.02%	15.81%	10.26%	16.12%
28	10.16%	16.85%	10.40%	17.44%	10.23%	16.42%	10.16%	16.03%	10.40%	16.34%
29	10.31%	17.10%	10.55%	17.68%	10.38%	16.65%	10.31%	16.26%	10.55%	16.58%
30	10.46%	17.35%	10.70%	17.94%	10.53%	16.89%	10.46%	16.50%	10.70%	16.82%
31	10.62%	17.61%	10.86%	18.20%	10.69%	17.15%	10.62%	16.75%	10.86%	17.06%
32	10.77%	17.87%	11.01%	18.46%	10.84%	17.40%	10.77%	16.99%	11.01%	17.31%
33	10.93%	18.12%	11.17%	18.72%	11.00%	17.64%	10.93%	17.24%	11.17%	17.55%
34	11.08%	18.37%	11.32%	18.98%	11.15%	17.89%	11.08%	17.48%	11.32%	17.79%
35	11.24%	18.64%	11.48%	19.24%	11.31%	18.14%	11.24%	17.73%	11.48%	18.04%
36	11.41%	18.92%	11.65%	19.53%	11.48%	18.42%	11.41%	18.00%	11.65%	18.31%
37	11.59%	19.23%	11.83%	19.83%	11.66%	18.71%	11.59%	18.29%	11.83%	18.59%
38	11.77%	19.53%	12.00%	20.13%	11.84%	19.00%	11.77%	18.57%	12.00%	18.87%
39	11.95%	19.82%	12.18%	20.42%	12.02%	19.28%	11.95%	18.86%	12.18%	19.14%
40	12.10%	20.07%	12.32%	20.66%	12.17%	19.52%	12.10%	19.09%	12.32%	19.36%
41	12.23%	20.28%	12.44%	20.85%	12.29%	19.72%	12.23%	19.29%	12.44%	19.55%
42	12.31%	20.41%	12.50%	20.96%	12.36%	19.83%	12.31%	19.41%	12.50%	19.64%
43	12.34%	20.46%	12.51%	20.98%	12.39%	19.88%	12.34%	19.46%	12.51%	19.67%
44	12.29%	20.39%	12.44%	20.86%	12.34%	19.79%	12.29%	19.39%	12.44%	19.55%

Safety Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan F (Fire Authority)		Plan F (Law Enforcement)		Plan F (Probation)		Plan R (Fire Authority)		Plan R (Law Enforcement)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
45	12.15%	20.14%	12.26%	20.56%	12.18%	19.54%	12.15%	19.16%	12.26%	19.27%
46	11.89%	19.71%	11.96%	20.05%	11.91%	19.10%	11.89%	18.75%	11.96%	18.79%
47	11.45%	18.99%	11.45%	19.20%	11.45%	18.37%	11.45%	18.06%	11.45%	18.00%
48	11.82%	19.61%	11.82%	19.83%	11.82%	18.97%	11.82%	18.65%	11.82%	18.59%
49	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
50	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
51	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
52	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
53	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
54	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
55	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
56	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
57	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
58	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
59	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
60	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
COLA Loading:		*65.83%*		*67.66%*		*60.41%*		*57.74%*		*57.17%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*
Additional Cashouts *See Exhibit II, page 82*

Safety CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 6 – Plan V		Rate Group 7 – Plan V		Rate Group 8 – Plan V	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
15	9.13%	12.99%	10.54%	15.10%	8.63%	12.42%
16	9.13%	12.99%	10.54%	15.10%	8.63%	12.42%
17	9.25%	13.15%	10.68%	15.29%	8.74%	12.58%
18	9.37%	13.33%	10.82%	15.49%	8.86%	12.75%
19	9.49%	13.50%	10.96%	15.69%	8.97%	12.91%
20	9.61%	13.67%	11.10%	15.90%	9.09%	13.08%
21	9.74%	13.85%	11.24%	16.10%	9.21%	13.25%
22	9.86%	14.03%	11.39%	16.31%	9.33%	13.42%
23	9.99%	14.22%	11.54%	16.53%	9.45%	13.60%
24	10.12%	14.40%	11.69%	16.74%	9.58%	13.78%
25	10.26%	14.59%	11.85%	16.96%	9.70%	13.96%
26	10.39%	14.79%	12.00%	17.19%	9.83%	14.14%
27	10.53%	14.98%	12.16%	17.42%	9.96%	14.33%
28	10.67%	15.18%	12.32%	17.65%	10.09%	14.52%
29	10.81%	15.39%	12.49%	17.89%	10.23%	14.72%
30	10.96%	15.60%	12.66%	18.13%	10.37%	14.92%
31	11.11%	15.81%	12.83%	18.38%	10.51%	15.12%
32	11.26%	16.03%	13.01%	18.63%	10.65%	15.33%
33	11.42%	16.25%	13.19%	18.89%	10.80%	15.54%
34	11.58%	16.48%	13.38%	19.15%	10.95%	15.76%
35	11.75%	16.71%	13.57%	19.43%	11.11%	15.99%
36	11.92%	16.96%	13.76%	19.71%	11.27%	16.22%
37	12.09%	17.21%	13.97%	20.00%	11.44%	16.46%
38	12.28%	17.47%	14.18%	20.31%	11.61%	16.71%
39	12.46%	17.73%	14.39%	20.61%	11.78%	16.96%
40	12.64%	17.99%	14.60%	20.91%	11.96%	17.20%
41	12.82%	18.24%	14.81%	21.20%	12.13%	17.45%
42	13.01%	18.51%	15.03%	21.52%	12.31%	17.71%
43	13.21%	18.80%	15.26%	21.85%	12.50%	17.98%
44	13.43%	19.11%	15.51%	22.21%	12.70%	18.28%

Safety CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation
(Expressed as a Percentage of Monthly Payroll)

Calculated Under Recommended Assumptions

	Rate Group 6 – Plan V		Rate Group 7 – Plan V		Rate Group 8 – Plan V	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
45	13.64%	19.41%	15.76%	22.57%	12.91%	18.57%
46	13.86%	19.72%	16.01%	22.93%	13.11%	18.87%
47	14.04%	19.98%	16.22%	23.23%	13.28%	19.11%
48	14.20%	20.21%	16.40%	23.49%	13.43%	19.33%
49	14.30%	20.35%	16.52%	23.66%	13.53%	19.47%
50	14.36%	20.43%	16.58%	23.75%	13.58%	19.54%
51	14.32%	20.38%	16.54%	23.69%	13.55%	19.50%
52	14.18%	20.18%	16.38%	23.46%	13.41%	19.30%
53	13.92%	19.81%	16.08%	23.02%	13.17%	18.94%
54	13.47%	19.16%	15.55%	22.27%	12.74%	18.33%
55	13.91%	19.79%	16.06%	23.00%	13.15%	18.93%
56 and thereafter	14.37%	20.45%	16.60%	23.77%	13.59%	19.56%
COLA Loading:		*42.29%*		*43.20%*		*43.90%*

Interest: *7.25%*
Salary Increases: *See Exhibit II, page 81*
Mortality: *See Exhibit II, page 72*

It is our understanding that in the determination of pension benefits under the CalPEPRA 2.7% at 57 formula, the compensation that can be taken into account for 2017 is equal to $142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).

Appendix C
Funded Percentages

The funded percentages on a valuation value of assets basis by rate group provided for informational purposes only are as follows:

	Funded Percentage	
	December 31, 2016 Valuation	December 31, 2015 Valuation
General Members		
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	82.57%	78.87%
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	71.23%	70.00%
Rate Group #3 – Plans B, G, H and U (OCSD)	100.42%	99.09%
Rate Group #5 – Plans A, B and U (OCTA)	77.31%	75.22%
Rate Group #9 – Plans M, N and U (TCA)	75.29%	70.00%
Rate Group #10 – Plans I, J, M, N and U (OCFA)	70.16%	68.09%
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	103.37%	101.53%
Rate Group #12 – Plans G, H, future service, and U (Law Library)	84.42%	65.92%
Safety Members		
Rate Group #6 – Plans E, F and V (Probation)	70.84%	70.19%
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	69.89%	69.08%
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	77.65%	75.19%

Appendix D
Reconciliation of Employer Contribution Rates (by Rate Group)

The reconciliation of the employer contribution rates for the General Rate Groups #1 to #5 are as follows:

		Rate Group			
		#1	#2	#3	#5
1.	Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	18.51%[(1)]	34.38%	13.07%	26.18%
2.	Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	-1.42%	0.00%
3.	Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	0.00%	0.00%	0.00%	0.00%
4.	Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	18.51%[(1)]	34.38%	11.65%	26.18%
5.	Actuarial (gain)/loss items:				
(a)	Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	0.00%	0.00%	0.00%	0.00%
(b)	Effect of investment loss (after smoothing)	0.27%	0.41%	N/A[(2)]	0.38%
(c)	Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	-0.11%	0.00%	N/A[(2)]	0.00%
(d)	Effect of actual contributions less/(more) than expected	-0.12%	-0.02%	N/A[(2)]	0.14%
(e)	Effect of difference in actual versus expected COLA increases	-0.42%	-0.68%	N/A[(2)]	-0.55%
(f)	Effect of difference in actual versus expected salary increases	-0.24%	0.87%	N/A[(2)]	0.23%
(g)	Effect of growth in total payroll (greater)/less than expected	-0.68%	-0.96%	N/A[(2)]	-0.02%
(h)	Effect of changes in data and process[(3)]	-0.37%	-0.36%	N/A[(2)]	-0.86%
(i)	Effect of other experience (gain)/loss[(4)]	-0.47%	0.02%	-0.04%	-0.02%
(j)	Subtotal	-2.14%	-0.72%	-0.04%	-0.70%
6.	Aggregate Recommended Contribution Rate as of December 31, 2016	16.37%[(5)]	33.66%	11.61%	25.48%

(1) *As of December 31, 2015, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 14.86%.*

(2) *N/A because RG #3 has become overfunded and under CalPEPRA, the employer's contribution rate cannot be less than the Normal Cost unless the funded ratio is over 120% and other conditions in CalPEPRA are met. If that restriction did not apply, the UAAL rates would have been -0.21% if the overfunded amounts are amortized over 30 years.*

(3) *Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.*

(4) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

(5) *As of December 31, 2016, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 13.30%.*

Appendix D (Continued)
Reconciliation of Employer Contribution Rates (by Rate Group)

The reconciliation of the employer contribution rates for the General Rate Groups #9 to #12 are as follows:

		Rate Group			
		#9	#10	#11	#12
1.	Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	26.30%	32.58%	11.45%	31.00%[1]
2.	Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	0.00%	-8.89%
3.	Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	0.00%	0.00%	0.00%	0.00%
4.	Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	26.30%	32.58%	11.45%	22.11%
5.	Actuarial (gain)/loss items:				
(a)	Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	0.00%	0.00%	0.00%	0.00%
(b)	Effect of investment loss (after smoothing)	0.27%	0.33%	N/A[2]	0.41%
(c)	Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	0.00%	-0.15%	N/A[2]	0.00%
(d)	Effect of actual contributions less/(more) than expected	-0.20%	-0.13%	N/A[2]	0.19%
(e)	Effect of difference in actual versus expected COLA increases	-0.35%	-0.58%	N/A[2]	-0.36%
(f)	Effect of difference in actual versus expected salary increases	-0.46%	0.08%	N/A[2]	-0.99%
(g)	Effect of growth in total payroll (greater)/less than expected	-0.45%	-2.14%	N/A[2]	0.60%
(h)	Effect of changes in data and process	-0.12%	-0.35%	N/A[2]	-0.10%
(i)	Effect of other experience (gain)/loss[4][5]	-1.17%	0.90%	-0.57%	0.88%
(j)	Subtotal	-2.48%	-2.04%	-0.57%	0.63%
6.	Aggregate Recommended Contribution Rate as of December 31, 2016	23.82%	30.54%	10.88%	22.74%

(1) *After adjustments for future service improvements.*

(2) *N/A because RG #11 has become overfunded and under CalPEPRA, the employer's contribution rate cannot be less than the Normal Cost unless the funded ratio is over 120% and other conditions in CalPEPRA are met. If that restriction did not apply, the UAAL rates would have been -1.15% if the overfunded amounts are amortized over 30 years.*

(3) *Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.*

(4) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

(5) *Effect of other experience (gain)/loss includes:*

	RG#9	RG#10	RG#11	RG#12
Effect of changes in demographics	-0.15%	0.14%	-0.57%	0.86%
Retirement experience (gain)/loss	-0.59%	0.54%	N/A	N/A

Appendix D (Continued)
Reconciliation of Employer Contribution Rates (by Rate Group)

The reconciliation of the employer contribution rates for the Safety rate groups are as follows:

		Rate Group		
		#6	**#7**	**#8**
1.	Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	47.09%	63.83%	49.43%
2.	Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	0.00%
3.	Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	-2.17%	-2.12%	-1.40%
4.	Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	44.92%	61.71%	48.03%
5.	Actuarial (gain)/loss items:			
(a)	Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	2.17%	2.12%	1.40%
(b)	Effect of investment loss (after smoothing)	0.49%	0.69%	0.59%
(c)	Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	0.00%	0.00%	-0.27%
(d)	Effect of actual contributions less/(more) than expected	0.24%	0.20%	0.07%
(e)	Effect of difference in actual versus expected COLA increases	-0.64%	-1.28%	-1.05%
(f)	Effect of difference in actual versus expected salary increases	1.30%	2.16%	-0.07%
(g)	Effect of growth in total payroll (greater)/less than expected	-0.63%	-1.87%	-0.48%
(h)	Effect of changes in data and process[1]	-0.27%	-0.50%	-0.08%
(i)	Effect of other experience (gain)/loss[2]	0.21%	-0.42%	-0.33%
(j)	Subtotal	2.87%	1.10%	-0.22%
6.	Aggregate Recommended Contribution Rate as of December 31, 2016	47.79%	62.81%	47.81%

(1) *Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.*

(2) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

Appendix E
Reconciliation of UAAL (by Rate Group)

The reconciliation of UAAL for the General rate groups are as follows:

	Rate Group ($000s)							
	#1	#2	#3	#5	#9	#10	#11	#12
1. UAAL as of December 31, 2015	$91,105	$2,864,029	$5,269	$201,945	$11,425	$62,239	-$125	$2,943[(1)]
2. Total normal cost at middle of year	13,476	232,677	14,867	20,092	1,461	5,546	261	300
3. Expected employer and member contributions	-20,342	-453,663	-15,762	-35,685	-2,342	-10,319	-261	-564
4. Interest	6,202	200,254	177	14,174	807	4,330	-9	245
5. Expected UAAL as of December 31, 2016	$90,441	$2,843,297	$4,551	$200,526	$11,351	$61,796	-$134	$2,924
6. Actuarial (gain)/loss and other changes:								
(a) (Gain) from additional UAAL contributions	-$1,331	$0	-$5,652	$0	$0	-$552	$0	-$1,504
(b) (Gain)/loss from actual contributions (more)/less than expected	-1,345	-3,049	-1,380	2,106	-188	-490	-22	82
(c) Loss from investment return	3,118	61,622	5,260	5,610	258	1,257	77	67
(d) Gain on lower than expected COLA increases	-4,951	-101,421	-5,860	-7,972	-339	-2,191	-48	-59
(e) (Gain)/loss from lower/higher than expected salary increases	-2,827	129,820	-2,654	3,251	-440	298	80	-163
(f) Change in data and process[(2)]	-4,238	-53,981	-1,324	-12,452	-119	-1,316	-13	-16
(g) Other experience (gain)/loss	-2,601	6,454	4,537	-286	-707	3,128	-229	107
Total Changes	-$14,175	$39,445	-$7,073	-$9,743	-$1,535	$134	-$155	-$1,486
7. UAAL as of December 31, 2016	$76,266	$2,882,742	-$2,522	$190,783	$9,816	$61,930	-$289	$1,438

(1) *After adjustment of $510 for future service only benefit improvement for O.C. Law Library.*

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

Appendix E (Continued)
Reconciliation of UAAL (by Rate Group)

The reconciliation of UAAL for the Safety rate groups are as follows:

	Rate Group ($000s)		
	#6	**#7**	**#8**
1. UAAL as of December 31, 2015	$201,176	$1,025,052	$356,780
2. Total normal cost at middle of year	22,964	83,194	47,860
3. Expected employer and member contributions	-37,169	-157,951	-73,695
4. Interest	12,880	68,146	23,295
5. Expected UAAL as of December 31, 2016	$199,851	$1,018,441	$354,240
6. Actuarial (gain)/loss and other changes:			
(a) Gain from additional UAAL contributions	$0	$0	-$4,615
(b) (Gain)/loss from actual contributions (more)/less than expected	2,170	6,066	1,192
(c) Loss from investment return	4,481	21,203	10,150
(d) Gain on lower than expected COLA increases	-5,828	-39,359	-18,011
(e) (Gain)/loss from lower/higher than expected salary increases	11,800	66,518	-1,080
(f) Change in data and process[1]	-2,421	-15,317	-1,390
(g) Other experience (gain)/loss	3,597	613	-1,982
Total Changes	$13,799	$39,724	-$15,736
7. UAAL as of December 31, 2016	$213,650	$1,058,165	$338,504

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

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ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 1, 2017

TO: Members of the Board of Retirement

FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations; Tracy Bowman, Director of Finance

SUBJECT: **GASB 68 VALUATION AND AUDIT REPORT**

Recommendations

Approve the following recommendations from the Audit Committee during a meeting held on June

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 GASB 68 valuation 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.

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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 Board of Retirement 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 M Shott

Brenda Shott

Asst. CEO, Finance & Internal Operations

GASB 68: Audit & Valuation

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

June 12, 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)

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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 Inflows 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)

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

NPL vs UAAL

Total Pension Liability − Plan Fiduciary Net Position (Market Value) = Net Pension Liability

Actuarial Accrued Liability − Valuation Value of Assets (smoothed value) = Unfunded Actuarial Accrued Liability

Reconciling

Total Pension Liability − Timing differences (Actuarial gains) − Method differences = Actuarial Accrued Liability

Fiduciary Net Position + Deferred losses − Non Valuation Assets = Valuation Value of Assets

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%

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	469,430,660	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

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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 Parks & Recreation District
    - 21 Retired Members & Beneficiaries
    - 7 Deferred Members
- Currently in discussions with Cypress Parks & Recreation 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

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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.

Macias Gini & O'Connell LLP
4675 MacArthur Court, Suite 600
Newport Beach, CA 92660

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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

Deferred Outflows of Resources	**O.C. Fire Authority**	**Department of Education**	**Transportation Corridor Agency**	**City of San Juan Capistrano**	**O.C. Sanitation District**
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

Deferred Outflows of Resources	O.C. Transportation Authority	U.C.I.	O.C. Children and Families Comm.	Local Agency Formation Comm.	Rancho Santa Margarita
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

Deferred Outflows of Resources	**O.C. Superior Court**	**O.C. IHSS Public Authority**	**Total for all Employers**
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

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.

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 or 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.

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

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.

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):

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

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

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.

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.

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

Segal Consulting

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.

Segal Consulting

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

AW/jl

SECTION 1

VALUATION SUMMARY

SECTION 2

GASB 68 INFORMATION

SECTION 2 (CONTINUED)

SECTION 3

ACTUARIAL ASSUMPTIONS AND METHODS AND APPENDICES

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.

- 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.

- 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 #1[1] 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.

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[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..*

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.*

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.

- 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.

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	21,746
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.

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.

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.

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[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.*

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	(12,809,208,000)	(11,657,318,000)
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

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	6.00%	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 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.

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	1,301,134	781,506	353,845
Total for all Employers	$7,669,194,567	$5,191,216,603	$3,151,808,889

EXHIBIT 5

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

Reporting Date for Employer under GASB 68 Measurement Date for Employer under GASB 68	June 30, 2017 December 31, 2016	June 30, 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]	(508,788)	0
9. Net change in Total Pension Liability	$626,501,862	$755,336,068
10. Total Pension Liability – beginning	17,373,922,741	16,618,586,673
11. Total Pension Liability – ending	$18,000,424,603	$17,373,922,741
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	0	0
19. Net change in Plan Fiduciary Net Position	$1,151,890,000	$121,212,000
20. Plan Fiduciary Net Position – beginning	11,657,318,000	11,536,106,000
21. Plan Fiduciary Net Position – ending	$12,809,208,000	$11,657,318,000
22. Net Pension Liability – ending (11) – (21)	$5,191,216,603	$5,716,604,741
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%

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.*

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:*

Plan Year Ended December 31	*Transfers from County Investment Account*	*Plan Year Ended December 31*	*Transfers from County Investment Account*
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.*

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.*

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	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. For valuation purposes, the Valuation Value of Assets is reduced by the value of the non-valuation reserves.

Notes to Exhibit 6 – continued

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 13.50% 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

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 #1 Percentage	Rate Group #2	Rate Group #2 Percentage	Rate Group #3	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	178,000	1.217%	0	0.000%	0	0.000%
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.

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 #4 Percentage	Rate Group #5	Rate Group #5 Percentage	Rate Group #9	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	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	0	0.000%	0	0.000%	0	0.000%
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.

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 #10 Percentage	Rate Group #11	Rate Group #11 Percentage	Rate Group #6	Rate Group #6 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	0	0.000%	0	0.000%	0	0.000%
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.

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	0	0.000%	0	0.000%	178,000	0.034%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Employer	Rate Group #1	Rate Group #1 Percentage	Rate Group #2	Rate Group #2 Percentage	Rate Group #3	Rate Group #3 Percentage
	Allocation of December 31, 2015 Net Pension Liability					
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	895,964	0.800%	0	0.000%	0	0.000%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #4	Rate Group #4 Percentage	Rate Group #5	Rate Group #5 Percentage	Rate Group #9	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	0	0.000%	0	0.000%	0	0.000%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	**Rate Group #10**	**Rate Group #10 Percentage**	**Rate Group #11**	**Rate Group #11 Percentage**	**Rate Group #6**	**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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2015 Net Pension Liability						
Employer	Rate Group #7	Rate Group #7 Percentage	Rate Group #8	Rate Group #8 Percentage	Total NPL	Total 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	0	0.000%	0	0.000%	895,964	0.016%
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.

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 Accout 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):	50,000,000
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:	30,959,706
Total:	$108,789,000

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

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 #1 Percentage	Rate Group #2	Rate Group #2 Percentage	Rate Group #3	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	190,000	1.279%	0	0.000%	0	0.000%
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.

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 #4 Percentage	Rate Group #5	Rate Group #5 Percentage	Rate Group #9	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	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	0	0.000%	0	0.000%	0	0.000%
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.

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 #10 Percentage	Rate Group #11	Rate Group #11 Percentage	Rate Group #12	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	0	0.000%	0	0.000%	0	0.000%
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.

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 #6 Percentage	Rate Group #7	Rate Group #7 Percentage	Rate Group #8	Rate Group #8 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	0	0.000%	0	0.000%	0	0.000%
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.

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	190,000	0.035%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #1	Rate Group #1 Percentage	Rate Group #2	Rate Group #2 Percentage	Rate Group #3	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	781,506	0.790%	0	0.000%	0	0.000%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	**Rate Group #4**	**Rate Group #4 Percentage**	**Rate Group #5**	**Rate Group #5 Percentage**	**Rate Group #9**	**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	0	0.000%	0	0.000%	0	0.000%
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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #10	Rate Group #10 Percentage	Rate Group #11	Rate Group #11 Percentage	Rate Group #12	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.

EXHIBIT 7 (continued)

Determination of Proportionate Share

Allocation of December 31, 2016 Net Pension Liability						
Employer	Rate Group #6	Rate Group #6 Percentage	Rate Group #7	Rate Group #7 Percentage	Rate Group #8	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.

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	781,506	0.015%
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.

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 Accout 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

   - 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:	33,502,187
Total:	$117,723,000

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

EXHIBIT 8

Pension Expense: Total for all Employers

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	0	0
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.*

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	1,233,839	782,287
Pension Expense	$442,698,203	$488,008,927

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Cemetery District

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	0	0
Pension Expense	$185,759	$225,747

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Law Library

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	(372,508)	51,206
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.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Vector Control District

Reporting Date for Employer under GASB 68 Measurement Date for Employer under GASB 68 Components of Pension Expense	June 30, 2017 December 31, 2016	June 30, 2016 December 31, 2015
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	0	0
Pension Expense	$166,366	$140,014

(1) *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Retirement System

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	439,607	174,350
Pension Expense	$2,219,132	$2,728,176

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Fire Authority

Reporting Date for Employer under GASB 68 Measurement Date for Employer under GASB 68 Components of Pension Expense	June 30, 2017 December 31, 2016	June 30, 2016 December 31, 2015
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	0	0
Pension Expense	$79,967,025	$87,460,983

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: Department of Education

Reporting Date for Employer under GASB 68 Measurement Date for Employer under GASB 68 Components of Pension Expense	June 30, 2017 December 31, 2016	June 30, 2016 December 31, 2015
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	0	0
Pension Expense	$476,679	$444,907

[1] *Member contributions include employer paid member contributions, if any.*

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	0	0
Pension Expense	$1,831,342	$1,796,234

[1] *Member contributions include employer paid member contributions, if any.*

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	(59,873)	268,086
Pension Expense	$1,813,614	$2,645,009

[1] *Member contributions include employer paid member contributions, if any.*

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	372,508	(51,206)
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.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Transportation Authority

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	0	0
Pension Expense	$29,906,543	$32,700,739

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: U.C.I.

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	0	0
Pension Expense	$2,466,246	$2,152,512

[1] *Member contributions include employer paid member contributions, if any.*

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	(114,243)	(53,775)
Pension Expense	$57,963	$261,818

[1] *Member contributions include employer paid member contributions, if any.*

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	(14,130)	34,795
Pension Expense	$153,336	$92,823

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: Rancho Santa Margarita

Reporting Date for Employer under GASB 68 **Measurement Date for Employer under GASB 68** **Components of Pension Expense**	**June 30, 2017** **December 31, 2016**	**June 30, 2016** **December 31, 2015**
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	0	0
Pension Expense	$3,002	$2,189

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 8 (continued)

Pension Expense: O.C. Superior Court

Reporting Date for Employer under GASB 68 Measurement Date for Employer under GASB 68 Components of Pension Expense	June 30, 2017 December 31, 2016	June 30, 2016 December 31, 2015
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	(1,506,768)	(1,208,755)
Pension Expense	$26,695,155	$35,110,331

[1] *Member contributions include employer paid member contributions, if any.*

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	21,568	3,012
Pension Expense	$190,140	$196,037

[1] *Member contributions include employer paid member contributions, if any.*

EXHIBIT 9

Deferred Outflows of Resources and Deferred Inflows of Resources: Total for all Employers

	June 30, 2017	June 30, 2016
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	3,792,676	2,849,306
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	579,008,315	395,853,967
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.*

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	0	0
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	441,331,575	301,672,441
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.*

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	25,468	31,741
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	297,296	174,426
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.*

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	0	0
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	1,027,751	1,158,768
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.*

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	12,918	0
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	1,669,650	2,080,894
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.*

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	0	0
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	2,535,127	1,764,788
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.*

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	1,181,288	0
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	52,828,035	32,777,639
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.*

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	544,088	715,184
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	228,305	277,763
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.*

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	198,368	46,994
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	389,345	511,780
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.*

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	0	0
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	2,906,090	2,085,820
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.*

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	0	0
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	14,897,427	14,164,115
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.*

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: O.C. Transportation Authority

	June 30, 2017	June 30, 2016
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	846,803	1,055,375
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	18,879,529	9,302,221
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.*

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	982,335	998,161
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	886,050	1,164,682
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.*

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	0	0
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	365,828	289,993
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.*

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	0	0
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	155,317	82,475
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.*

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	1,408	1,851
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	4,224	1,357
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.*

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	0	0
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	40,445,221	28,236,614
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.*

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	0	0
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	161,545	108,191
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.*

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 periord (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.

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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.*

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)	0	0
9. Ending Net Pension Liability	$5,191,216,603	$5,716,604,741

(1) *Include differences between employer contributions and proportionate share of contributions.*

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]	(1,233,839)	(782,287)
9. Ending Net Pension Liability	$4,043,855,643	$4,391,070,880

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	0	0
9. Ending Net Pension Liability	$222,409	$533,906

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	372,508	(51,206)
9. Ending Net Pension Liability	$1,770,282	$3,472,003

[1] *Include differences between employer contributions and proportionate share of contributions.*

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)	0	0
9. Ending Net Pension Liability	$1,669,793	$1,941,891

(1) *Include differences between employer contributions and proportionate share of contributions.*

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]	(439,607)	(174,350)
9. Ending Net Pension Liability	$21,886,393	$24,747,342

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	0	0
9. Ending Net Pension Liability	$469,430,660	$517,669,806

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	0	0
9. Ending Net Pension Liability	$4,415,517	$4,306,689

[1] *Include differences between employer contributions and proportionate share of contributions.*

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)]	0	0
9. Ending Net Pension Liability	$12,423,364	$12,713,136

[(1)] *Include differences between employer contributions and proportionate share of contributions.*

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]	59,873	(268,086)
9. Ending Net Pension Liability	$25,089,009	$29,249,120

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	(372,508)	51,206
9. Ending Net Pension Liability	$(10,384,510)	$42,439,759

[1] *Include differences between employer contributions and proportionate share of contributions.*

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)	0	0
9. Ending Net Pension Liability	$230,260,478	$250,192,983

(1) *Include differences between employer contributions and proportionate share of contributions.*

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]	0	0
9. Ending Net Pension Liability	$36,113,699	$36,184,065

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	114,243	53,775
9.	Ending Net Pension Liability	$3,158,290	$4,066,523

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	14,130	(34,795)
9. Ending Net Pension Liability	$1,340,888	$1,156,534

[1] *Include differences between employer contributions and proportionate share of contributions.*

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)	0	0
9. Ending Net Pension Liability	$9,332	$6,660

(1) *Include differences between employer contributions and proportionate share of contributions.*

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]	1,506,768	1,208,755
9. Ending Net Pension Liability	$349,173,850	$395,957,480

[1] *Include differences between employer contributions and proportionate share of contributions.*

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]	(21,568)	(3,012)
9. Ending Net Pension Liability	$781,506	$895,964

[1] *Include differences between employer contributions and proportionate share of contributions.*

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)	$(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)	(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)	(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)	$(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)	$(3,720,266)	$0
2016	0	6.06	N/A	0	0	0	0	0	0	0
2017	0	5.94	N/A	N/A	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)	$(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.

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)

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.

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: 2017	2018	2019	2020	2021	2022	Thereafter
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	48,111	5.94	8,099	8,099	8,099	8,099	8,099	7,616	0
Total for all Employers	$0		$0	$0	$0	$0	$0	$0	$0

EXHIBIT 13 (continued)

Allocation of Changes in Total Net Pension Liability

The amounts as of December 31, 2015 are as follows:

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, 2015

	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	112,452	6.06	18,556	18,556	18,556	18,556	18,556	18,556	1,116
Total for all Employers	$0		$0	$0	$0	$0	$0	$0	$0

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.

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.

Termination Rates Before Retirement:

	Rate (%) Mortality			
	General		Safety	
Age	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.

Termination Rates Before Retirement (Continued):

	Rate (%)			
	Disability			
Age	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.*

Termination Rates Before Retirement (Continued):

	Rate (%) Termination			
Years of Service	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

(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.*

Retirement Rates:

	Rate (%)							
Age	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.*

Retirement Rates (Continued):

	Rate (%)			
Age	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.*

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.

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

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:

	Final One Year Salary	Final Three Year Salary
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.

	• 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.

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 Acount as of December 31, 2016.

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.

APPENDIX B

Schedule of Pension Amounts by Employer as of 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	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	16,466,285	0	162,832	0	1,631,373
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	124,932	0	1,720,279	0	555,990
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	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

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

Deferred Outflows of Resources	O.C. Fire Authority	Department of Education	Transportation Corridor Agency	City of San Juan Capistrano	O.C. Sanitation District
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	0	0	0	852,511	1,720,279
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	0	0	0	2,791,050	162,832
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	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

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

Deferred Outflows of Resources	O.C. Transportation Authority	U.C.I.	O.C. Children and Families Comm.	Local Agency Formation Comm.	Rancho Santa Margarita
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	0	0	0	365,286	0
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	0	0	914,592	198,634	0
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	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

APPENDIX B (continued)

Schedule of Pension Amounts by Employer as of December 31, 2016

Deferred Outflows of Resources	**O.C. Superior Court**	**O.C. IHSS Public Authority**	**Total for all Employers**
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	0	124,932	21,323,498
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	14,855,189	0	21,323,498
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	(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

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.

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.

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.

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.

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.

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.

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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I-5

Memorandum

DATE: June 1, 2017

TO: Members, Board of Retirement

FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations; Tracy Bowman, Director of Finance

SUBJECT: **2016 AUDITED FINANCIAL STATEMENTS AND COMPREHENSIVE ANNUAL FINANCIAL REPORTS**

Recommendation

Approve the following recommendations presented to the Audit Committee during a meeting held on June 9, 2017:

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)
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, 2015, 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 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 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 an "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 presented their reports to the Audit Committee Meeting on June 9, 2017 and provided a detailed verbal report on their audit. Due to the short turn-around time between the Audit Committee meeting and the Regular Board meeting, those minutes are not yet available.

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' 2015 CAFR and the Actuarial Valuation (for funding purposes) as of December 31, 2015 by the deadline of June 30, 2017.

Submitted by:

Tracy Bowman

Director of Finance

Approved by:

Brenda M Shott

Brenda Shott

Asst. CEO, Finance & Internal Operations

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ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

2016 Comprehensive Annual Financial Report

for the year ended December 31, 2016

Orange County, California

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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

ORANGE COUNTY

OCERS

EMPLOYEES RETIREMENT SYSTEM

2016 Comprehensive Annual Financial Report

for the year ended December 31, 2016

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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.

Section I

Introductory

Letter of Transmittal

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

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,

Steve Delaney

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.

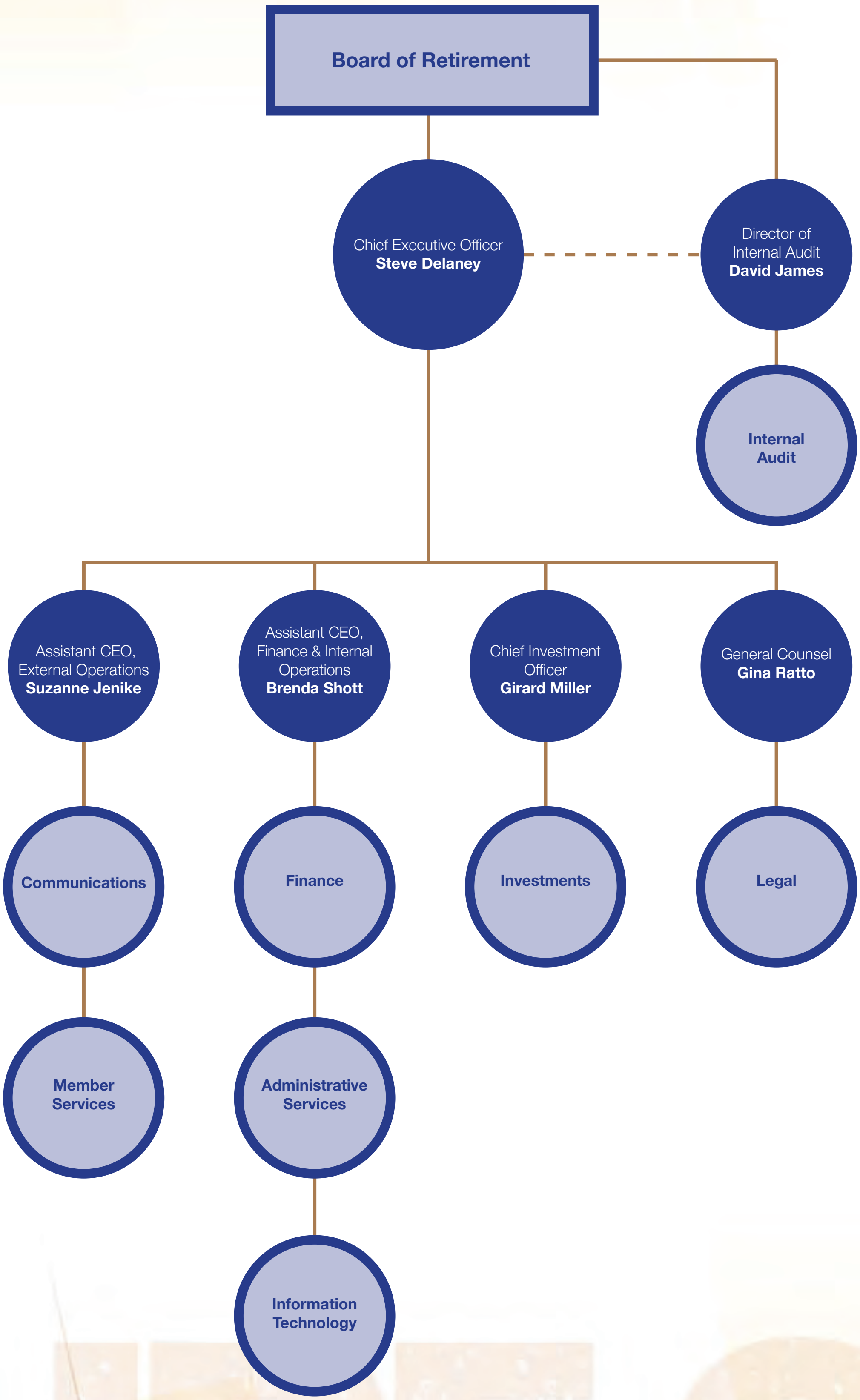
The Administrative Services Division is responsible for providing contract administration, risk management, purchasing, headquarters building administration, human resources and labor relations functions of OCERS.

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.

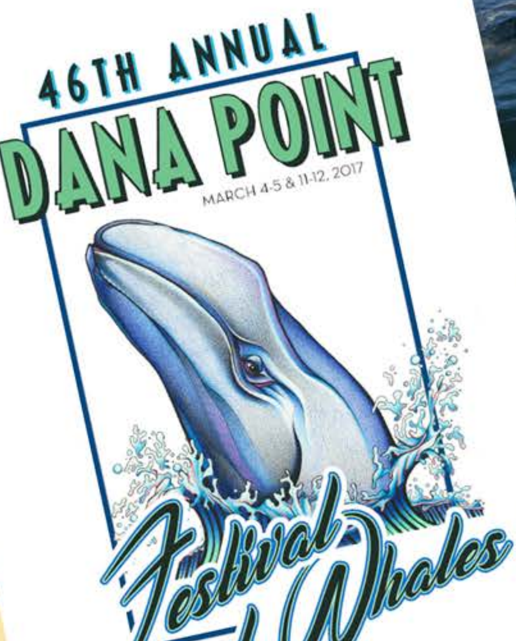
Presented by the Public Pension Coordinating Council, a confederation of

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

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.



Section II

Financial

ORANGE COUNTY

OCERS

EMPLOYEES RETIREMENT SYSTEM

Independent Auditor's Report

MGO 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.

Macias Gini & O'Connell LLP
4675 MacArthur Court, Suite 600
Newport Beach, CA 92660

www.mgocpa.com

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%**
Liabilites				
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.

Table 2 : Changes in Fiduciary Net Position

For the Years Ended December 31, 2016 and 2015
(Dollars in Thousands)

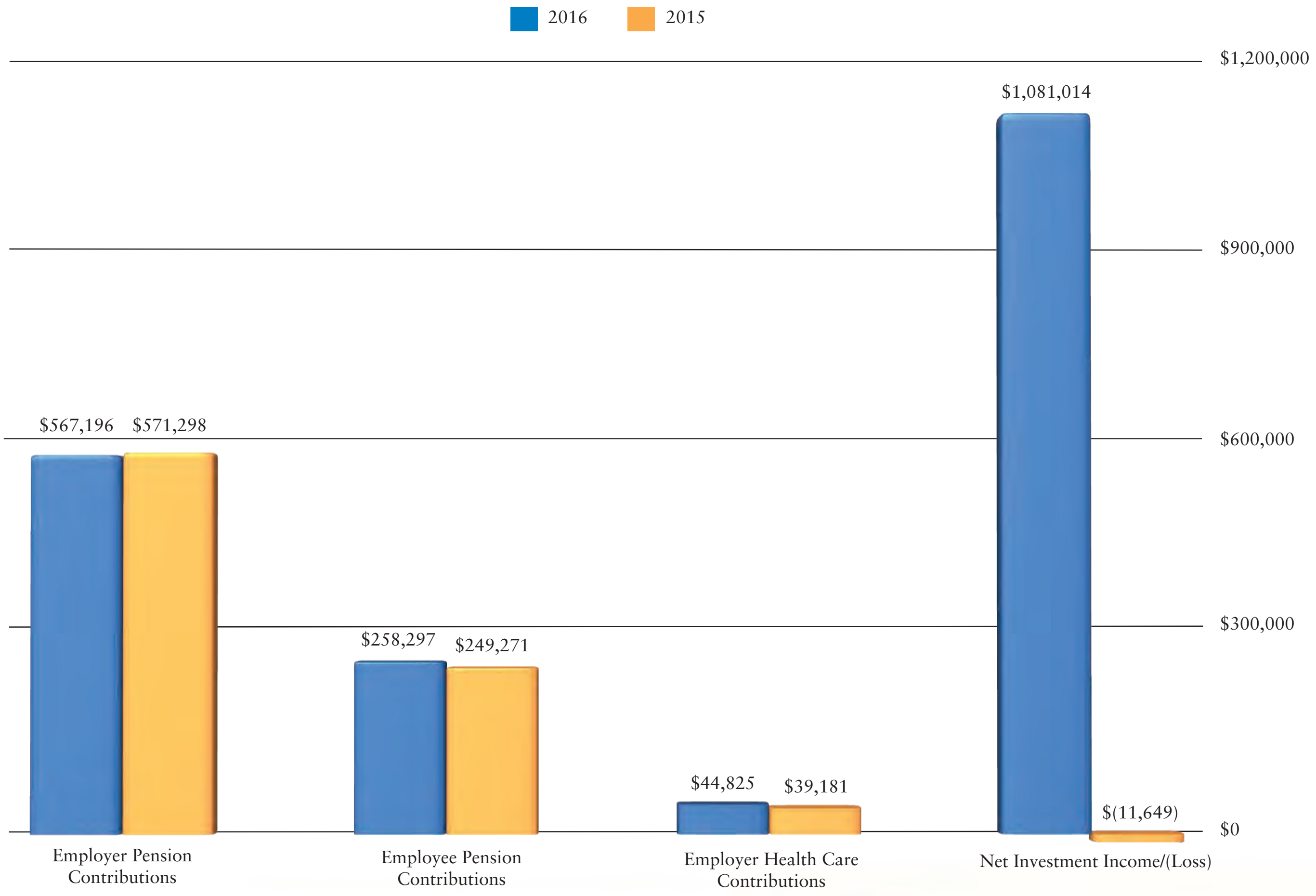
	12/31/2016	12/31/2015	Increase / (Decrease)	Percentage Change
Additions				
Employer Pension Contributions	$ 567,196	$ 571,298	$ (4,102)	-0.7%
Employer Health Care Contributions	44,825	39,181	5,644	14.4%
Employee Pension Contributions	258,297	249,271	9,026	3.6%
Net Investment Income/(Loss)	1,081,014	(11,649)	1,092,663	9,379.9%
Total Additions	**1,951,332**	**848,101**	**1,103,231**	**130.1%**
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	**769,575**	**722,083**	**47,492**	**6.6%**
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	11,896,094	11,770,076		
End of the Year	**$ 13,077,851**	**$ 11,896,094**		

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

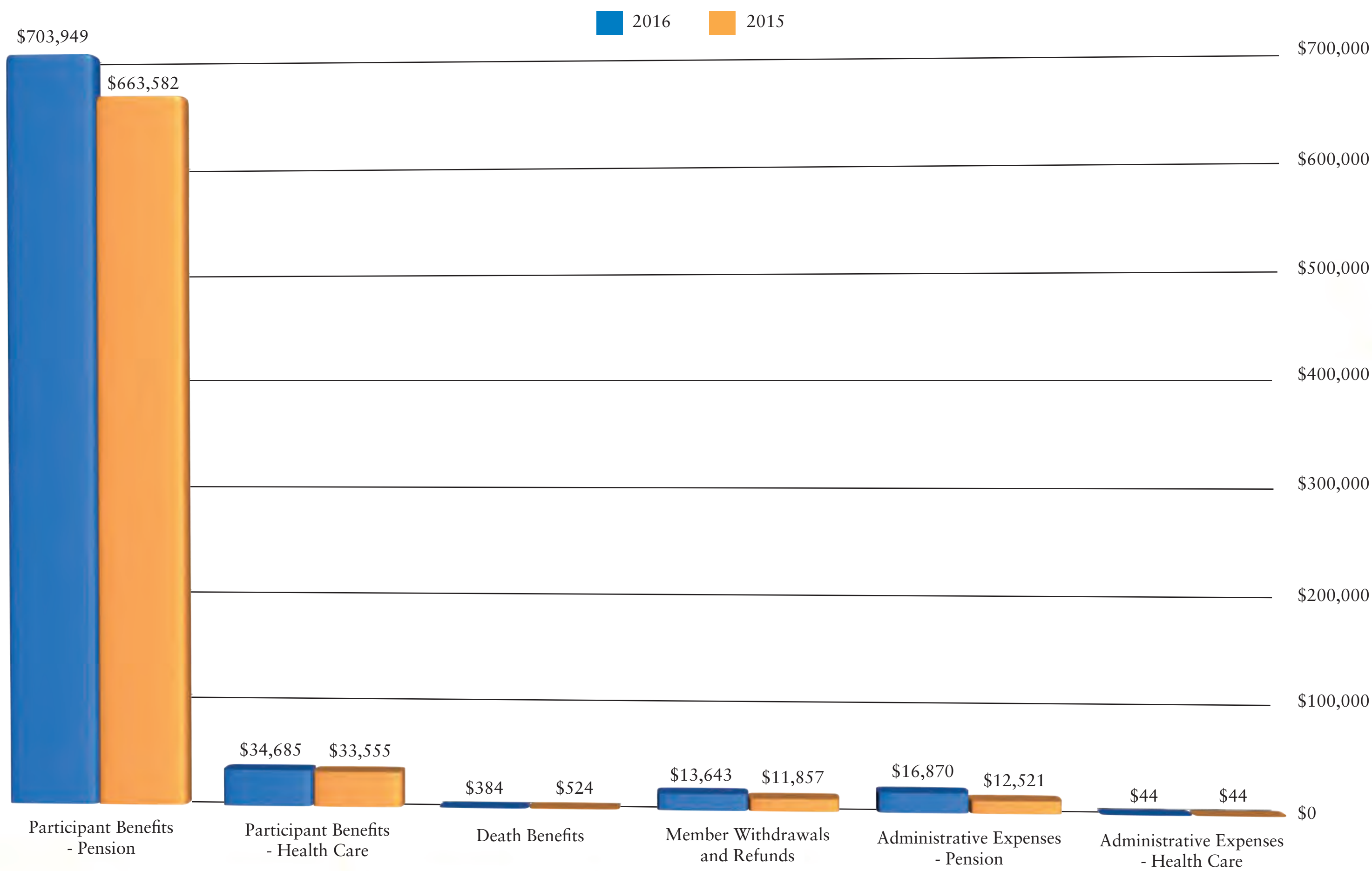
(continued)

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)



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 ¼ 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 SWALLOWS Day Parade

San Juan Capistrano
Fiesta Association

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.

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	258,297	-	-	258,297	249,271
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	(654)	(12)	(2)	(668)	(291)
Net Securities Lending Income	1,203	21	3	1,227	1,051
Total Investment Income	1,142,053	18,375	3,079	1,163,507	43,984
Investment Fees and Expenses	(80,810)	(1,452)	(231)	(82,493)	(55,633)
Net Investment Income/(Loss)	1,061,243	16,923	2,848	1,081,014	(11,649)
Total Additions	**1,886,736**	**59,334**	**5,262**	**1,951,332**	**848,101**
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	16,870	22	22	16,914	12,565
Total Deductions	**734,846**	**30,840**	**3,889**	**769,575**	**722,083**
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	11,657,318	203,311	35,465	11,896,094	11,770,076
Ending 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.

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
	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

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				**15,916**	**5,830**	**16,369**	**5,370**	**43,485**

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	
		W	1.62% @ 65 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	
		B	1.67% @ 57.5	
		M	2.0% @ 55	Transportation Corridor Agencies
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
10	General	A	2.0% @ 57	
		B	1.67% @ 57.5	
		I	2.7% @ 55	
		J	2.7% @ 55	OC Fire Authority
		M	2.0% @ 55	
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
11	General	A	2.0% @ 57	
		B	1.67% @ 57.5	
		M	2.0% @ 55	OC Cemetery District
		N	2.0% @ 55	
		U	2.5% @ 67 PEPRA	
12	General	A	2.0% @ 57	
		B	1.67% @ 57.5	
		G	2.5% @ 55	OC Public Law Library
		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 arising out 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	3
Total Plan Participants*	**1,259**

* 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.

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	873
Total Capital Assets (at cost)	29,165
Less: Accumulated Depreciation and Amortization	(6,545)
Total Capital Assets, Net of Depreciation and Amortization	**$ 22,620**

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.

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.

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
Austrailian 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] Classification	Changes in Fair Value [4] Amount [1]	Fair Value at December 31, 2016 Classification	Fair Value at December 31, 2016 Amount [2]	Notional [3]
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 Securites / Global Equities	(75)	264,307
Index Futures Long	Net Appreciation / (Depreciation) in Fair Value of Investments	36,535	International Equity Securities / Cash	-	1,621

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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	14	International Equity Sequrities	34	(1,949)
Grand Totals		$ 53,170		$ 3,304	

[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.

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**

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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 Maturities (in years)			
Investment Type	Fair Value	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 TIIE	(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**	

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 Forward Contracts			
Currency Name	Options	Net Receivables	Net Payables	Swaps	Total Exposure
Austrailian 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**	**$ -**

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.

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	304,724	-		
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	566,183	-		
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	1,627,973	579,947		
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	387,142	317,210		
Total Investments Measured at the NAV	**$ 5,100,479**	**$ 1,863,599**		

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.

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.

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**

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	(12,809,208)
Net Pension Liability	**$ 5,191,217**
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

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	July 1, 2016
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	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

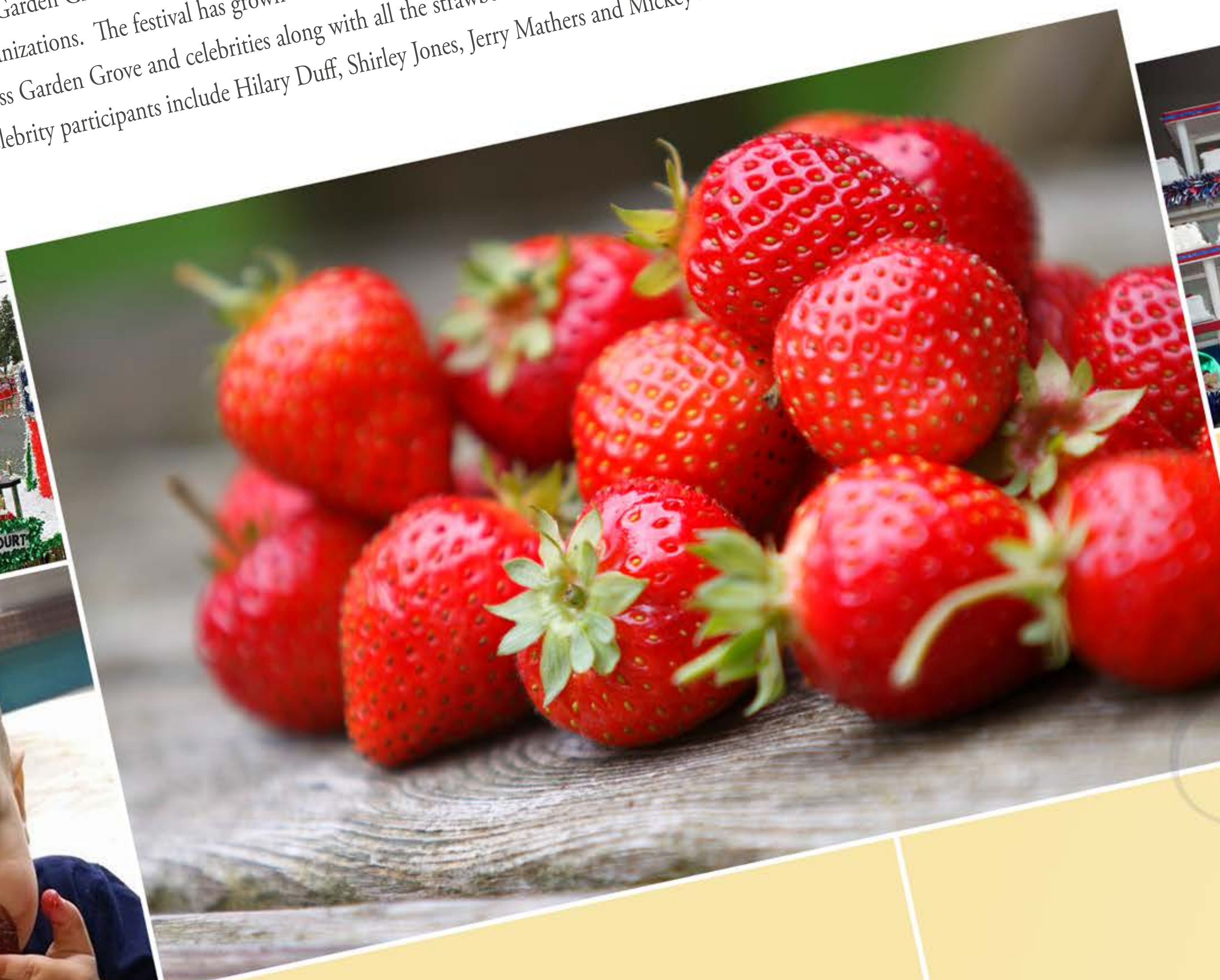
ORANGE COUNTY

OCERS

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.



Section II

Financial

Required Supplementary Information

Schedule of Changes in Net Pension Liability of Participating Employers

For the Years Ended December 31, 2013 through 2016[1]
(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.

525/707

Schedule of Investment Returns

For the Years Ended December 31, 2014 Through 2016[1]

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

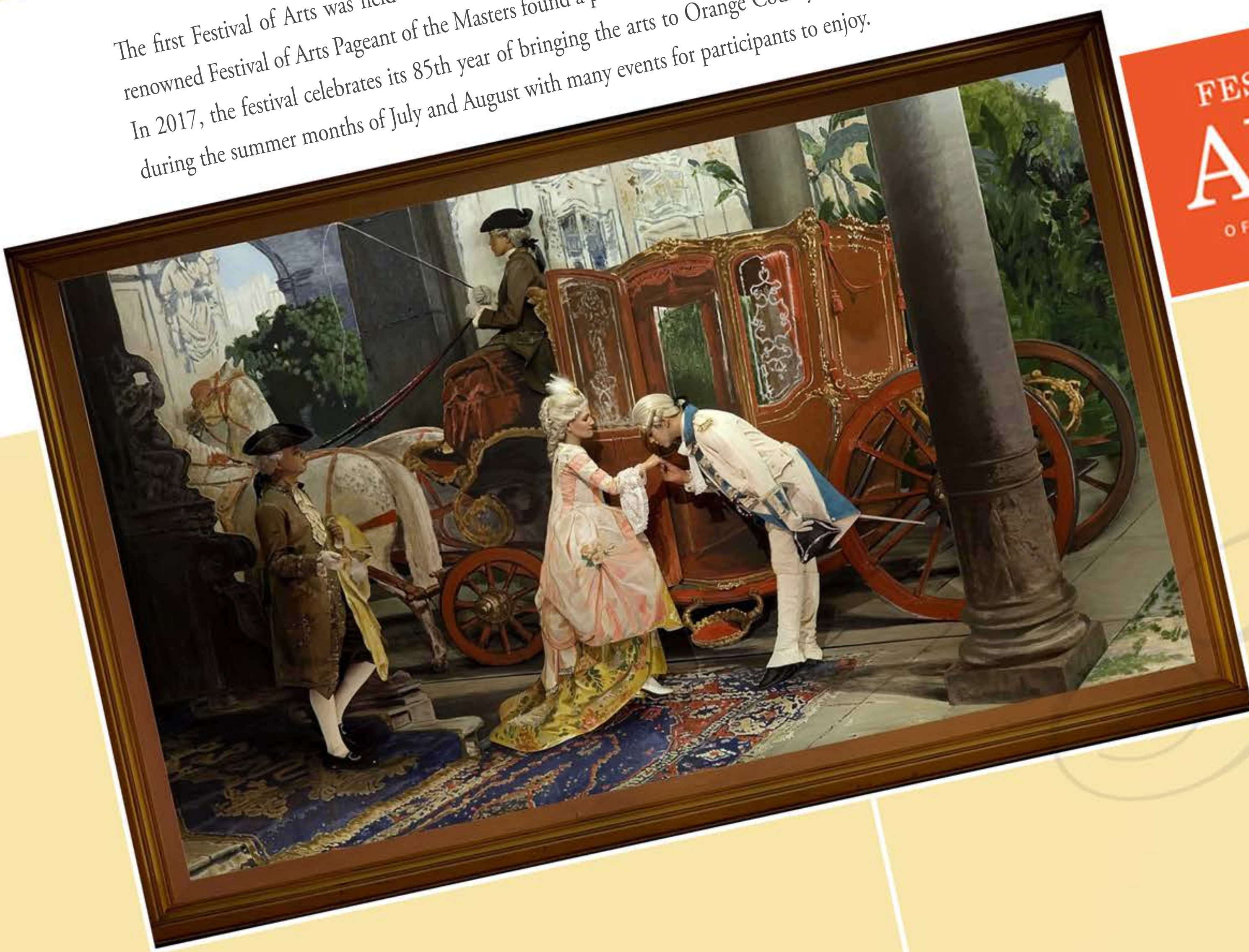
- The July 1, 2014 OPEB Valuation: OCFA highlights include the following:
  - The 5.00% discount rate reflects a blended discount rate as OCFA is currently partially funding the annual required contribution (ARC). The blended rate reflects a short-term rate of approximately 4.25% and a long-term expected 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.



Section II

Financial

Other Supplementary Information

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	9,423
Office Operating Expenses	
Professional Services	2,314
Depreciation/Amortization	2,314
Operating Expenses	1,327
Rent/Leased Real Property	660
Total Office Operating Expenses	6,615
Total Expenses Subject to the Statutory Limit	16,038
Expenses Not Subject to the Statutory Limit	
Actuarial Fees	394
Information Technology Consulting	357
Equipment/Software	81
Total Expenses Not Subject to the Statutory Limit	832
Total Pension Fund Administrative Expenses	**16,870**
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		**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**
Security Lending Activity		
Security Lending Fees		366
Rebate Fees		302
Total Security Lending Activity		**668**
Total Investment Expenses	**$**	**83,161**

* 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	**2,314**
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	**3,091**
Total Payments for Professional Expenses	**$ 5,405**

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

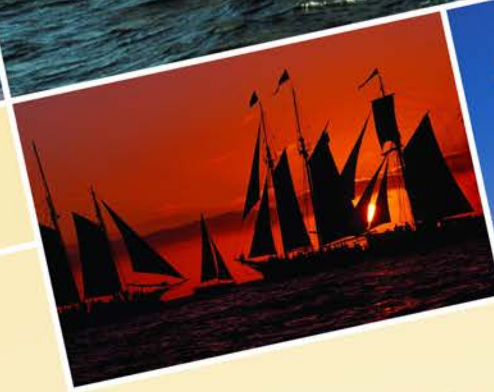
Statement of Changes in Assets and Liabilities - OPEB Agency Fund

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	4,342	1,268	(178)	5,432
Total Assets	$ 13,993	$ 3,648	$ (2,947)	$ 14,694
Liabilities				
Due to Employers	$ 13,993	$ 3,648	$ (2,947)	$ 14,694
Total Liabilities	$ 13,993	$ 3,648	$ (2,947)	$ 14,694

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

Section III

Investments

Investment Consultant's Statement

M E K E T A   I N V E S T M E N T   G R O U P

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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760 795 3450 fax 760 795 3445 www.meketagroup.com

Investment Consultant's Statement

(continued)

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.

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 Index[1], which returned 2.6% over the same period. OCERS' 2016 annual performance of 8.5% compared favorably to peers[2], 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

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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% NCREF 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.

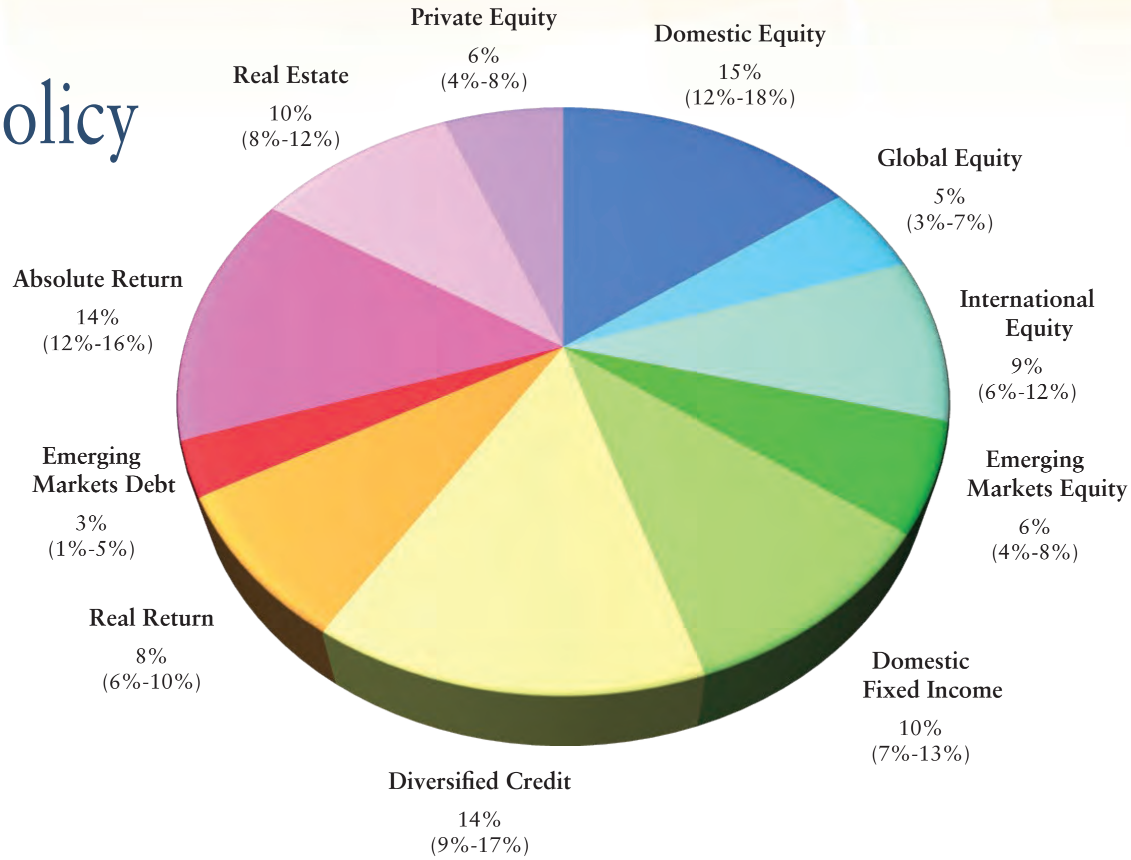
Use of Proxies

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.

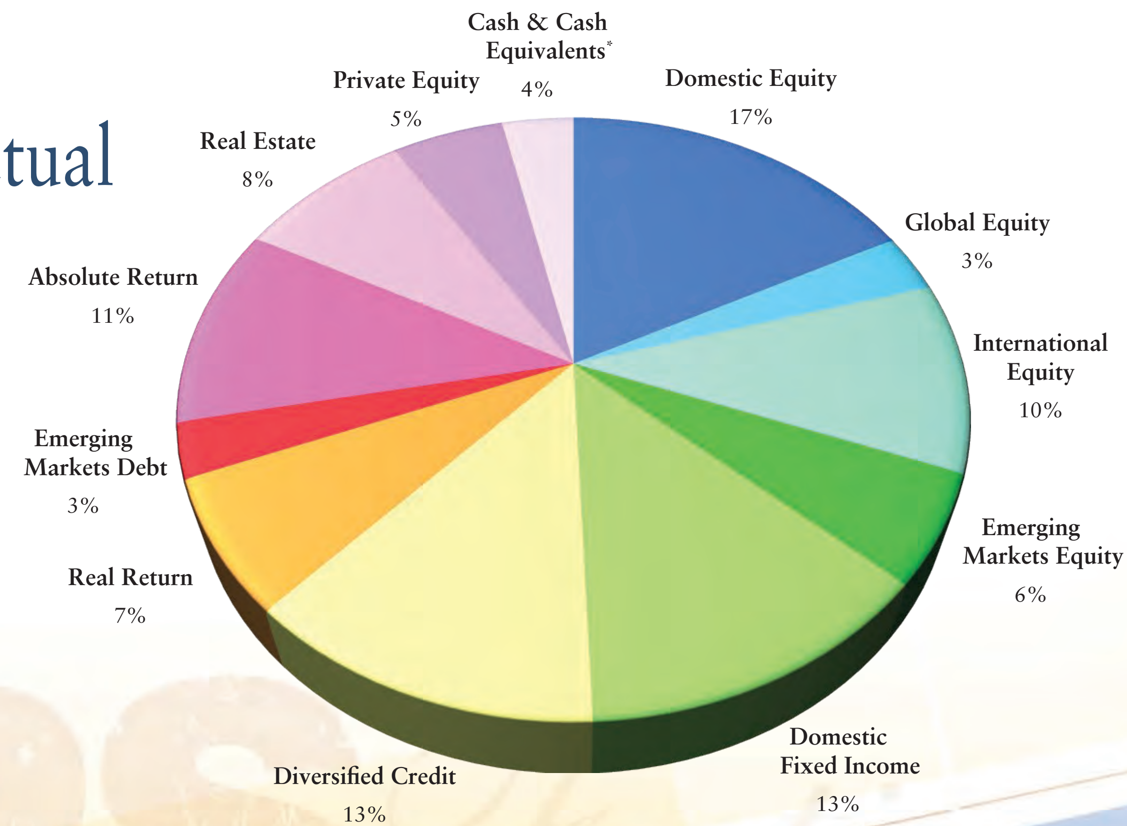
Asset Diversification

December 31, 2016

Policy



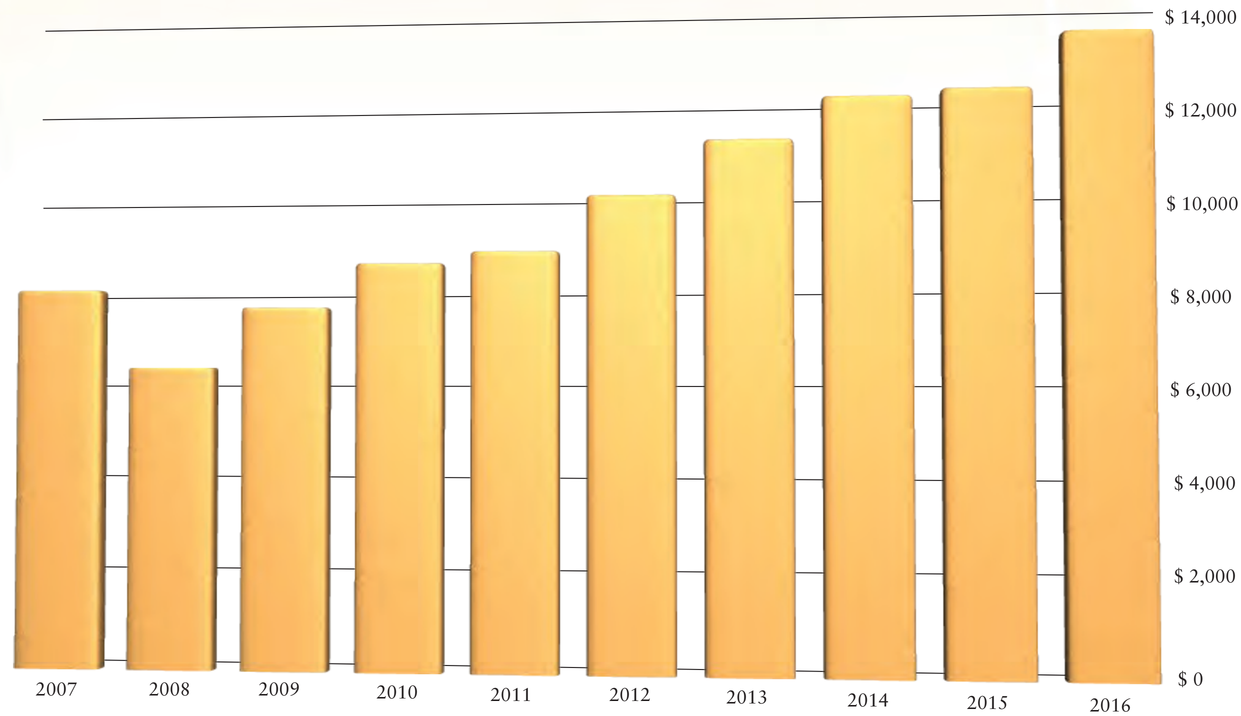
Actual



* Fund level cash is invested in an overlay strategy.

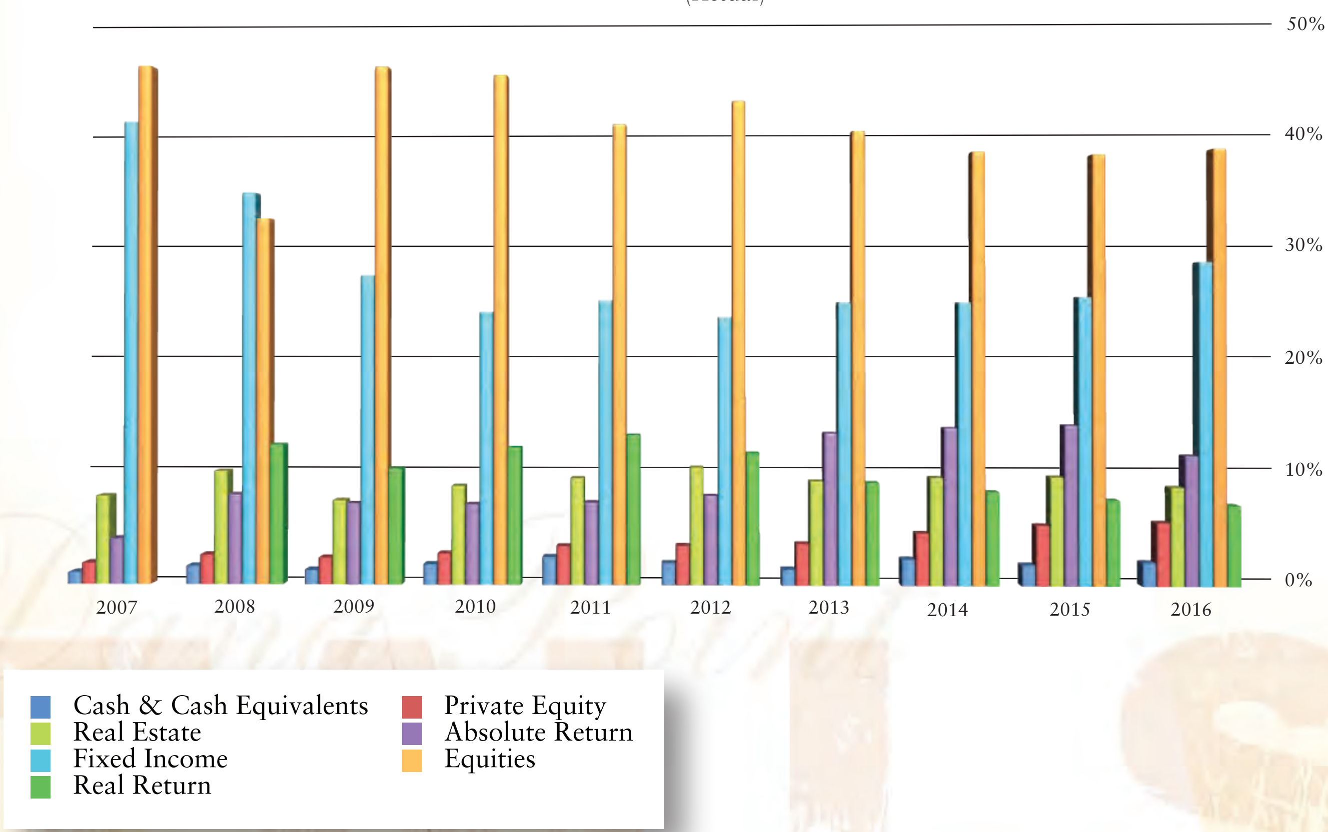
Growth of System Net Investments at Fair Value

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



Historical Asset Allocation

December 2007 - December 2016
(Actual)



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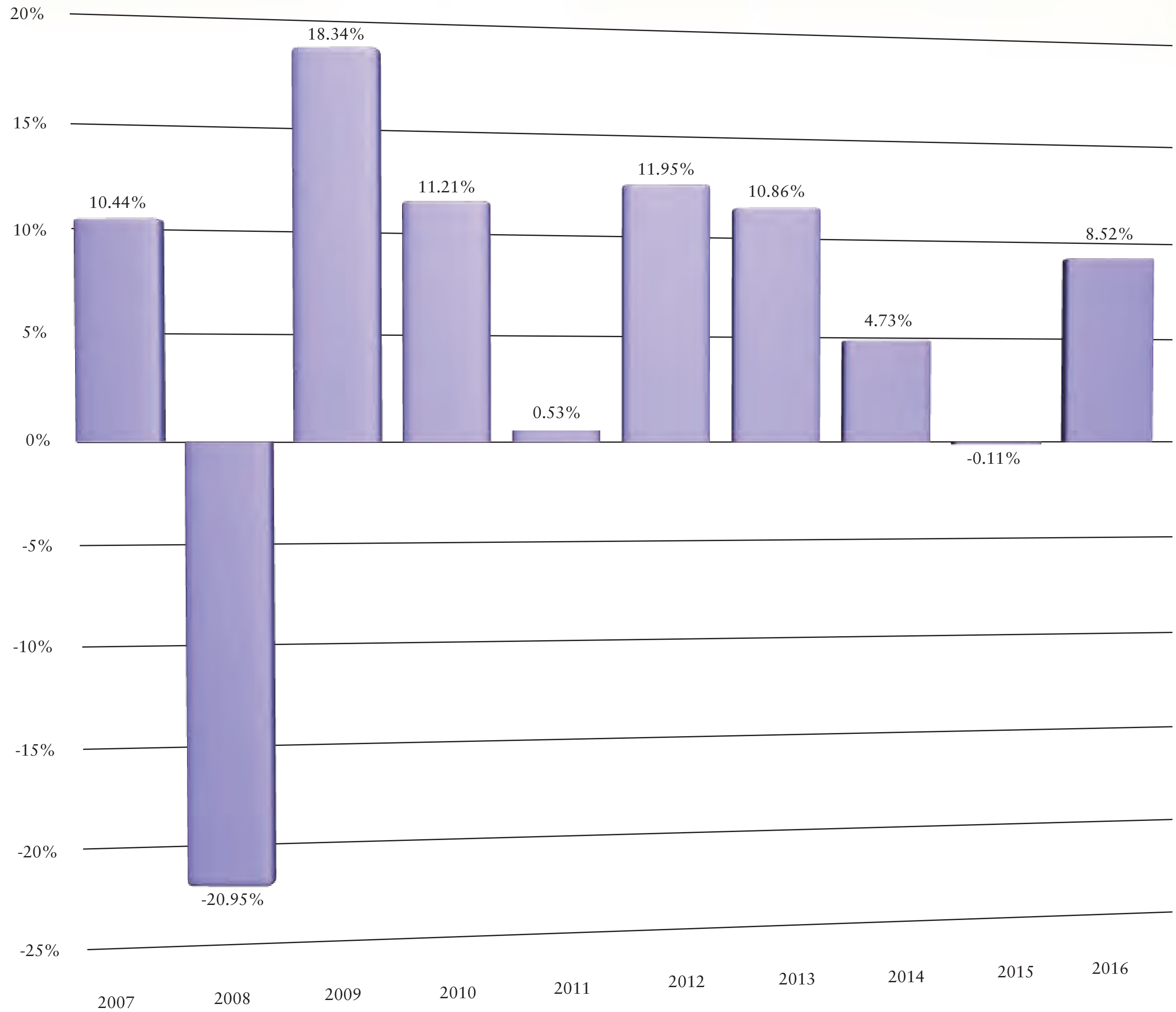
History of Performance

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, Convergex 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.

550/707

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!

Section IV

Actuarial

Actuary's Certification Letter

Segal Consulting

100 Montgomery Street Suite 500 San Francisco, CA 94104-4308
T 415.263.8200 www.segalco.com

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.

Actuary's Certification Letter

(Continued)

Board of Retirement
Orange County Employees Retirement System
May 12, 2017
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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.

<u>Actuarial Section (Based on December 31, 2015 Funding Valuation)</u>

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

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Orange County Employees Retirement System
May 12, 2017
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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
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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.

	Amount Excluded from Assets	
Valuation Date	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 **Total 15.31%**	NC 11.43% UAAL 12.81 **Total 24.24%**	N/A	NC 20.19% UAAL 15.86 **Total 36.05%**	N/A	NC 19.93% UAAL 13.50 **Total 33.43%**	N/A	NC 20.61% UAAL 11.64 **Total 32.25%**
12/31/07	NC 10.79% UAAL 4.36 **Total 15.15%**	NC 11.48% UAAL 11.53 **Total 23.01%**	N/A	NC 21.27% UAAL 18.25 **Total 39.52%**	N/A	NC 21.02% UAAL 17.22 **Total 38.24%**	N/A	NC 20.49% UAAL 10.90 **Total 31.39%**
12/31/08	NC 10.85% UAAL 7.05 **Total 17.90%**	NC 12.03% UAAL 12.59 **Total 24.62%**	N/A	NC 21.39% UAAL 21.95 **Total 43.34%**	N/A	NC 21.16% UAAL 21.94 **Total 43.10%**	N/A	NC 20.15% UAAL 12.03 **Total 32.18%**
12/31/09[(3)]	NC 11.24% UAAL 6.92 **Total 18.16%**	NC 11.98% UAAL 14.55 **Total 26.53%**	NC 11.11% UAAL 14.55 **Total 25.66%**	NC 21.13% UAAL 25.26 **Total 46.39%**	NC 20.38% UAAL 25.26 **Total 45.64%**	NC 21.31% UAAL 27.22 **Total 48.53%**	NC 18.30% UAAL 27.22 **Total 45.52%**	NC 20.17% UAAL 13.90 **Total 34.07%**
12/31/10[(4)]	NC 10.90% UAAL 6.86 **Total 17.76%**	NC 11.85% UAAL 16.14 **Total 27.99%**	NC 11.11% UAAL 16.14 **Total 27.25%**	NC 21.05% UAAL 26.40 **Total 47.45%**	NC 20.38% UAAL 26.40 **Total 46.78%**	NC 21.54% UAAL 23.92 **Total 45.46%**	NC 18.30% UAAL 23.92 **Total 42.22%**	NC 20.07% UAAL 16.22 **Total 36.29%**
12/31/11	NC 10.80% UAAL 8.23 **Total 19.03%**	NC 12.18% UAAL 20.43 **Total 32.61%**	NC 14.35% UAAL 20.43 **Total 34.78%**	NC 21.48% UAAL 29.38 **Total 50.86%**	NC 21.47% UAAL 29.38 **Total 50.85%**	NC 23.49% UAAL 19.66 **Total 43.15%**	NC 18.58% UAAL 19.66 **Total 38.24%**	NC 19.31% UAAL 17.26 **Total 36.57%**
12/31/12	NC 12.34% UAAL 12.28 **Total 24.62%**	NC 13.92% UAAL 24.76 **Total 38.68%**	NC 14.01% UAAL 24.76 **Total 38.77%**	NC 24.24% UAAL 36.71 **Total 60.95%**	NC 24.20% UAAL 36.71 **Total 60.91%**	NC 26.16% UAAL 26.84 **Total 53.00%**	NC 21.12% UAAL 26.84 **Total 47.96%**	NC 21.26% UAAL 21.91 **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 **Total 22.20%**	NC 14.06% UAAL 23.34 **Total 37.40%**	NC 14.15% UAAL 23.34 **Total 37.49%**	NC 24.23% UAAL 32.47 **Total 56.70%**	NC 22.58% UAAL 32.47 **Total 55.05%**	NC 25.86% UAAL 24.14 **Total 50.00%**	NC 21.70% UAAL 24.14 **Total 45.84%**	NC 21.00% UAAL 19.72 **Total 40.72%**
12/31/14	NC 11.79% UAAL 0.00 **Total 11.79%**	NC 13.53% UAAL 20.28 **Total 33.81%**	NC 12.47% UAAL 20.28 **Total 32.75%**	NC 25.79% UAAL 37.46 **Total 63.25%**	NC 23.55% UAAL 37.46 **Total 61.01%**	NC 27.05% UAAL 24.42 **Total 51.47%**	NC 22.38% UAAL 24.42 **Total 46.80%**	NC 22.17% UAAL 25.01 **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 **Total 11.33%**	NC 13.44% UAAL 20.53 **Total 33.97%**	NC 12.72% UAAL 20.53 **Total 33.25%**	NC 25.56% UAAL 39.16 **Total 64.72%**	NC 23.24% UAAL 39.16 **Total 62.40%**	NC 26.87% UAAL 23.81 **Total 50.68%**	NC 22.10% UAAL 23.81 **Total 45.91%**	NC 21.92% UAAL 25.32 **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%	NC 5.78%	NC 7.64%		NC 8.34%		NC 9.78%	NC 7.36%
	UAAL 8.26	UAAL 16.84	UAAL 16.84		UAAL 16.55		UAAL 8.41	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%	NC 6.20%	NC 8.26%		NC 8.70%		NC 10.36%	NC 7.84%
	UAAL 10.39	UAAL 20.98	UAAL 20.98		UAAL 20.66		UAAL 9.11	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%	NC 6.78%	NC 7.44%		NC 9.38%		NC 10.97%	NC 8.50%
	UAAL 12.91	UAAL 25.85	UAAL 25.85		UAAL 25.60		UAAL 12.97	UAAL 24.76
	Total 21.59%	**Total 32.63%**	**Total 33.29%**		**Total 34.98%**		**Total 23.94%**	**Total 33.26%**
With 2-Year Phase-In	**20.33%**	**31.10%**	**32.05%**		**33.52%**		**22.87%**	**31.81%**
12/31/13[5]	NC 9.39%	NC 6.70%	NC 8.56%		NC 9.66%		NC 11.40%	NC 9.71%
	UAAL 11.34	UAAL 23.72	UAAL 23.72		UAAL[6] 21.87		UAAL 12.28	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%	NC 6.61%	NC 8.33%		NC 9.00%	NC 10.04%	NC 9.85%	NC 9.63%
	UAAL[7] 8.62	UAAL 21.72	UAAL 21.72		UAAL[8] 6.26	UAAL 14.40	UAAL 12.78	UAAL 20.28
	Total 17.49%	**Total 28.33%**	**Total 30.05%**		**Total 15.26%**	**Total 24.44%**	**Total 22.63%**	**Total 29.91%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**		**N/A**	**N/A**	**N/A**	**N/A**
12/31/15	NC 8.92%	NC 6.56%	NC 8.35%	NC 6.68%	NC 9.25%	NC 10.12%	NC 10.57%	NC 8.81%
	UAAL[9] 9.22	UAAL 22.45	UAAL 22.45	UAAL 22.45	UAAL[10] 1.42	UAAL 15.52	UAAL 13.79	UAAL 20.53
	Total 18.14%	**Total 29.01%**	**Total 30.80%**	**Total 29.13%**	**Total 10.67%**	**Total 25.64%**	**Total 24.36%**	**Total 29.34%**
With 3-Year Phase-In	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

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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%	NC 11.37%	NC 15.03%	NC 14.53%
	UAAL 6.86	UAAL 16.22	UAAL 26.40	UAAL 23.92
	Total 14.17%	Total 27.59%	Total 41.43%	Total 38.45%
12/31/11	NC 7.95%	NC 12.23%	NC 15.55%	NC 15.23%
	UAAL 8.23	UAAL 17.26	UAAL 29.38	UAAL 19.66
	Total 16.18%	Total 29.49%	Total 44.93%	Total 34.89%
12/31/12	NC 8.66%	NC 13.91%	NC 17.05%	NC 16.41%
	UAAL 12.28	UAAL 21.91	UAAL 36.71	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%	NC 13.95%	NC 19.17%	NC 16.85%
	UAAL(6) 9.87	UAAL 19.72	UAAL 32.47	UAAL 24.14
	Total 18.53%	Total 33.67%	Total 51.64%	Total 40.99%
12/31/14	NC 11.81%	NC 15.25%	NC 20.10%	NC 15.71%
	UAAL 0.00	UAAL 25.01	UAAL 37.46	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%	NC 15.00%	NC 20.04%	NC 15.30%
	UAAL 0.00	UAAL 25.32	UAAL 39.16	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	3,662	273,857,000	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	3,815	300,475,000	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	3,925	331,687,000	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	3,760	359,933,000	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	3,587	346,582,000	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	3,704	370,410,000	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	3,727	370,643,000	99,448	-0.55
Total	**21,256**	**$ 1,609,601,000**	**$ 75,725**	**0.16**
12/31/13				
General	17,547	$ 1,227,153,000	$ 69,935	-1.05
Safety	3,821	377,343,000	98,755	-0.70
Total	**21,368**	**$ 1,604,496,000**	**$ 75,089**	**-0.84**
12/31/14				
General	17,705	$ 1,267,582,000	$ 71,595	2.37
Safety	3,754	380,578,000	101,379	2.66
Total	**21,459**	**$ 1,648,160,000**	**$ 76,805**	**2.29**
12/31/15				
General	17,839	$ 1,254,521,000	$ 70,325	-1.77
Safety	3,686	378,590,000	102,710	1.31
Total	**21,525**	**$ 1,633,111,000**	**$ 75,870**	**-1.22**

Excludes Deferred and Pending members.

Summary of Retired Membership

Plan Year Ending	At Beginning of Year	Added to Rolls		Removed from Rolls		At End of Year	Annual Allowance (in 000's)	% Increase in Annual Allowance	Average Monthly Allowance
		Number	Annual Allowance (in 000's)*	Number	Annual Allowance (in 000's)				
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:

Mortality Rate Percentages				
	General		Safety	
Age	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				
	General		Safety	
Age	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

	Termination Rate Percentages			
	General		Safety	
Years of Service	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.

Retirement Rates

	Rate (%) Retirement							
	General			Safety				
Age	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:

	Final One Year Salary	Final Three Year Salary
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.

Non-CalPEPRA General Plans:

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.

All Other General Employers:

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:

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

Service Retirement Eligibility:

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

Summary of Major Plan Provisions

(continued)

Benefit Formula: General Plans

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% x FAS1 x Yrs)
Tier 1	55	(0.99% x FAS1 x Yrs)
	60	(1.28% x FAS1 x Yrs)
	62	(1.39% x FAS1 x Yrs)
	65 or later	(1.62% x FAS1 x Yrs)
Plan P, Plan T and Plan W (§31676.01)	50	(0.79% x FAS3 x Yrs)
Tier 2	55	(0.99% x FAS3 x Yrs)
	60	(1.28% x FAS3 x Yrs)
	62	(1.39% x FAS3 x Yrs)
	65 or later	(1.62% x FAS3 x Yrs)

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

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

Summary of Major Plan Provisions

(continued)

Benefit Formula: Safety Plans

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:

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

Ordinary Disability:

General Plans:

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

Eligibility — Five years of service. (§31720)

Benefit Formula — Plans A, G, I, M, and O:
1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 62, but the total benefit cannot be more than one-third of Final Compensation. (§31727.1)

Plans B, H, J, N, P, S, T, U and W:
1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation. (§31727)

Safety Plans:

Plans E, F, Q, R and V

Eligibility — Five years of service. (§31720)

Benefit Formula — 1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation (§31727.2)

For all members, 100% of the service retirement benefit will be paid, if greater.

Line-of-Duty Disability:

All Members:

Eligibility — No age or service requirements. (§31720)

Benefit Formula — 50% of the Final Compensation or 100% of Service Retirement benefit, if greater. (§31727.4)

Pre-Retirement Death

All Members:

Eligibility — None

Benefit — Refund of employee contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation. (§31781) A lump sum benefit in the amount of $1,000 is payable upon death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)

Death in line of duty — 50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor-children. (§31787)

Or

Vested Members:

Eligibility — Five years of service.

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

Summary of Major Plan Provisions

(continued)

Death After Retirement:

All Members:

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

Withdrawal Benefits:

Less than Five Years of Service	Refund of accumulated employee contributions with interest or earned benefit at age 70 (§31628). Effective January 1, 2003, a member may also elect to leave their contributions on deposit in the retirement fund. (§31629.5)
Five or More Years of Service	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	
Basic	Provide for an average annuity at age 60 equal to 1/200 of FAS1. (§31621.5)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan B	
Basic	Provide for an average annuity at age 60 equal to 1/120 of FAS3. (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans G, H, I and J	
Basic	Provide for an average annuity at age 55 equal to 1/100 of FAS3 (FAS1 for Plans G and I). (§31621.8)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans M, N, O and P	
Basic	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3 (FAS1 for Plans M and O). (§31621)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plan S	
Basic	Provide for an average annuity at age 60 equal to 1/100 of FAS3. (§31621.2)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.

Summary of Major Plan Provisions

(continued)

Member Contributions: (continued)

Non-CalPEPRA Safety Plans:	
Plans E and Q	
Basic	Provide for an average annuity at age 50 equal to 1/200 FAS1. (§31639.5)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
Plans F and R	
Basic	Provide for an average annuity at age 50 equal to 1/100 of FAS3. (§31639.25)
Cost-of-Living	Provide for 50% of future Cost-of-Living costs.
CalPEPRA Plans:	
Plans T, U, V and W	50% of total Normal Cost rate.

Other Information:

Non-CalPEPRA Safety members with 30 or more years of 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					
	Gains (or Losses) Per Year				
Type of Activity	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					
	Gains (or Losses) Per Year				
Type of Activity	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

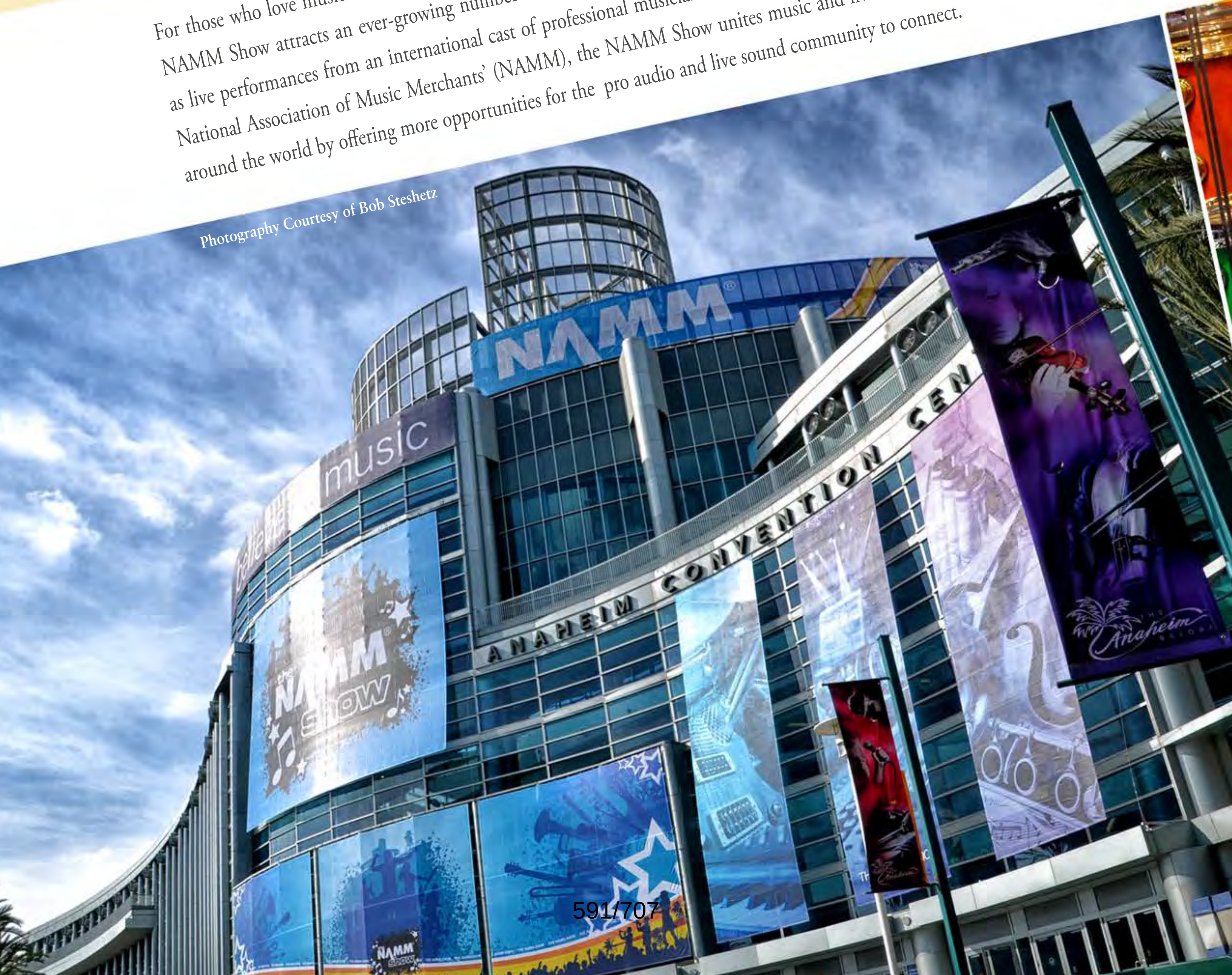
Valuation Date*	Benefit Type	Active Member Contribution	Liability for Retired Members (in 000's)	Active Members Employer Financed Portion (in 000's)	Total (in 000's)	Actuarial Value of Plan Assets (in 000's)	Active Member Contribution	Liability for Retired Members	Active Members Employer Financed Portion
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



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)

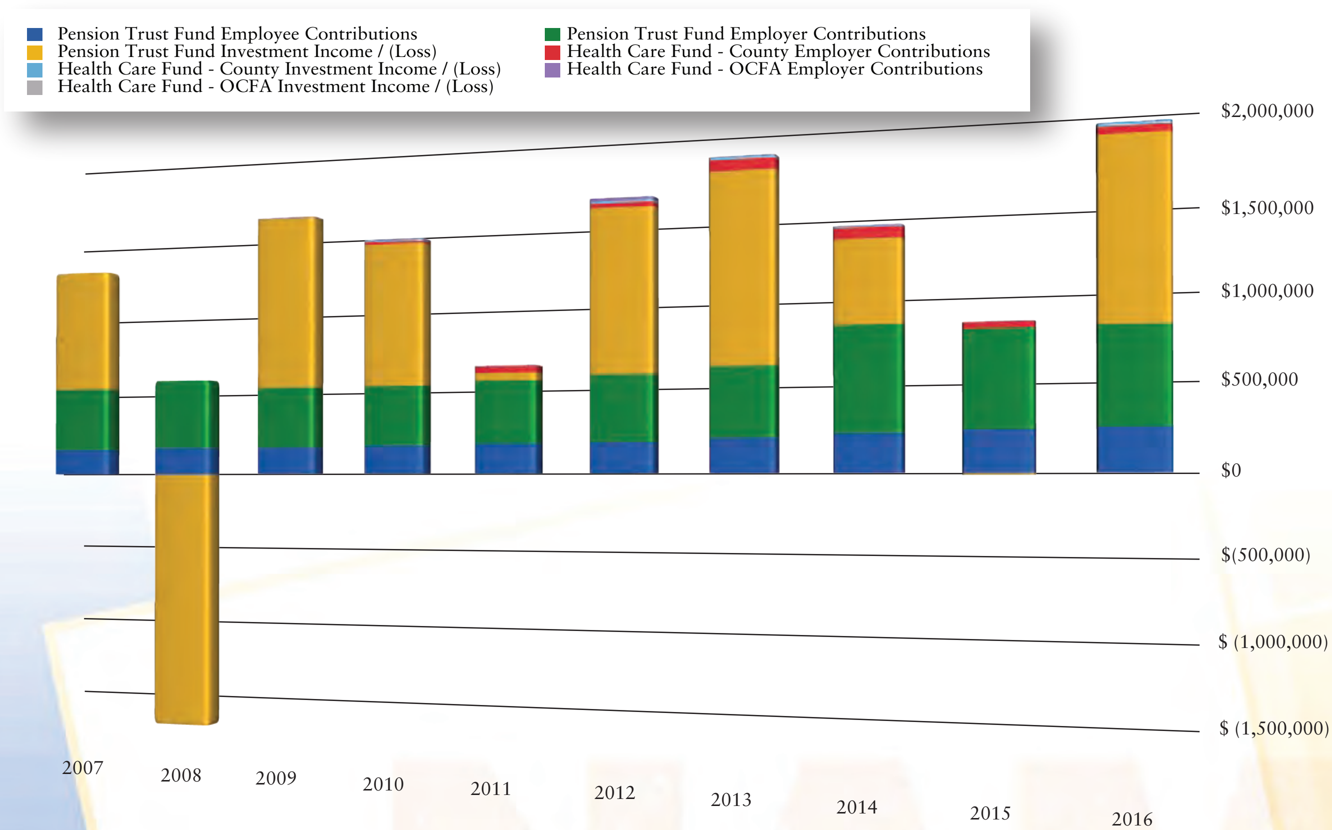
Years Ended December 31	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Additions										
Employer Contributions	N/A	N/A	N/A	$ 3,634	$ 3,660	$ 3,590	$ 18,349	$ 2,667	$ 2,624	$ 2,414
Investment Income/(Loss)	N/A	N/A	N/A	1,358	(7)	1,736	1,963	1,583	(99)	2,845
Net Securities Lending	N/A	N/A	N/A	3	3	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.

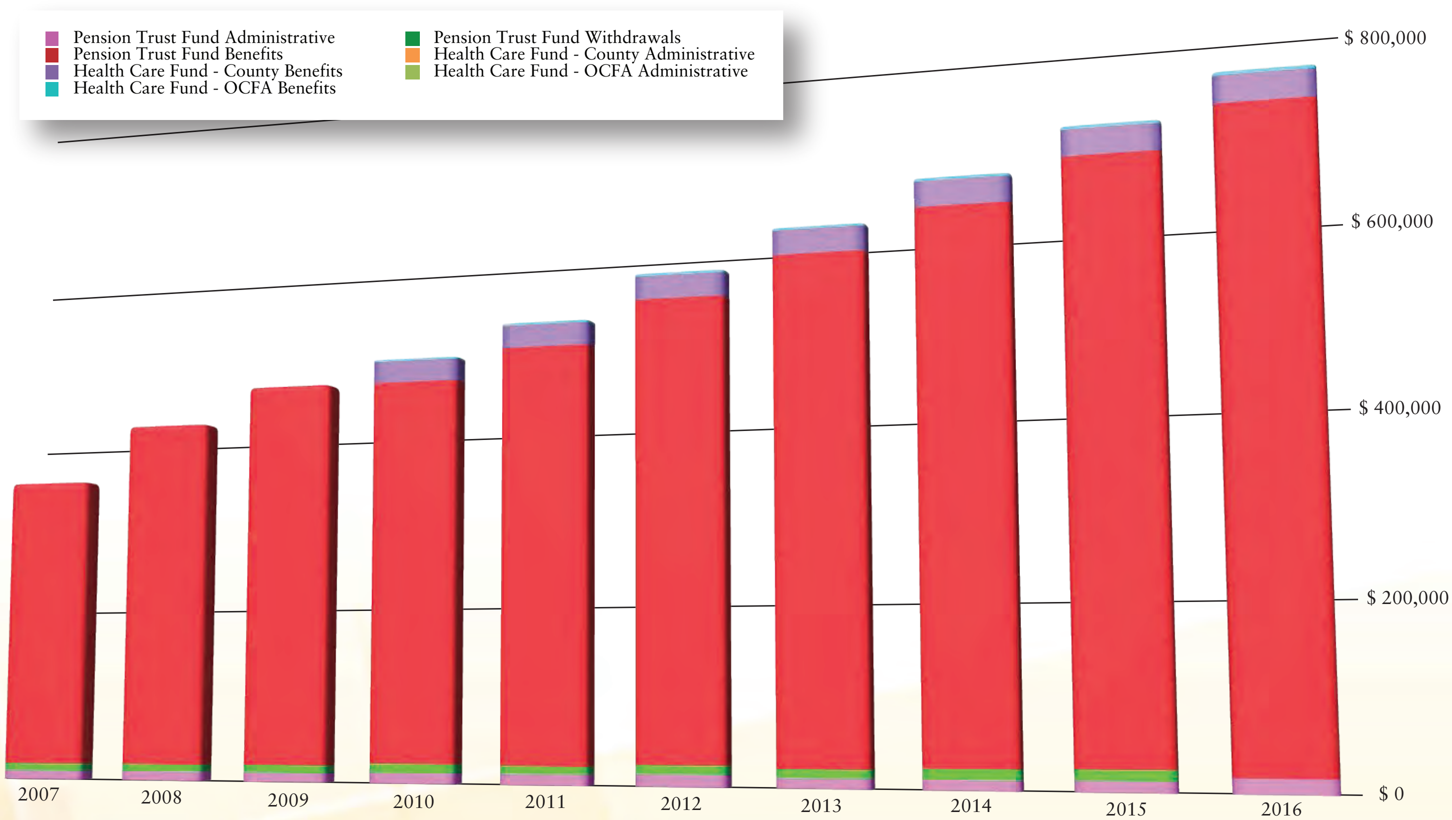
[1] Investment Income / (Loss) includes net appreciation/(depreciation) less investment manager fees, security lending fees and commission recapture.

[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

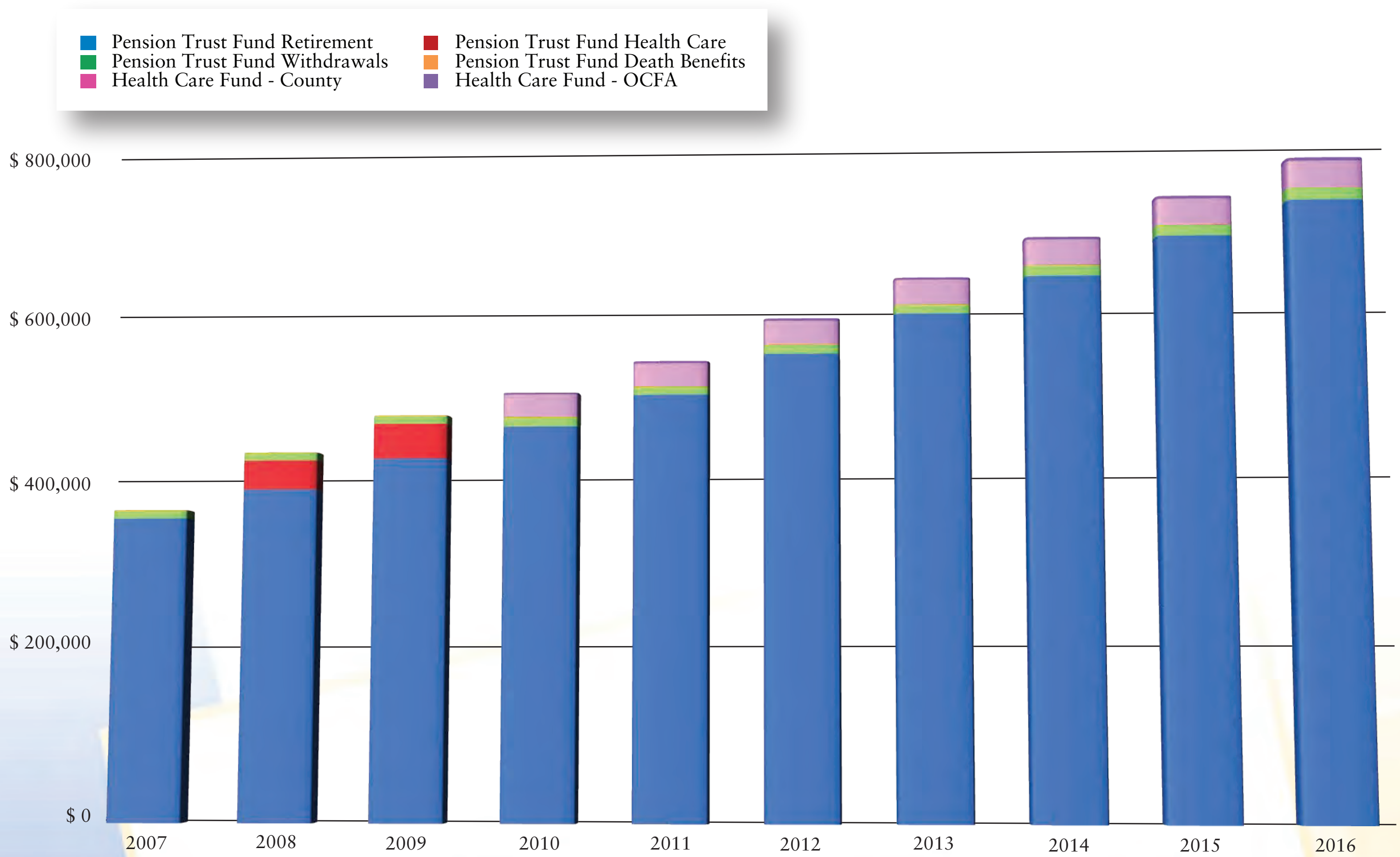


N/A: Detailed information not available.

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 CareFund - 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**



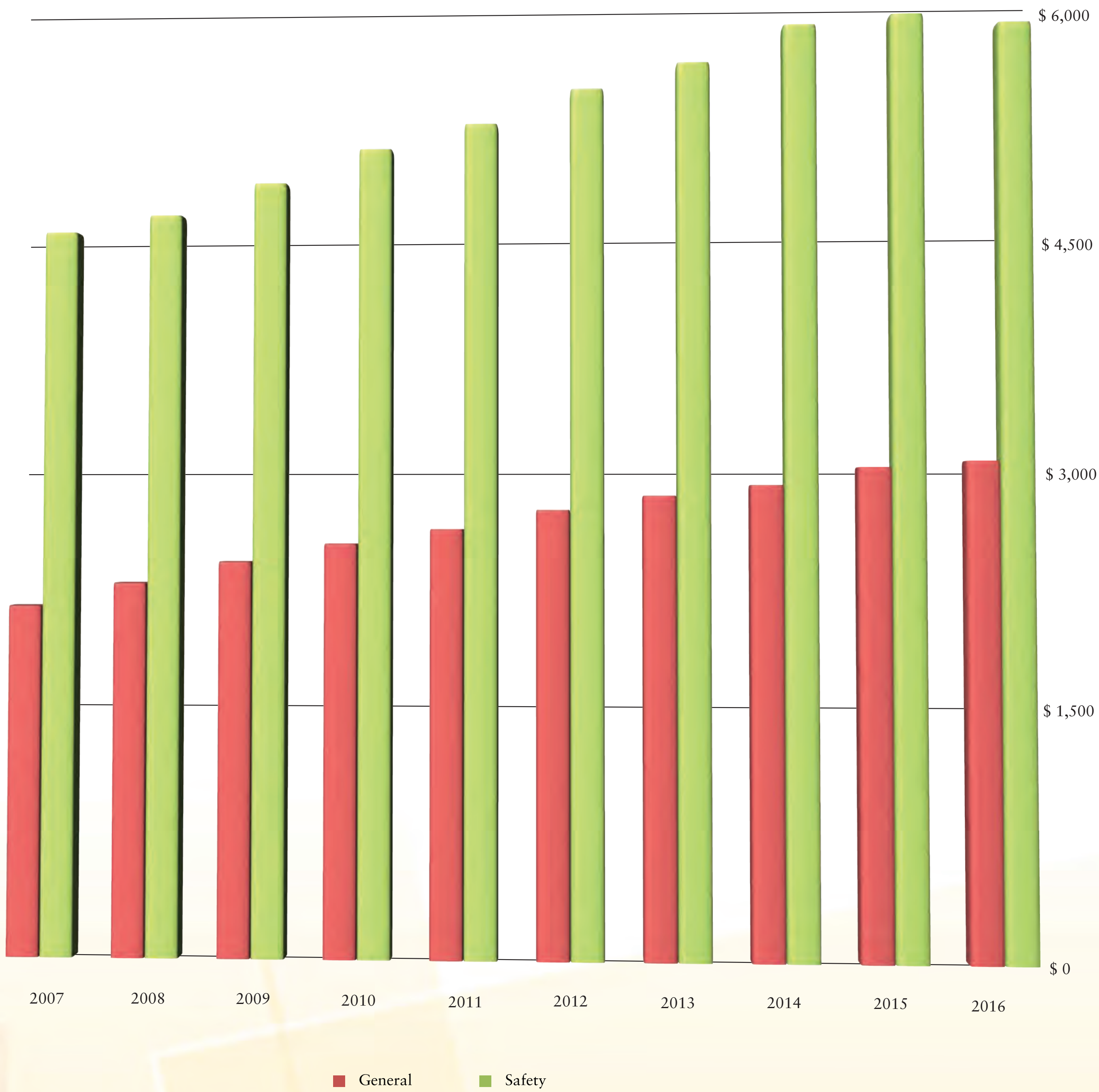
N/A: Detailed information not available.

[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

Schedule of Average Pension Benefit Payments by Years of Service

	Years of Service						
Service Retirement Effective Dates	0-5	5-10	10-15	15-20	20-25	25-30	30 & Over
Period 1/1/07-12/31/07							
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

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

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	2,087	1	20	2	11	-	27	5	-	-	-	-	1	-	-	2,154
Total	13,771	9	315	28	55	426	1,352	102	17	1	35	215	35	-	8	16,369

Definition of Options:

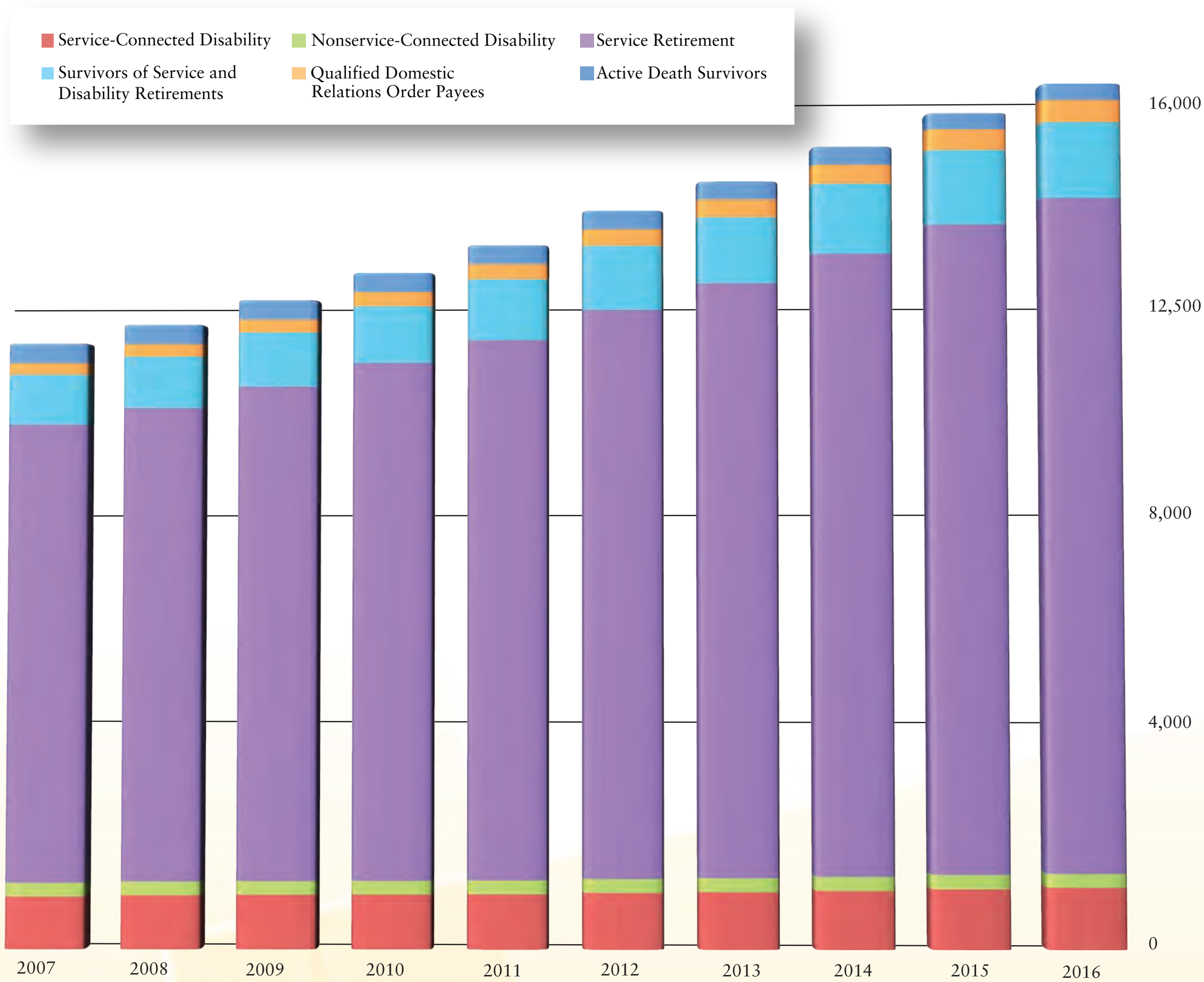
UM: Unmodified -- Maximum retirement allowance
OP1: Option 1 -- Reduced retirement allowance, at death of retiree beneficiary receives remaining balance on account
OP2: Option 2 -- Reduced retirement allowance
OP3: Option 3 -- Reduced retirement allowance
OP4: Option 4 -- Reduced retirement allowance
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
04C: 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	1,320	1,349	1,399	1,442	1,520	1,575	1,690	1,680	1,731	1,757

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	27,264	27,601	26,727	26,050	25,827	25,671	25,981	26,249	26,617	27,116

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

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

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

OCERS

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.

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.

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

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Segal Consulting

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:

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

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SECTION 1

VALUATION SUMMARY

SECTION 2

GASB STATEMENT 67 INFORMATION

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.

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.

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.*

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

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.

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	21,746
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.

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.

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.

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[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.*

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	(12,809,208,000)	(11,657,318,000)
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

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	6.00%	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 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

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]	(508,788)	0
9. Net change in Total Pension Liability	$626,501,862	$755,336,068
10. Total Pension Liability – beginning	17,373,922,741	16,618,586,673
11. Total Pension Liability – ending	$18,000,424,603	$17,373,922,741
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	0	0
19. Net change in Plan Fiduciary Net Position	$1,151,890,000	$121,212,000
20. Plan Fiduciary Net Position – beginning	11,657,318,000	11,536,106,000
21. Plan Fiduciary Net Position – ending	$12,809,208,000	$11,657,318,000
22. Net Pension Liability – ending (11) – (21)	$5,191,216,603	$5,716,604,741
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.*

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:*

Plan Year Ended December 31	*Transfers from County Investment Account*	*Plan Year Ended December 31*	*Transfers from County Investment Account*
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.*

(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.*

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	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. For valuation purposes, the Valuation Value of Assets is reduced by the value of the non-valuation reserves.

Notes to Exhibit 4 – continued

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 13.50% 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

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 Acount as of December 31, 2016.

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.

5481765v2/05794.015

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

MGO Certified Public Accountants

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.

Macias Gini É O'Connell LLP

Newport Beach, California
June 1, 2017

I-6

Memorandum

DATE: May 31, 2017

TO: Members of the Board of Retirement

FROM: Jenny Sadoski, Director of Information Technology

SUBJECT: **BUSINESS CONTINUITY AND DISASTER RECOVERY PLAN UPDATE**

Recommendation

Receive and file.

Update

The Board of Retirement directed staff to bring the Business Continuity and Disaster Recovery Plan Update back to the Board in June so that questions that were raised during the May 15, 2017 Board meeting could be addressed. In particular, a question was asked regarding the security of the proposed ShoreTel Connect CLOUD telephony solution. Staff had performed research in this area and believes the proposed solution will meet OCERS' security requirements due in part to the following features of the solution:

- Housed in redundant, geographically separated, physically-reinforced, 24x7x365 guarded colocation facilities managed by an S&P 400 company
- 128-bit AES encryption of 100% of voice and signalling traffic
- Vendor controls to ensure the highest levels of integrity and ethics for Network Operations Center staff

Beyond these details, the solution provides many additional features that make for a very compelling system.

Since the report provided at the May Board meeting, there have been no major updates to the project progress. However, in the near future staff expects to execute agreements with the local and out-of-state colocation facility providers and begin in earnest the migration to the offsite facilities.

Below is the information from the May regular Board report:

In the report provided to the Board for the March 20th regular Board meeting, it was noted that staff was working closely with our technology partner, Sidepath, to review proposals submitted in response to the data center colocation and wide area network (WAN) services request for proposal (RFP) which had been released to the public on February 6 and which closed on March 3. After a thorough review of the proposals, the project team felt that none of the responses offered a complete solution that encompassed OCERS' best interests. Staff consulted with Contracts, Risk and Performance Administrator Jim Doezie and Assistant CEO, Internal Operations Brenda Shott to explore options and it was determined that OCERS reserves the right in its RFP process to refrain from awarding a contract if a suitable submission is not identified. Once this determination was made, staff evaluated each component of the RFP (local data center; out-of-state data center; and WAN connectivity services) and identified three individual vendors whose offerings in conjunction would comprise a robust, secure and high-performance solution. Those vendors were notified and the project team immediately entered into contract negotiations with the WAN connectivity services provider as this component of the project lies on the critical path. The contract with the WAN connectivity services provider was signed on May 2 and the vendor will begin provisioning the contracted services in the very near future with an expected duration-to-completion of 125 days. Next, we will shift our focus to finalizing the colocation contracts with each of the local and out-of-state facilities providers; we anticipate execution of those contracts to fall well within the 125-day WAN connectivity services implementation period. Final costs for these components are anticipated to be in line with the expected costs noted in Table 1 below and will be reported as contracts are signed; the table has been updated with the negotiated costs for the WAN connectivity services and we expect to report the colocation facility costs in the July regular Board update.

In related news, IT staff has worked closely with stakeholders within OCERS, particularly in the Member Services Department, and with technology partner Sidepath and current enterprise telephony system vendor, ShoreTel, to review cloud-based telephony solutions. Through these discussions over the previous several months, it was determined that ShoreTel's Connect CLOUD product offers all the functionality of our existing on-premises solution plus additional functionality that leverages the cloud to bring resiliency, flexibility and business continuity and disaster recovery features into play. At an April 20 internal staff meeting, stakeholders approved the solution's design, functionality and expected implementation schedule and the project team was given the greenlight to work with Mr. Doezie on the procurement process. Due to the existing relationship with ShoreTel and the expected cost of the annual contract (initial analysis indicates a potential annual cost savings over existing costs), an RFP process is not expected to be required in this instance; however, Mr. Doezie will ensure that OCERS meets all procurement requirements. As exact costs are identified, they will be shared in upcoming regular Board reports.

Background

At the September 2014 Strategic Planning meeting, OCERS' Board of Retirement directed staff to hire a business continuity consulting firm to provide professional services to assist in the development of a new BC/DR plan. The cost for the professional services was budgeted as part of the OCERS 2015 budget which was reviewed at the OCERS 2014 Budget Workshop and approved at the November 17, 2014 regular Board meeting. The total project was budgeted at $2.3 million. During the 2014 Strategic Planning meeting, staff also received feedback from Board members to avoid the use of public cloud architecture for its core business application.

At the April 15, 2015 regular Board meeting, OCERS staff presented to the Board the results of the business continuity consulting services RFP. The Board approved staff's recommendation to acquire the services of Avalution Consulting for a cost of $102,500 and procurement of the Catalyst online software solution at an annual cost of $3,000. The Avalution project team began work in June 2015, conducting the business impact analysis and developing OCERS' business continuity and disaster recovery plan with staff, including a crisis management plan.

OCERS staff presented the methodology, deliverables and recommendations from Avalution Consulting to the Board at the October 19, 2015 regular Board meeting. Avalution's recommendations, based on industry best practices, were:

1. **Identify Alternate Workspace**
    - Identify solution that can support all personnel required for response and recovery from a disruption.
2. **Develop and Implement Disaster Recovery Capabilities**
    - Identify a suitable alternate location for the data center as well as develop and implement disaster recovery procedures to recover and relocate its network systems.
3. **Develop and Implement a Crisis Management Structure**
    - Establish a crisis management team to lead the response to a disruption event.

- Implement and document strategies to address a loss of employees who perform critical activities and implement succession planning for critical personnel.
- Implement and validate (test) work from home or alternate location capabilities.
- Communicate and train OCERS staff on business continuity planning and procedures.

4. Develop and Document Manual Workarounds

- Document manual workarounds and alternate process procedures and make documents available by storing in Catalyst business continuity software.

At the October 19, 2015 Board meeting, staff presented to the Board the following next steps for the project:

- Develop annual BC/DR testing and maintenance schedule.
- Pursue and implement options for alternate workspaces for OCERS staff in case of disruption of service.
- Draft and implement redundant and high availability solutions for OCERS data center and pursue out of state co-location of OCERS data center.
- Establish communications systems including new Voice-over-IP phone system, to support member communications, reporting, and crisis management.
- Investigate cost and feasibility of building improvement options such power generators and new data center equipment (UPS, HVAC).

In June 2016, OCERS released a RFP for IT BC/DR implementation services which received four responses and culminated in the selection in July 2016 of Sidepath as our technology partner for this initiative.

At the 2016 budget workshop held on October 22, 2015, staff included $2 million in the proposed budget for the continuation of the BC/DR project. The project budget was approved by the Board as part of the 2016 Administrative Budget at the November 16, 2015 regular Board meeting.

Staff then provided an update to the Board on the progress of the BC/DR project as described above as a consent item at the August 15, 2016 Board meeting.

At the October 17, 2016 regular Board meeting, staff presented the plan to move forward with the primary and secondary data center relocation, including detailed discussion on potential options. Staff recommended a hybrid (public/private) cloud architecture for the data center.

At the November 14, 2016 regular Board meeting, the Board approved staff's recommendation to establish a hybrid (private/public) cloud infrastructure solution, relocate the primary OCERS data center to a local, professionally-managed facility, establish a secondary site out-of-state and implement a public cloud-based telephony system in order to enhance OCERS' business continuity and disaster recovery capabilities at a cost not to exceed the 2017 budgeted amount of $1.235 million. At that meeting, the Board requested bi-monthly status updates to be included in the consent agenda.

On November 21, 2016, OCERS issued a purchase order to our technology partner, Sidepath, to allow them to begin procurement of the hardware, software and support required for the project. The bill of materials for this procurement was subject to a competitive bid process for which we received three responses.

At the March 20, 2017 regular Board meeting, staff reported that we had completed procurement of the hardware, software and training required for the data center colocation project at a total cost of $654,276.88. Additionally, it was noted that staff was working closely with our technology partner, Sidepath, to review responses to the RFP used to select a vendor to provide the local and out-of-state colocation facilities and WAN connectivity services.

OCERS has defined a budget of $1.235 million in 2017 to proceed with a hybrid cloud solution which includes the costs shown in Table 1.

Table 1: Approved 2017 Purchase Costs and Actuals-to-Date

Description	Estimated Expenses	Actual Expenses-to-Date
Hardware and Software	$ 671,000.00	$ 650,196.19
Professional Services	$ 80,000.00	$ -
Staff Training	$ 4,000.00	$ 4,080.69
Public Cloud-based Telephony System	$ 250,000.00	$ -
Initial Setup and First Year Recurring Costs	$ 140,000.00	$ 68,450.00*
Contingency	$ 90,000.00	$ -
Total	**$ 1,235,000.00**	**$ 722,726.88**

* These expenses have not been incurred; rather, they represent the contractually negotiated costs for initial setup and first year recurring costs.

Submitted by:

OCERS J.S. - Approved

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Jenny Sadoski
OCERS Director of Information Technology

Business Continuity and Disaster Recovery Planning Update

Presented on June 12, 2017

by

Jenny Sadoski, OCERS Director of Information Technology

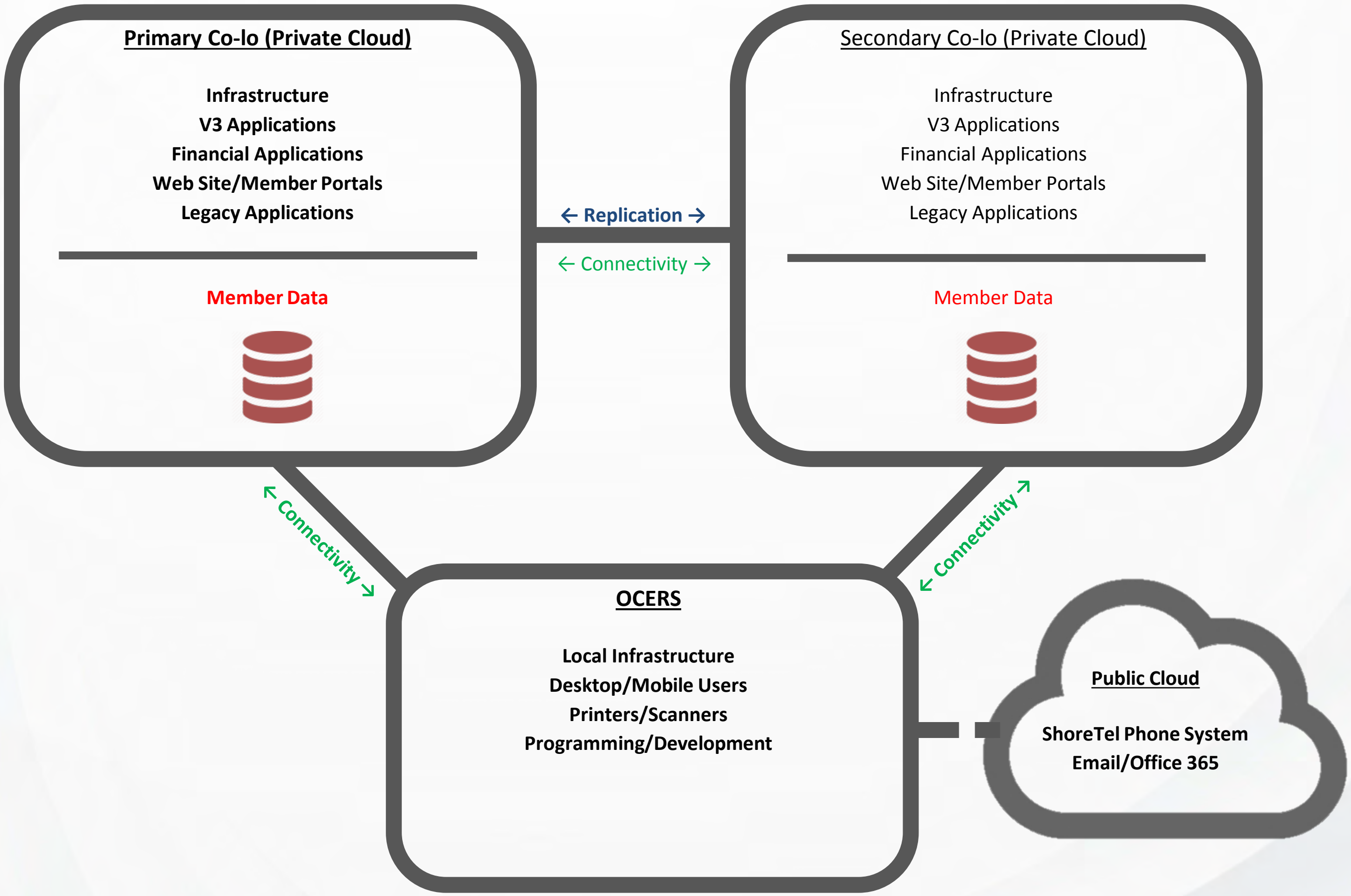
Agenda

- Status of Current Action Items
- Current Project – Data Center Relocation
- The future of cloud computing at OCERS

Status of BC/DR Action Items

- Identify Alternate Workspace – *scheduled for 2018*
- Develop and Implement Disaster Recovery Capabilities – in process
  - Relocation of OCERS primary data center to local colocation facility and creation of a secondary out-of-state location
- Develop and Implement a Crisis Management Structure – *on going*
  - Development of the Business Continuity and Disaster Recovery Plan
    - First iteration completed in 2015; continually updated, with major revisions annually
    - Next major revision and department walk through scheduled for June 2017
    - Next table top exercise scheduled for June 2017
- Develop and Document Manual Workarounds – in process
  - Work with department heads to identify and include BC/DR contingencies for core business processes

Data Center Relocation



ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Data Center Relocation Status

- Purchased new hardware and software
- Finalizing contracts with selected vendors for:
  - Local Data Center colocation facility
  - Out-of-state Data Center colocation facility
  - Dedicated WAN connectivity services
  - Migration to ShoreTel Connect CLOUD
- Migration kick-off meeting with technology partners in June

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Cloud Computing

- Develop cloud computing policy that defines when it is feasible to use cloud services
- Bring policy to Governance Committee for review and input
- Seek Board approval and adoption
- Follow policy for determining cloud service provider usage

I-7

Memorandum

DATE: May 31, 2017

TO: Member of the Board of Retirement

FROM: Jenny Sadoski, Director of Information Technology

SUBJECT: **CYBER SECURITY OVERVIEW**

Recommendation

Receive and File.

Background/Discussion

As part of OCERS 2017 business goals and overall Strategic Plan, cyber security is key component in protecting our member data and providing peace of mind to our members that OCERS can issue safe and secure pension benefits to its members. The following presentation is to provide OCERS Board of Retirement an update on OCERS IT cyber security initiatives and accomplishments for 2017.

Thank you,

Submitted by:

OCERS J.S. - Approved

____

Jenny Sadoski
Director of Information Technology

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

2017 Cyber Security Initiatives Update

Presented on June 12, 2017

by

Jenny Sadoski, OCERS Director of Information Technology

Agenda

- Background
- Review status of 2017 Cyber Security Initiatives
- The future of cloud computing at OCERS

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Background

- In 2016 with the implementation of V3 complete, OCERS IT was directed by the Board and Executive Management to focus on Cyber Security initiatives and the creation of a Security Awareness Program

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2017 Cyber Security Initiatives

- Expand Security Awareness Program
  - Continuous Security Awareness training
  - Implement phishing email testing
  - Annual security testing
- Implement Advanced Email Security
- Researching Managed Security Services
- Conducted Compromise Assessment of Network and IT Infrastructure
- Regular Security updates to the Audit Committee

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2017 Cyber Security Initiatives

Advanced Email Security

Robust, ever-evolving solution that provides a multilayered approach to automatically detect and prevent email threats before they reach our inbox.

- Detect and remove spam, phishing, ransomware, malware and virus infused emails
- Detect and Block threats from malicious attachments or embedded URL links in emails
- Assess the reputation of the sender and block invalid and imposter fraud emails
- Allow users to send and receive email securely (encryption)
- Facilitate threat response, monitoring and reporting

2017 Cyber Security Initiatives

Managed Security Services

Proactive advanced persistent threat protection and expert-managed security analysis to protect our network 24/7

- Managed Intrusion Detection System(IDS) and Intrusion Protection Systems (IPS)
- Managed Firewall Services and Endpoint Threat Detection
- Advanced Malware Protection
- Constant Monitoring of Network and Server Resources
- Incident Response Services

658/707

I-8

Memorandum

DATE: June 2, 2017

TO: Members of the Board of Retirement

FROM: Steve Delaney, Chief Executive Officer

SUBJECT: **ANNUAL BUSINESS PLAN PROGRESS – MID-YEAR REVIEW**

Recommendation

Receive and file.

Background/Discussion

The OCERS Board's Planning Policy requires the following:

> **Review of Business Plan Initiatives**
>
> On a semi-annual basis, the Chief Executive Officer will review for the Board the status of each initiative in the Business Plan, regardless of whether any progress was made.

Attached you will find a copy of the 2017 Business Plan.

The OCERS management team will be present during this portion of the Board agenda, and available to respond to questions you may have regarding any 2017 Business Plan initiative.

As a change in pace, the Board Chair has directed that rather than reviewing each goal and providing you with current status, I highlight below those business plan initiatives that have had some kind of issue arise, or a change or modification was necessary:

EXECUTIVE SERVICES

> Goal #7: Implement pilot Staff Retention Award Program while studying expansion for key administrative positions
>
> This goal has been deferred by the Governance Committee in agreement with the Board for consideration at a later date.

INFORMATION TECHONOLOGY

Goal #12: Board room technical and safety upgrades

In process, anticipated to roll into 2018 as project is running behind schedule. Working with CBRE to get options and pricing for room improvements and new digital audio/visual equipment

ADMINISTRATIVE SERVICES

Goal #18: Partner with the CEO and CIO on the implementation of a pilot Staff Retention program

This goal has been deferred by the Governance Committee in agreement with the Board for consideration at a later date.

INVESTMENTS

Goal #45: Complete procurement and selection for Real Estate consultant, conduct/complete exploratory RFP for private equity consultant and other service providers as needs or opportunities arise

On hold for arrival of Ms. Murphy, as new CIO.

Goal #48: Investigate OCERS institute for trustee investment training in conjunction with other So Cal CERL plans

This was an initiative specific to Mr. Miller's background. We will need to allow Ms. Murphy to determine if this should remain as an agency goal.

Goal #49: Seed capital to fund multi-plan procurement consortium through NCPERS and/or BLA Schwartz and SACRS CIOs

This was an initiative specific to Mr. Miller's background. We will need to allow Ms. Murphy to determine if this should remain as an agency goal.

Submitted by:

Steve Delaney
Chief Executive Officer

2017

Business Plan

ORANGE COUNTY
OCERS
EMPLOYEES RETIREMENT SYSTEM

Table of Contents

Business Plan Process

On an annual basis OCERS staff prepares a one year Business Plan for the Board of Retirement's (Board) consideration and adoption. The purpose of the annual Business Plan is to set department and agency-wide goals and initiatives for the upcoming year that will support and advance the longer term strategic goals of the agency and complete short term projects. The goals and initiatives included in the Business Plan are assumed to be in support of and in addition to the ongoing business activities of the agency. The Business Plan then becomes part of the foundation for developing OCERS' annual budget.

The OCERS Strategic Plan was the starting point for developing the 2017 Business Plan. Staff reviewed the goals and objectives within the rolling three-year Strategic Plan and considered tactics to be used in implementing those long term goals in the upcoming year. The Board initially reviewed staff's proposed goals and initiatives for the upcoming year in September at the annual strategic planning session. Although an official action of the Board is not taken at that meeting, staff received verbal direction from the Board to proceed with including the goals and initiatives presented at the Strategic Planning Meeting into the 2017 Business Plan

After receiving Board approval of the 2017 Business Plan, Executive Management will perform a detailed final review of all budget requests that have been submitted by department managers during the initial stages of developing both the Business Plan and the annual budget. Executive Management ensures that the funds requested are both necessary and adequate to deliver, in an effective and efficient manner, the services OCERS is committed and obligated to provide to its plan participants and sponsors as well as to achieve the Board approved goals for the upcoming year and move longer term strategic goals forward. The budget is also reviewed for compliance with expenditure limitations set by the California Government Code. The budget includes detailed expenses by category and functional area along with comparative data from previous years.

A budget workshop is held prior to the regularly scheduled Board of Retirement meeting in November. The budget workshop will give staff an opportunity to review the detailed budget proposal with Board members. Board members will have an opportunity to ask questions and provide feedback to staff on the budget before it is before them for approval.

The annual budget is then presented to the Board or Retirement in November for review and approval. Business Plan goals must be funded in the approved budget. Should the Board decide not to fund a goal or initiative in the budget that item will either be deferred or deleted from the Business Plan. Should the Board have additional questions, comments, or are in need of further information, the schedule allows for staff to return to the Board in December if necessary.

Introduction

OCERS 2017 Business Plan (the Business Plan) is organized as a list of goals and initiatives for each department at OCERS. The plan is not organized or intended to be a comprehensive financial and strategic road map for operations for 2017. Instead, the intention of the Business Plan is to set and document goals and initiatives for each department that are in addition to the everyday operations. The goals and initiatives are then incorporated into the budget process for the next year. The 2017 budget impact (not including existing staff time) for each goal/initiative has been noted when applicable. The Business Plan also contains a review of the goals approved in the 2016 Business Plan and provides a status update on how staff has progressed in achieving those goals. In addition to the stated goals from 2016, the Business Plan also includes other accomplishments in each department that resulted from either unplanned or unknown events or activities at the time of developing the 2016 Business Plan or as a result of changing priorities during the year.

Each year, as staff develops the goals and initiatives through the Business Plan Process it is important to remind ourselves what the organization's core purpose and focus is as reflected in OCERS Mission Statement. In doing so, we ensure our goals are aligned with our mission as we develop, implement and administer programs for our 21,525 active members, 15,810 retiree and beneficiary members and 5,092 deferred members.

OCERS Mission Statement

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

Supporting Goals

1) Excellent Customer
2) Timely & Accurate Benefits
3) Secure and Reliable Data
4) Prudently Managed Investments
5) Professional Plan Administration

Included in the appendix of the 2017 Business Plan are documents that are helpful in understanding OCERS' budget development process. They are intended to provide the reader additional information about OCERS as an organization and how the 2017 Business Plan goals and initiatives fit into the annual budget process. The items included are:

A. Existing Organization Chart
B. OCERS Department Descriptions
C. Budget Authority
D. Budget Policy
E. 2016 Budget Summary
F. 21 Basis Point Test of 2016 Adopted Budget compared to Accrued Liabilities
G. Historical Actuarial Asset and Liability Data

Department Goals and Initiatives for 2017

Executive

1. Complete management calls to new retiree program (Strategic Plan (SP) Goal #1, Objective A)
2. Continue investigating Baldrige Performance Excellence Program (SP Goal #5)
   Budget impact: $1,000
3. Visit two California retirement systems for on-site review (SP Goal #5)
   Budget impact: $3,000
4. Have all OCERS managers visit another California retirement system and report on observation to management team (SP Goal #5)
   Budget impact: $5,000
5. Attend another state wide association conference to observe issues and problem resolution (Texas, Louisiana, Florida or Michigan) (SP Goal #5)
   Budget impact: $2,000
6. Arrange and conduct:
   a. Annual OCERS Board Strategic Planning Workshop (SP Goal #5)
      Budget impact: $5,000 – possible speaker costs
   b. Annual Contract Cities OCERS overview presentation (SP Goal #1, Objective C)
   c. Annual OCERS Year in Review presentation to membership audience(SP Goal #1, Objective C)
7. Implement pilot Staff Retention Award Program while studying expansion for key administrative positions (SP Goal #1, Objective A)
   Budget impact: TBD
8. Accompany investment staff on local due diligence trips (SP Goal #1, Objective A)

Information Technology

9. Redesign the OCERS Website (SP Goal #1, Objective B)
   Budget impact: $250,000
10. Procure and implement a new phone system (SP Goal #1, Objective A)
    Budget impact: $250,000
11. Enhance Information Security Program (SP Goal #3, Objective B)
    Budget impact: $100,000
12. Board room technical and safety upgrades
    Budget impact: TBD

Administrative Services

13. Implement revisions to OCERS Contracting and Vendor Management Process, including the use of a contract management system

Budget impact: $9,000

14. Continue to partner with the Legal Department to complete the Employee Handbook revisions

    Budget impact: $25,000 included in Legal Department

15. Review recommendations of completed workforce analysis with CEO and the Board and implement approved recommendations (SP Goal #3, Objective A)
16. Continue to partner with the CEO on agency wide Succession Development Plan (SP Goal #6, Objective D)

    Budget impact: $30,000

17. Investigate Education and Training database systems for tracking and reporting activity for OCERS employees (SP Goal #1, Objective A)
18. Partner with the CEO and CIO on the implementation of pilot Staff Retention Program, while studying expansion for key administrative positions
19. Investigate an agency wide volunteer internship program

<u>Finance</u>

20. Implement GASB 72, *Fair Value Measurement and Application*

    Budget impact: $5,300

21. Determine OPEB reporting responsibility under GASB 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* and conduct outreach efforts to applicable Plan Sponsors for GASB 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions.*
22. Update Finance Policies and Desktop Procedures to document new process and procedures due to implementation of V3 (SP Goal #1, Objective A)

<u>Member Services</u>

23. Create retirement forms that can be downloaded from the website (SP Goal #1, Objective B)
24. Evaluate call center options (SP Goal #1, Objective A)
25. Collaborate with IT on procuring and implementing a new phone system (SP Goal #1, Objective A)
26. Create a Quality Assurance unit (potential budget impact if additional staff are needed) (SP Goal #2, Objectives A & B)
27. Collaborate with Disability to improve the efficiency of the intake of disability retirement applications – multi-year (SP Goal #2, Objective C)

<u>Disability</u>

28. Create disability forms that can be downloaded from the website (SP Goal #1, Objective B)

29. Collaborate with Member Services to improve the efficiency of the intake of Disability retirement applications – multi-year (SP Goal #2, Objective C)
30. Outreach – work with employers to educate employees on disability benefits and process (SP Goal #1, Objective C)

Communications

31. Continue to work on revising the Summary Plan Description (Plan Sponsor specific) – multi-year project
32. Lead the redesign of the OCERS Website utilizing the IT Department for technical support

    Budget impact: $250,000 included in IT Department
33. Redesign the newsletter to reflect the design of the new Website

Internal Audit

34. Conduct two Plan Sponsor audits
35. System key internal control review
36. Entity-wide Risk Assessment
37. Develop annual Audit Plan
38. Maintain and update Plan Sponsor Review Document

Investments

39. Implement new (Meketa-era) strategic portfolio structure changes including at least 80% of new manager lineup by year-end 2017 (SP Goal #4, Objective 4)
40. Update Investment Policy Statement and construct a new written Investment Beliefs statement (SP Goal #4, Objective D)
41. Research "crisis risk offset" or similar cycle-mitigation portfolio strategies and commence implementation of those approved by Committee (SP Goal #4, Objective A)
42. Resolve portfolio strategy for Absolute Return (hedge funds) and transition as necessary (SP Goal #4, Objective F)
43. Undertake one or more "pilot" operational due diligence reviews of approved or incumbent investment managers as necessary and appropriate (SP Goal #4, Objective D)
44. Complete 70% of the second-round on-site due diligence visits by year-end 2017, targeting full cycle completion 1H18 (SP Goal #4 Objective D)
45. Complete procurement and selection for Real Estate consultant, conduct/complete exploratory RFP for private equity consultant and other service providers as needs or opportunities arise (SP Goal #4 Objective F)
46. Initiate screening process and/or searches for Opportunistic investments if that portfolio category is established (SP Goal #4 Objective B)

47. Inaugurate annual reporting on portfolio-wide income
48. Investigate OCERS institute for trustee investment training in conjunction with other So Cal CERL plans (SP Goal #4 Objective C)
49. Seed capital to fund multi-plan procurement consortium through NCPERS and/or BLA Schwartz and SACRS CIOs (SP Goal #4 Objective F)

Legal

50. Continue to work with Member Services and Disability departments on the Administrative Rules creation process
51. Provide internal staff education/training on various topics that affect OCERS operations
52. Provide support to OCERS Communications and IT regarding legal aspects of the OCERS public Website redesign with respect to fillable electronic form templates for domestic relations orders and public records requests
53. Issue a request for information or request for proposals for securities fraud monitoring firms

2016 Business Plan Review and Status Update

Below are the list of department goals and initiatives from the 2016 Business Plan. Included with each goal is a status update (as of September 2016) of the progress towards each item.

A. Post V-3 Implementation Process Optimization and Project Assessment

In 2009, the Board approved a project to update the current pension administration system. The system selected through a competitive process was V3 from Vitech Systems Group. The project commenced in May 2010 with an original launch date of March 2013. During the lifecycle of the project, OCERS and the Vitech team worked together to overcome challenges that required extensions to the launch date. The system is anticipated to be put into production in December 2015. During 2016 OCERS staff from multiple departments will be working on several items related to the newly implemented system including the following:

- Defect remediation of items not needed for putting the system into production.
- Business process refinement based on knowledge gained after using the new system in production.
- Rebalancing the workloads of staff within individual departments based on revised business processes that reflect new system functionality.
- After business processes have been refined and workloads have been rebalanced, begin a workforce analysis which will identify; current and anticipated future supply of labor and skills, OCERS' needs currently and in the future in terms of labor, skills and competencies and gaps between the current and future supply and current and future demands.

In order to complete the above items, staff proposes continuing the use of three consultants/contactors that have been part of the V3 implementation team. The cost of such additional help in 2016 is estimated as follows:

Member Services:	$ 83,200
Finance:	$115,000
IT:	$182,600
Total:	**$380,800**

The total costs being proposed for 2016 are within the projected remaining total project dollars (this does not add to the total approved cost of the project). However, due to generally accepted accounting principles which state that once software is put into production, costs associated to the development and implementation of such software are no longer eligible to be recorded as an asset and depreciated over the useful life of the software. Therefore, the costs incurred in 2016 related to the post implementation tasks will be recorded as an expense in the current year.

- In process. See individual manager reports in sections that follow.

B. Performance Measurement and Reporting

OCERS currently has several tools and processes that are used for planning for the future of the organization, effectively and efficiently administering the plan and measuring our performance. In 2016, the executive management team will be working to tie the OCERS Strategic Plan, performance measurements and the budget together. The purpose of doing so is to make a more robust and transparent road map and progress report on how the organization is doing on moving towards its strategic goals. Some of the items that will be undertaken in connection with this agency wide goal are:

- Investigate participating in CEM's small system benchmarking survey.
- Develop a reporting mechanism that communicates the progress being made on Strategic Plan objectives as a performance measurement tool.
- Incorporate in the annual budget process performance measurements by department to bring context to the dollars being requested for the following year.

The engagement with CEM Benchmarking has begun. The Business Plan Goals for 2017 have been linked to the Strategic Plan as appropriate.

C. Operational Risk Management

Operational risk is the risk of loss resulting from inadequate or failed processes or systems, human factors or from external events. OCERS has many different methods and process by which operational risks are identified, assessed, managed, and mitigated. These processes are decentralized and in some cases completed informally. An area of improvement that is being endeavored in 2016 is to bolster the agency's operational risk management program. Staff will first begin with the development of a framework of a more formalized Operational Risk Management program (ORM). The framework, once completed will centralize and formalize how OCERS: 1) identifies the risks that originate in the business units, 2) assesses the size of operational risks, 3) monitors, controls and reports changes in operational risks, 4) mitigates operational risks and 5) calculates capital needed to protect the agency from operational risk losses.

Incorporated within the overall ORM will be the Business Continuity and Disaster Recovery Plan (BC/DR). Staff has been working on the development of an updated

BC/DR plan for the past eighteen months. In 2016, staff from all departments will be actively involved in the implementation of the drafted BC/DR plan. The newly revised plan calls for regular “table top” exercises to test the plans workability and to better prepare staff in the event that operations are disrupted and OCERS is faced with either a loss of facilities, people, or technology. The plan is considered a “living document” in that it will be continuously updated to stay in synch with OCERS current business processes, procedures and requirements.

In process. Alliant was hired by the Board as OCERS’ Insurance Broker and a new Contract, Risk and Performance Administrator was hired. Both of these new additions are key resources for developing and implementing an ORM. The Business Continuity and Disaster Recovery plan continues to be implemented and a “table top” exercise was successfully executed

D. Procurement of Named Service Providers and Other Consultants

OCERS policies call for the re-procurement of certain “Named Service Providers” to occur at least every six years. Named Service Providers whose current contracts are due to be re-bid in 2016 includes:

- General Investment Consultant -Complete
- Consulting Actuary - Complete
- Alternative investments consultant;- Underway
- Real estate investment consultant; - TBD
- Custodian;-Complete
- Securities lending manager; and - TBD
- Financial auditor (selection to occur in late 2015) - Complete

The process of re-procurement of contracts such as these include the writing of a Request for Proposal, evaluation of proposals, interviews with finalists and contract negotiations. Should the incumbent not be the successful vendor in a RFP process, the transition from the old to the new vendor entails staff time and effort to ensure all old business is wrapped up and adequate transfer of knowledge to the new vendor occur. Given the number of procurements to be conducted in 2016, staff will be investing a notable amount of time on these procurements.

Executive

1. OCERS post V3 go-live review:

    - Initiate business process analysis:

      Meeting on July 22, the OCERS management team took up the question of V3, and its impact on OCERS business processes as part of our semi-annual off-site planning session. Coordinating with the staff analysis that will be conducted by an outside consultant as noted in the next goal below, as well as with our new contracts and performance management specialist, the management team will continue to advance the goal of business process improvement.

    - Staffing analysis:

      A fall 2016 goal, allowing OCERS departments time to use the new V3 system through much of the calendar year before we begin to determine impact on staffing needs. A consultant RFP was issued in August.

    - Legacy data status:

      Conducted by Sunera, this process began at the start of the year under the supervision of the OCERS Internal Audit team. While there are some findings, they are generally understood to be known issues and proposed variances. A final report to the audit committee will be presented in the fall 2016.

2. Begin annual "State of OCERS" presentation (January):

   Done. Completed at the January 19, 2016 meeting of the OCERS Board of Retirement. The detailed discussion was dependent on year end data, so the Board's directive is to continue with this annual presentation, but move it to February each year.

3. Annual visits to Orange County Legislative Delegation in Sacramento

    - Budget Impact: $1,000

4. Seek further opportunities for operational excellence including:

    - Continue research into Baldrige Program applicability to OCERS:

Ongoing. During visit to Illinois Municipal Retirement Fund (IMRF) (see below) several hours were spent with their Performance Excellence Manager in review of IMRF and use of the Baldrige Quality System to determine applicability at OCERS.

- Visit Illinois Municipal Retirement Fund:

  - Budget Impact: $2,000

  Done. CEO Delaney was on site at the IMRF offices on September 29, 2016, meeting with CEO Louis Kosiba and his executive team. A detailed review of that system's investment, member services and disability departments filled the day.

- Begin: Tie Strategic Plan, performance measures and the annual budget together:

  Ongoing preparation with specific actions in fall 2016 following hire of agency's new Contract, Risk and Performance Administrator.

- Reengage CEM Benchmarking services.

  - Budget Impact: $25,000

    Completed. With CEM Benchmarking meeting the minimum goal established by the OCERS Board (at least eight participating public employers), OCERS will once again be participating in the CEM program for Calendar Year 2016.

- Annual visit to two other California retirement systems.

  - Budget Impact: $2,000

  CEO Delaney visited the City of San Diego Employees Retirement System on September 21, 2016. A full review took place with their CEO, CIO Member Services Manager and disability review team.

  CEO Delaney will visit CalPERS late this year. A business acquaintance with the new CalPERS CEO, he will be meeting her and members of her executive team.

- Continue work on Staff Retention Program:

  I will present a modified Staff Retention Program, improved from that previously considered by the OCERS Board at their October 2015 budget workshops.

5. Create an improved Information Security Policy to prevent and manage any possible breach or hack of member and system information:

   - Budget Impact – $250,000 Included in IT Department

   An ongoing training program for OCERS staff is underway. An RFP was issued leading to the hiring of Mandiant; a security consultant. They were on site in June to review and make suggestions. A review of equipment and services will follow in the fall. Further security improvements will be developed as we enter the fall.

6. Investigate membership in Coalition for Social Security:

   CEO Delaney attended the Coalition for Social Security Conference as part of the larger National Institute for Retirement Security (NIRS) conference in the first week of March 2016. The Coalition is made up of several states and certain non-profit associations that seek to prevent a mandatory imposition of Social Security on the remaining public employers (including many in California) who have not yet agreed to provide that benefit.

   Mr. Delaney reports:

   "In my June quarterly report I informed the Board that I had placed this topic on the CALAPRS CEO Roundtable agenda in July. From that meeting I learned that no other system is following this issue at this time, and no other system is seeking membership in the Coalition.

   I believe no further action is required on this topic. I will continue to attend the annual Coalition conference as it is part of the NIRS winter conference that I attend any way, so there is no cost to adding my attendance at this short quarter day event. If movement is detected in Congress to move in the direction of mandatory Social Security I would then return to the Board to determine if, OCERS would then want to become an active member of the Coalition."

Investments

7. Launch General Consultant search in the first quarter, contract ends August 2016. Could result in higher fees in final months of 2016.

   RFP was issued in January 2016, Meketa was hired as the General consultant for a period of five years, the agreement between OCERS and Meketa became effective June 15, 2016.

8. Launch Real Estate Consultant search in the second quarter, contracts ends November 2016.

   RFP prepared and was presented to the Investment Committee at the September 28, 2016 Investment Committee meeting. Committee tabled and will revisit the RFP after asset allocation deliberations are complete.

9. Launch Hedge Fund Consultant search in the third quarter, contract ends December 2016.

   Based on the recommendation of CIO, Meketa and PCA (Risk consultant) at the Annual Strategic Planning meeting, OCERS will be transitioning out of hedge funds and presently does not expect to issue a new RFP for these services which would be subsumed by Meketa.

10. Complete asset/liability study in 1H 2016.

    Meketa has commenced the Asset Liability/Asset Allocation study and is expected to be completed by year-end.

11. Review Diversified Credit Program portfolio structure, and value added by long-short credit managers.

    Meketa and staff will review the Diversified Credit Program in conjunction with the asset/liability and asset/allocation studies.

12. Selective, enhanced "operational" due diligence for a few money managers, probably hedge funds?

    - Budget Impact: $50,000

    OCERS issued an RFP for ODD providers in May 2016, and hired Aksia and Laven as ODD providers; the contract negotiations with the two providers are ongoing.

13. OCERS institute trustee training for investments in conjunction with other California plans?

- Budget Impact: $10,000

OCERs sponsored “Energypalooza” last spring; and we had visitors from in-state and out of state.

14. New procurement strategy and round for private equity? This fall will be the last year of the 3 year P4 effort. Could be for a separate advisor, etc. Co-investments?

Staff is looking for authorization for CIO to issue an RFP for private equity discretionary management. This recommendation was approved by the Investment Committee on September 28, 2016

15. Implement new benchmarks for selected asset classes/categories (e.g., absolute and real return, diversified credit?).

NEPC completed the education sessions in the first half of 2016, OCERS eliminated the use of benchmarks that are aspirational in nature and put into effect July 1, 2016, market related benchmarks. Implementation should be completed by year-end.

16. Expanded internal risk reporting (e.g., better, stronger use of Green Package)

OCERS issued a RFP for Strategic Portfolio and Risk Advisor and hired PCA in lieu of BRS. Staff will work with PCA on risk reporting in the future.

17. Continued efforts to establish a joint procurement legal structure.

- Budget Impact: $50,000

Nothing developed in 2016, although we did encounter one proposal for international legal services which is now under review

18. Stronger involvement of Investments Staff members at California pension associations.

- Budget Impact: $2,000

Staff attended SACRS here in Orange County earlier this year, will continue to seek attendance opportunities

Member Services

19. V3 post go-live project wrap up tasks:

    - Upon implementation of V3, restructure/reorganize MS division.

    In progress – restructure extended into 2017 to incorporate the results of the workforce analysis

    - Cross train staff; with a focus on developing desk manuals that integrate business processes to revised functionality (continues from 2015).

    In-process

    - Defect remediation.

    Completed

    - Test remaining medium and low priority defects scheduled to be delivered post go-live.

    Completed

    - Regression test new V3 build deliveries.
        - Budget Impact: $83,200 (see Agency-wide goal A)

    Completed

20. Collaborate with Disability to improve efficiency of the intake of disability retirement applications.

    In process – multi-year goal

21. Assist the Legal department with Administrative Rule creation (continues from 2015).

    Ongoing

22. Participate in ongoing DR/BC Plan.

    Completed

Communications

23. Lead the redesign of the new OCERS Web site utilizing the IT department for technical support. This will serve as the primary effort to enhance OCERS' brand identity (including communications efforts such as newsletters, videos and social media, but extending to supporting all areas of OCERS).

    Deferred

24. Redesign "At Your Service" newsletter, with design reflecting the look of the new Web site and including interactivity on the electronic version.

    Deferred

25. Participate in ongoing Disaster Recovery/Business Continuity Plan tasks.

    Completed

26. Redesign the "Summary Plan Description" to be available as employer-specific editions (multi-year project).

    In progress – multi-year goal

27. Reinstitute the internal OCERS staff newsletter.

    Completed

28. Produce a library of media and public inquiry responses.

    Completed

Disability

29. Review and update written policies and procedures to incorporate V3 functionality.

    Completed

30. Collaborate with Member Services to improve efficiency of the intake of disability retirement applications and close the knowledge gap.

    Ongoing

31. Implement any changes to the disability process as directed by the Board as a result of the presentation at October 2015 Board meeting, if applicable. - Completed

32. Participate in ongoing Disaster Recovery/Business Continuity tasks.

    Completed

33. Utilize a copy service for retrieval of medical records to ensure the member's confidentiality and minimize vulnerability to security breach.

    Under Review

Finance

34. Evaluate reporting requirements for GASB 72, Fair Value Measurement and Application and its impact on financial statements for the year ended December 31, 2016.

On-going. Staff has participated in several webinars on the subject, as well as gathered sample disclosures and presentations on the subject. Finance will also be coordinating with investment staff and State Street Bank to determine how we will obtain the different levels of fair value required by this disclosure (quoted market prices, observable inputs other than quoted market prices and unobservable inputs)

35. Begin preliminary planning of implementation of GASB 74, Financial Reporting for Postemployment Benefit Plans Other Than Pensions effective for the year ended December 31, 2017 and determine assistance needed by Plan Sponsors for implementation of GASB 75, Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions effective for the year ended June 30, 2018.

On-going. Preliminary conversations have been initiated with OCERS' external auditors and OCFA, the only Plan Sponsor determined to be directly impacted by the new pronouncements. Staff has scheduled an initial implementation planning meeting at OCFA's offices in early November 2016.

36. Work with Investments Department to issue an RFP for investment custodial services.

Completed. State Street Bank, the incumbent custodian, was selected from three semi-finalists to continue providing OCERS with custodian bank services. Contract negotiations are currently underway.

37. V3 post go-live project wrap up tasks:

- Upon implementation of V3, evaluate and redistribute Finance staff workload to create greater efficiency in department.
- Defect remediation.
- Test any remaining medium and low priority defects scheduled to be delivered post go-live.
- Regression testing of new V3 build deliveries.

On-going. Finance has been actively involved in identifying and resolving defects in the areas of contributions, retiree payroll, GL integration and actuarial/CAFR reporting. Assessment of workloads continues and an evaluation of filling an open accounting technician position in Finance resulted in the position being reassigned to Member Services.

- Budget Impact: $115,000 (see Agency-wide goal A)

38. Develop "drill-down" reports for financial statements to create efficiencies in staff's financial statement analysis and the annual audit process.

Completed. "Drill-down" reports were available and used during the current audit of the 2015 financial statements.

39. Initiate improvements in Board level financial reporting:

- Develop user-friendly GASB 68 summary for 2016 valuation to simplify understanding of report.
- Assist Executive Department in tying the Strategic Plan, performance measurements and the annual budget together. –

In progress.

A summary report of the GASB 68 valuation was presented at the August 3, 2016 Audit Committee Meeting, followed by a slide show presentation to the full Board of Retirement at the Regular Board Meeting held on August 15, 2016. Staff will continue to refine the presentation of the GASB 68 valuation based on Board feedback.

The annual budget process has begun and strategic plan and performance measurements have been incorporated into budget requests and will be included in the formal reporting of the final budget in November 2016.

40. Continue to participate in the implementation of the BC/DR plan.

Completed. Finance continues to be involved in the implementation of the BC/DR plan and participated in a "table top" exercise that simulated a 2-3 day business interruption and identified areas where OCERS could be better prepared, such as updating its third party vendor contact list in the event of an emergency.

Information Technology

41. V3 post go-live project wrap up tasks:
    - Assist Internal Audit and external vendor with the V3 data conversion audit.

- Development of V3 reports to support business processes.
- Development of V3 queries.
- IT Support for V3 QA testing.
- IT Support for V3 in production.
- Defect remediation
  - Test any medium and low priority defects scheduled to be fixed after go-live.
  - Regression testing of new V3 build deliveries.

On Going. OCERS IT department is providing support to OCERS Staff of the V3 system. This includes V3 system administration and configuration, V3 QA Testing in specific areas, V3 Scripting for data cleanup, and Report creation and ad-hoc data requests.

42. Review IT staffing plan including both short and long term operational and programming requirements.

In process

43. Hardware/Software Purchases (Upgrades & Replacement)

- Anti-Spam Solution

In process

- Replace Education Center laptops

In process

44. Continue development and implementation of OCERS Intranet enhancements.

- Migrate non-member documents from LibertyNet to SharePoint
- Develop document library structure for:
  - Policy documents
  - Business process documents
  - Personnel documents
  - Training documents
  - Contracts
  - Public records requests
- Create standard forms, templates, widgets and pages for departments (i.e., meetings, calendars, action items, etc.)

In process. Staff has enhanced the OCERS Intranet home page, established document controls and procedures, including versioning and advanced search capabilities, an organizational calendar, electronic form submissions for Time Off, Overtime, and Cash Out Requests (roll out scheduled in November 2016)

45. Provide technical support to Communications department staff in the redesign of OCERS Web site.

Deferred

- Budget Impact: $100,000 (deferred from 2015)

46. Continue the implementation of the Business Continuity and Disaster Recovery Solution.

- Replication, co-location, backup and recovery, remote access and support.
  - Acquire and install new hardware.
  - Upgrade existing Data Center facilities equipment: (deferred from 2014).
  - Replace UPS unit, water-based fire suppression, central A/C unit for the server room and install power generator for Data Center, additional work space and supporting facilities.
- Test BC Plan including cross training of key staff.
- Test Business Resumption Approach Document for IT (Disaster Recovery Run Book).
- Create BC & DR testing and review schedule.
- Incorporate business continuity and disaster recovery processes into daily operations.

  - Budget Impact: Range from $750,000 - 2,000,000 (Year 3 of 3)

In process. An RFP was issued and an implementation vendor, Side Path, was selected to carry out the procurement of hardware, software and services, perform the installation and testing of OCERS BC/DR data center solution.

<u>Administrative Services</u>

47. Continue the development and implementation of succession planning.

In progress. 3 Managers enrolled in CALAPRS Academy, 3 Supervisors enrolled in County of Orange Leadership program. Ethics Training and Emotional Intelligence training for staff scheduled.

- Identify career development strategies for key leadership positions.

  - Budget Impact: $40,000

48. Revise the current performance management program.

Pending

49. Implement a Professional Retention Program for the Investments Department.

In progress

50. Process improvement and development of the contract, risk and performance management functions which will include the addition of a new manager level position.

In progress

- Budget Impact: $133,600 ($84,600 salary + $49,000 benefits)
- Manager position range: $57,000-$110,000

51. Post V-3 go live project wrap up tasks:

- In connection with Executive's business process analysis, review the organization structure and perform a workforce analysis.

In progress

- Budget Impact $40,000

52. Consider options for the facility to reduce water and energy consumption.

Pending

53. Space management projects:

- Building modifications needed to vacate the 3rd floor.

Completed

- Budget Impact: $10,000

- Legal library conversion into a conference room.

In progress

- Budget Impact: $15,000

Legal

54. Provide internal staff education/training on various topics that affect OCERS operations.

On going

55. Provide support to OCERS Communications and IT regarding legal aspects of the OCERS public Web site redesign with respect to fillable electronic form Web site templates for domestic relations orders and public records requests.

    Deferred

56. Issue a request for information or request for proposals for a securities fraud monitoring firms.

    Deferred

57. Continue to work with Member Services and Disability departments on the Administrative Rules creation process.

    In progress – multi-year goal

58. Provide technical support to V3 post go-live as needed.

    Completed

59. Add a paralegal position to address operational efficiencies (for the Legal and Member Services department) and risk mitigation regarding processing legal documents pertaining to member records and benefits.

    - Subpoenas
    - Child and spousal support orders
    - Domestic relations orders
    - Joinders
    - Notice of adverse interest
    - Tax levies
    - Death and beneficiary issues
    - Ad hoc member and plan sponsor requests

        - Budget Impact: $90,000 ($56K salary + $34K ben)

    Completed

60. Participate in ongoing Disaster Recovery/Business Continuity Plan tasks

    Completed

Internal Audit

61. Perform V3 data conversion audit.

- Budget impact: $255,000

Audit fieldwork completed. After inclusion of management response, the final report will be presented to the Audit Committee

62. Perform payroll audit: OCFA

Postponed as the request of OCFA management

63. Audit County payroll data transmittal to V3.

Postponed

Additional Departmental Accomplishments in 2016

Executive

- OCERS Year In Review outreach was completed in October 2016. Annually the OCERS Executive team goes out in the field to meet the executive teams of each plan sponsor, and of the majority of labor groups working with OCERS members. Additionally, the CEO accompanies the OCERS Board Chair and Vice Chair in similar presentations provided individually to the five members of the County of Orange Board of Supervisors.

- We continued regular communication outreach to the Contract Cities as requested by the OCERS Board of Retirement in 2014. A special program was hosted at OCERS in September 2016 to provide the Contract Cities with a general overview of OCERS pension liabilities and funding plan as part of an ongoing annual outreach program to Contract Cities

Investments

- Board education sessions: Dan Fuss from Loomis Sayles presented on the developments in the credit markets with a special focus on high yield. NEPC conducted a multi-month educational session on performance benchmarks and attribution. Infrastructure educational session was conducted by J.P. Morgan. CIO made a presentation on Investment Governance, Discussion on GoldenTree Litigation and potential impact by outside counsel. Jim Meketa presented his views of “big picture” and “long term” investment issues and themes. Howard Marks discussed how Oaktree assesses the markets, particularly credit markets and how fundamentals and psychology impact the market.

- Updated Proxy Policy and Investment Policy Statement.

- Conducted educational sessions and issued RFP for Alternative Income.

- Presented for approval supplemental subscriptions to Cross Ocean and Kayne Anderson Energy funds.

- Completed the RFP process for Custodian and retained State Street.

- Produced “Asset Liability” scenarios in conjunction with Meketa, PCA and Segal

- Preparing Private Equity RFP following committee authorization.

Information Technology

- Rolled out End User Security Awareness Training, providing a series of cyber and data security videos for staff to education and make staff aware of the threats and vulnerabilities around them and how best to approach and handle them. We have also conducted the first of a series of Phishing /Spear-Phishing test of staff.

- Developed IT Helpdesk function in SharePoint to allow staff to submit helpdesk requests. System allows IT to track and report on the number and types of support request we are receiving. We are now in development of a similar IT Report/Query request system for the Programming department. The IT Helpdesk will be rolled out in November to all staff.

Member Services

- Acquired and trained transferred staff position from Finance.
- Collaborated with legal department to expedite processing on legal opinion requests; working with new paralegal position.
- Facilitated Plan Sponsor Employer Payroll training and support.
- Provided full membership support and communication on cyber security for myOCERS member self-service portal. Participated in security awareness training.
- Initiated telephone confirmations for all direct deposit requests submitted via portal and in writing.
- Resumed professional development with managers (2) and supervisory staff (2) attending CalaPERS and County leadership academies.
- Developed graphs showing the percentage of salary associated to every year of service for each of the benefit plan formulas.

Disability

- Added 3 new panel physicians
- Professional development of Supervisory staff (attended LCW Consortium, SACRS, CALAPRS)
- Participated in security awareness training

Communications

- Worked with I.T. Programming to develop a tracking system for all incoming media queries and Freedom of Information Act (FOIA) requests.
- Assumed the responsibility for document management and version control of all outbound correspondence.

- Coordinated a lunchtime presentation with the Orange County Fire Authority relating to fire safety in the workplace.

Finance

- As a result of the implementation of V3, staff gained a better understanding of how Member Services processes retiree payroll, resulting in Finance working more closely with Member Services and creating a detailed reconciliation process related to the monthly processing of retiree payroll.

- As part of taking over the processing of deduction files, Finance instituted a procedure that requires third party payroll vendors to provide control totals for deduction files in advance of processing monthly payroll. This allows staff to identify file errors proactively instead of reactively.

- Implemented an ACH/Positive Pay File log so that all ACH/Positive Pay files are reviewed independently by a Manager or above to ensure amounts and pay dates are correct prior to submission of files to bank's secure portal.

- As part of Finance's succession planning, one of our Finance Managers participated in and successfully completed the CALAPRS Manager/Supervisor Academy.

- Planned, drafted and produced the 2015 Comprehensive Annual Financial Report (CAFR), "Progress Past | Present | Future"

- Received the prestigious Certificate of Achievement for Excellence in Financial Reporting from the Government Financial Officers Association (GFOA) for OCERS' 2014 CAFR and submitted the 2015 CAFR for consideration of the same award.

- OCERS' 2014 CAFR – "Orange County's Beautiful Blue" was submitted by our graphic designer this year to the American Advertising Federation's Addy Awards and was a recipient of the Bronze Addy award.

- Staff will be submitting the 2015 CAFR for consideration of the Public Pension Coordinating Council (PPCC) Standards Award for Funding and Administration which was awarded in late 2015 for OCERS' 2014 CAFR.

- Participated in security awareness training

Administrative Services

Recruitments

- Completed 14 recruitments and screened over 865 applications
- Received over 24,000 applicant views of employment flyers on NEOGOV website
- Hired 11 new employees, 10 temporary employees and 1 contractor
- Successfully Recruited Chief Legal Officer in-house
- Promoted 2 employees and processed 4 employee transfers

On Boarding/Off-Boarding

- Conducted 9 New Hire and 2 Temporary Employee Orientations
- Created formal Temporary Employee Orientation
- Successfully Off-boarded 11 employees

Coordinated 4 onsite Trainings to include:

- Active Shooter Training
- Ethics Training
- Emotional Intelligence Training
- Sexual Harassment Training

Successfully coordinated the following Employee events:

- 2016 Take Your Child to Work Day
- 2016 California Great ShakeOut
- County Wellness Biometric screening
- Red Cross Blood Drive
- CPR/AED certification for safety committee members
- Annual Transportation Survey
- Pack-a-Pack School Supply drive – Six Points for Kids (OC Sheriff Dept)
- Operation Santa Claus

Salary/Compensation Surveys

- Completed 10 Salary Surveys

Building Maintenance/Improvements

- Installed file cage in mail room
- Space Management: Vacated 3rd floor and moved contractors and staff to 2nd floor and Converted 4 storage rooms to offices

- Worked with property management firm to rent out vacated space on the 3rd floor
- Conversion of vending machine room in 1st floor break room into mother's room
- Increased energy efficiency via reduction in water usage and LED lighting
- Researched other energy efficient options via the Energy Network and PFMG Solar
- Increased safety - carpet strip and safety sign in board room.

Managed Leave of Absence / Return to Work / Workers Comp / Ergonomics

- Intermittent Leaves of Absence (3)
- Medical Leaves of Absence and Return to Work (6)
- Return to Work Interactive Meetings (2)
- Coordinated 7 ergonomics evaluations

Internal Audit

Private Equity audit

- Identified a process improvement to help OCERS verify that management fees for private equity investments are correct,

- Identified management fees that State Street was incorrectly netting against performance returns in its monthly reporting to OCERS.

Death Match Process audit

- Identified 29 deceased members who were not terminated in the pension administration system, resulting in $990,694 of refundable contributions and interest to be made to their beneficiaries,

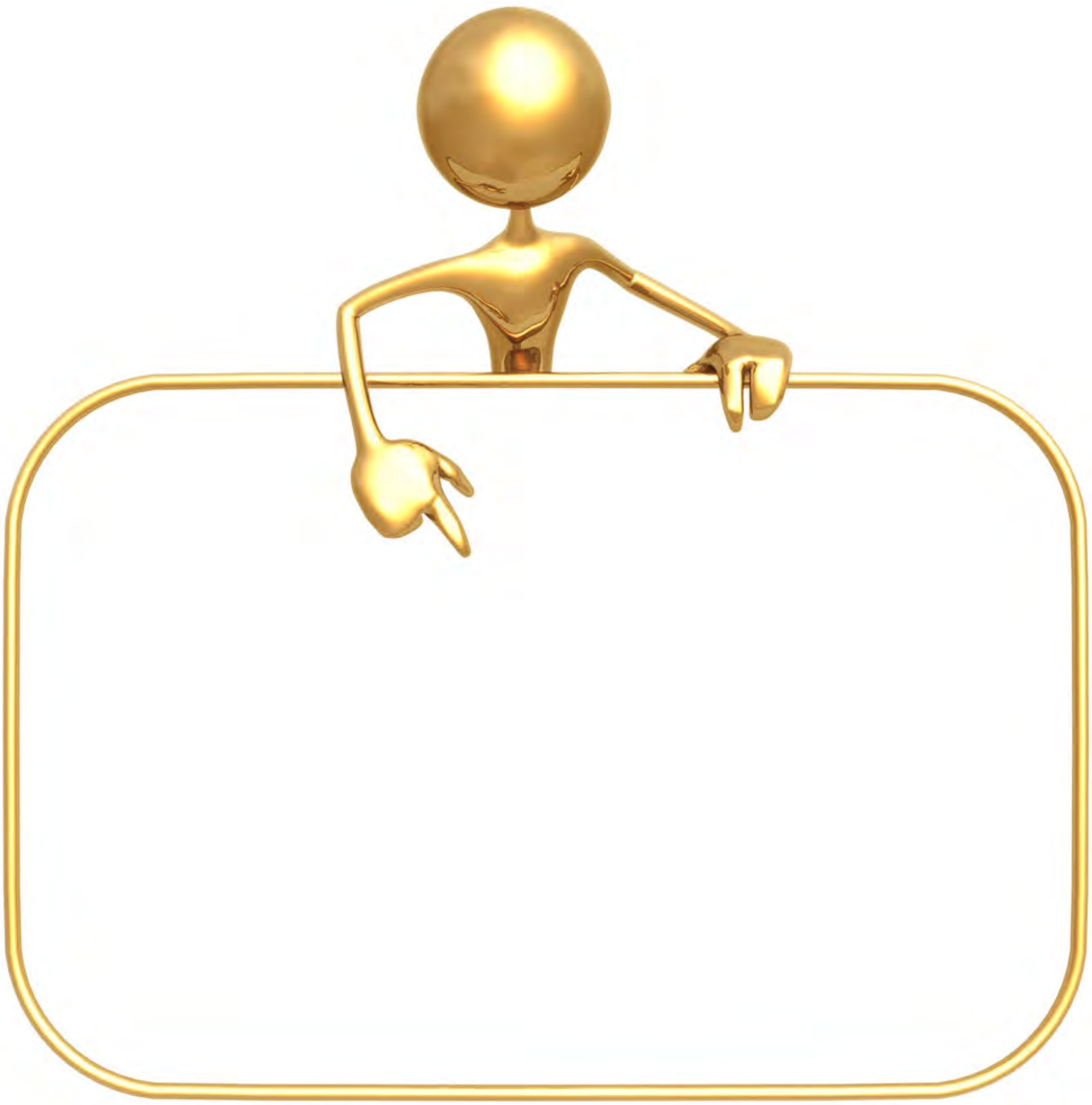
- Identified $56,298 in benefit overpayments to be collected by OCERS,

- Made recommendations to help secure members' private demographic and banking data.

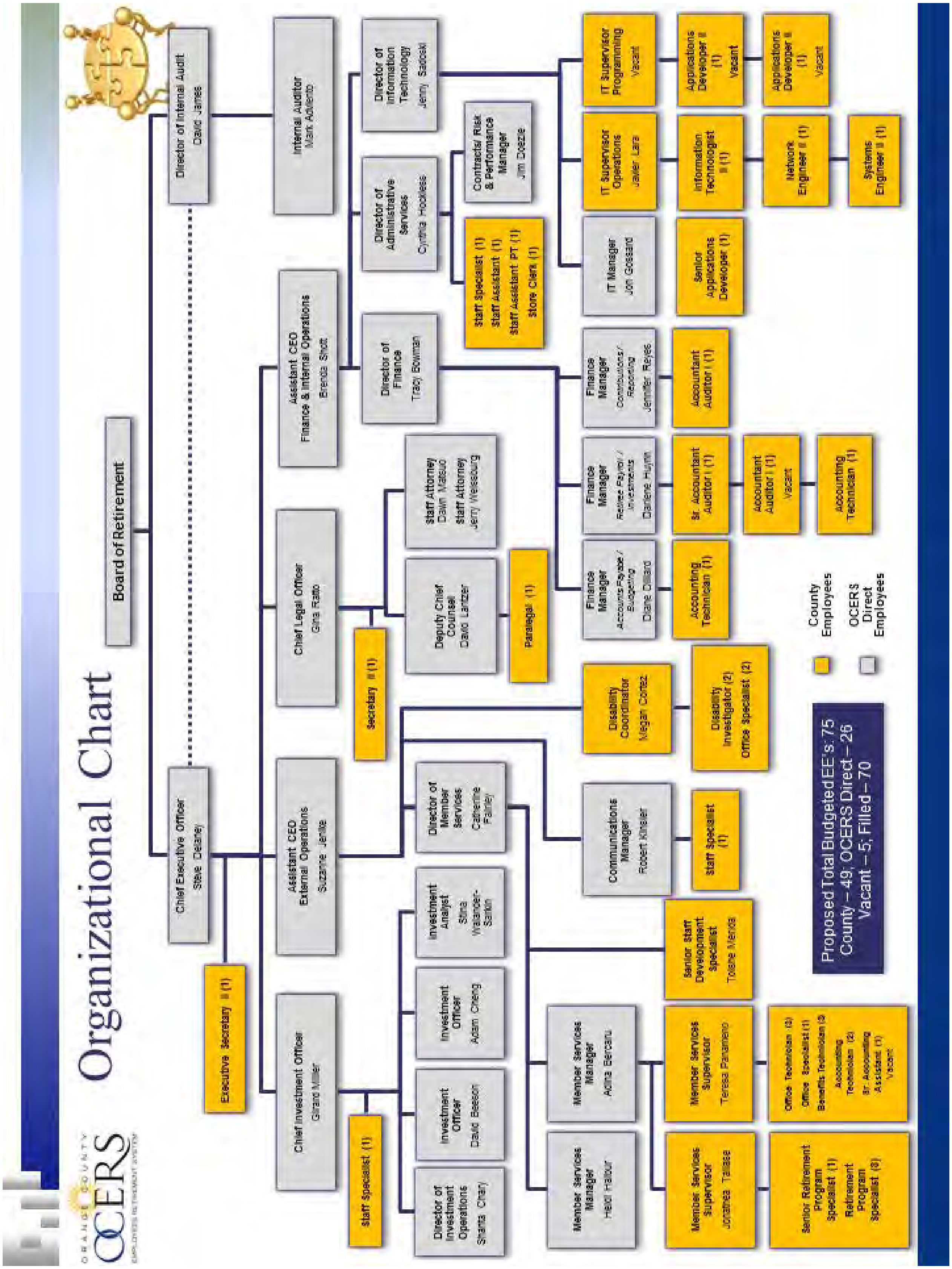
V3 Benefit Setup audit

- Identified an incorrect benefit setup in V3, resulting in re-training for Member Services staff in regards to retiring part-time members.

Appendix



Appendix A


ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM
Organizational Chart
Board of Retirement
Chief Executive Officer
Steve Delaney
Director of Internal Audit
David James
Executive Secretary II (1)
Chief Investment Officer
Girard Miller
Assistant CEO
External Operations
Suzanne Jenike
Chief Legal Officer
Gina Ratto
Assistant CEO
Finance & Internal Operations
Brenda Shott
Internal Auditor
Mark Adviento
Staff Specialist (1)
Secretary II (1)
Director of Finance
Tracy Bowman
Director of Administrative Services
Cynthia Hockless
Director of Information Technology
Jenny Sadoski
Director of Investment Operations
Shanta Chary
Investment Officer
David Beeson
Investment Officer
Adam Cheng
Investment Analyst
Stina Walander-Sarkin
Director of Member Services
Catherine Fairley
Deputy Chief Counsel
David Lantzer
Staff Attorney
Dawn Matsuo
Staff Attorney
Jerry Welssburg
Staff Specialist (1)
Staff Assistant (1)
Staff Assistant PT (1)
Store Clerk (1)
Contracts/ Risk & Performance Manager
Jim Doezie
Paralegal (1)
Member Services Manager
Heidi Halbur
Member Services Manager
Adina Bercaru
Communications Manager
Robert Kinsler
Disability Coordinator
Megan Cortez
Finance Manager
Accounts Payable / Budgeting
Diane Dillard
Finance Manager
Retiree Payroll / Investments
Darlene Huynh
Finance Manager
Contributions / Reporting
Jennifer Reyes
IT Manager
Jon Gossard
IT Supervisor Operations
Javier Lara
IT Supervisor Programming
Vacant
Member Services Supervisor
Jonathea Tallase
Member Services Supervisor
Teresa Panameno
Senior Staff Development Specialist
Tolshe Merida
Staff Specialist (1)
Disability Investigator (2)
Office Specialist (2)
Accounting Technician (1)
Sr. Accountant Auditor I (1)
Accountant Auditor I (1)
Senior Applications Developer (1)
Information Technologist II (1)
Applications Developer II (1)
Vacant
Accountant Auditor I (1)
Vacant
Network Engineer II (1)
Applications Developer II (1)
Vacant
Senior Retirement Program Specialist (1)
Retirement Program Specialist (8)
Office Technician (3)
Office Specialist (1)
Benefits Technician (3
Accounting Technician (2)
Sr. Accounting Assistant (1)
Vacant
Proposed Total Budgeted EE's: 75
County – 49; OCERS Direct – 26
Vacant – 5; Filled – 70
County Employees
OCERS Direct Employees
Accounting Technician (1)
Systems Engineer II (1)

OCERS Organization Description

Board of Retirement

The Board of Retirement is responsible for establishing policies governing the administration of the retirement plan, making benefit determinations, establishing investment policy for the system and monitoring execution of its policies. The Board of Retirement consists of nine members and one alternate. The Board of Supervisors of the County appoints four members of the Board of Retirement; active participants of the system elect four members, one safety and two general and an alternate; the retirees elect one member; and one member is ex-officio, the Treasurer of the County.

Executive Department

This department consists of the Chief Executive Officer (CEO) who implements and executes policies promulgated by the Board of Retirement. The Assistant CEO of Finance and Internal Operations, the Assistant CEO of External Operations, the Chief Investment Officer (CIO), Chief Legal Officer and the Director of Internal Audit assist the CEO in leading and operating the system. Two administrative staff members support the Executive department on a daily basis.

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, and interviewing prospective investment managers. The department is also responsible for the interface with outside investment consultants in reviewing and evaluating all investment managers' performance and investment manager fees. The CIO leads this department of five staff.

External Operations Division

This division is comprised of the following three departments;

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

Director of Member Services oversees this department of twenty-three employees.

The **Disability** department is responsible for the evaluation of claims for disability retirement. The Director of Member Services also oversees this division of five employees.

The **Communications** department is responsible for developing and coordinating information for members and plan sponsors through publications and newsletters. There are two employees who perform the communication functions for OCERS.

Legal Department

This department provides legal advice and representation to the Board of Retirement and the Orange County Employees Retirement System (OCERS) on a wide variety of issues affecting the Agency. Among other things, this includes issues involving disability retirements, investments, legislation, vendor contracts, and family law. The Chief Legal Officer oversees this department of Deputy Chief Counsel and two Staff Attorneys.

Internal Operations Division

The Internal Operations Division is led by the Assistant CEO of Finance and is comprised of the following three departments:

The **Finance** department is responsible for all the financial records and reports of OCERS. This includes the preparation of the Comprehensive Annual Financial Report, monthly and quarterly financial information and the annual operating budget. The Finance department also maintains OCERS' system of internal control; processes and accounts for retirement payroll and refunds of contributions and interest to members; collects and accounts for employer and members' contributions, reconciles investment portfolios and pays costs incurred for goods received and services rendered. The Finance team is managed by the Director of Finance and has nine full time staff members.

The **Administrative Services** department is responsible for providing administrative and human resources services for OCERS. Specifically, the areas of responsibility include staff and management recruitments, performance management, employee relations, employee compensation, personnel policies, and regulatory compliance, contract administration, purchasing, and facility management and maintenance. A Director of Administrative Services leads the department which includes three full time staff and a part time employee.

The **Information Technology (IT)** department is responsible for managing OCERS' network systems, personal computers, software, while providing programming and technical support on our Benefits Administration System. In addition, this department is responsible for the production of retiree payroll, file interfaces related to contributions and payroll and administering all audio/visual functions. Currently, OCERS is in the midst of implementing a new Pension Administration System. The IT department is the lead on managing the multi-year project. The Director of IT leads this division which includes nine employees.

Internal Audit Department

The Internal Audit Department assists the Board of Retirement and management in the effective discharge of their fiduciary responsibilities. This is done through audits, analysis, evaluations, recommendations, and information. Objectives of the department are to promote effective internal controls, provide assurance that the Agency's assets are safeguarded; compliance is maintained with prescribed laws, Board, and management policies; the reliability and integrity of OCERS' data is maintained; and procedures and operating efficiency are enhanced. The Internal Audit Department has a dual-reporting structure. The Director of Internal Audit reports directly to the Board's Audit Oversight Committee functionally and reports to the CEO administratively. The Director supervises one Internal Auditor.

Budget Authority

OCERS' annual budget is prepared in accordance with the California Government Code Sections 31580.2, which addresses administrative expenditures that are subjected to the 21 basis points limitation and 31596.1 for investment and other expenditures that are not subjected to the limitation. Below is an excerpt of these Code Sections.

§31580.2 Annual budget; expenses of administration; charges against earnings of fund

(a) In counties in which the board of retirement, or the board of retirement and the board of investment, have appointed personnel pursuant to Section 31522.1, 31522.5, or 31522.7, the respective board or boards shall annually adopt a budget covering the entire expense of administration of the retirement system which expense shall be charged against the earnings of the retirement fund. The expense incurred in any year may not exceed the greater of either of the following:

(1) Twenty-one hundredths of 1 percent of the accrued actuarial liability of the retirement system.

(2) Two million dollars ($2,000,000), as adjusted annually by the amount of the annual cost-of-living adjustment computed in accordance with Article 16.5 (commencing with Section 31870).

(b) Expenditures for computer software, computer hardware, and computer technology consulting services in support of these computer products shall not be considered a cost of administration of the retirement system for purposes of this section.

§31596.1 Expenses of investing moneys

The expenses of investing its moneys shall be borne solely by the system. The following types of expenses shall not be considered a cost of administration of the retirement system, but shall be considered as a reduction in earnings from those investments or a charge against the assets of the retirement system as determined by the board:

(a) The costs, as approved by the board, of actuarial valuations and services rendered pursuant to Section 31453.

(b) The compensation of any bank or trust company performing custodial services.

(c) When an investment is made in deeds of trust and mortgages, the fees stipulated in any agreement entered into with a bank or mortgage service company to service such deeds of trust and mortgages.

(d) Any fees stipulated in an agreement entered into with investment counsel for consulting or management services in connection with the administration of the board's investment program, including the system's participation in any form of investment pools managed by a third party or parties.

(e) The compensation to an attorney for services rendered pursuant to Section 31607 or legal representation rendered pursuant to Section 31529.1.

Orange County Employees Retirement System
Budget Approval Policy

BACKGROUND AND PURPOSE

1. The Board of Retirement annually adopts a budget covering the expenses of administering the retirement system. The administration expenses, as defined in Government Code Section 31580.2, incurred in any year will be charged against the earnings of the retirement fund and will not exceed 21 basis points of the actuarial accrued liability of the system.

2. The purpose of the Budget Approval Policy is to establish the process by which the OCERS annual budget is approved by the Board of Retirement.

ROLES

3. The preparation and presentation of the budget is the responsibility of the Chief Executive Officer.

4. The adoption of an annual budget is the responsibility of the Board of Retirement.

GUIDELINES

General Provisions

5. The Chief Executive Officer will present to the Board of Retirement a proposed budget for the next calendar year that supports the initiatives set out in the proposed Business Plan. The Budget will be presented during the month of November.

6. The format of the proposed budget will organize expenditures by function within OCERS as follows:

   a. Executive;
   b. Investments;
   c. Communications;
   d. Member Services;
   e. Finance;
   f. Administrative Service;

g. Disabilities;

h. Board;

i. Information Technology;

j. Legal;

k. Internal Audit; and/or

l. Such other functions that may be adopted by OCERS in the future.

7. The budget shall be broken into three broad categories of expenditures:

a. Salaries and Benefits;

b. Services and Supplies; and

c. Capital Projects.

The Capital Project budget category will include the current year costs for all capital asset purchases. Capital assets include items such as buildings, building improvements, vehicles, machinery, equipment, internally generated computer software, computer hardware and all other tangible or intangible assets that; are used in operations, cost more than $25,000 per item and have initial useful lives extending beyond a single reporting period.

The Chief Executive Officer, or the Assistant CEO, Finance & Internal Operations, is granted authority to transfer funds within a category to accomplish the goals set forth in the Business Plan. Funds may not be moved from one category to another without approval of the Board of Retirement.

8. The value of the actuarial accrued liability (AAL) at the beginning of the budget year will be used for purposes of calculating the 21 basis point test. That value will be calculated by the system's actuary using the prior year's beginning AAL and projecting to the beginning of the budget year.

9. The Chief Executive Officer may request that the Board amend the budget for the current fiscal year by presenting reasons for the budget amendment, its expected impact, and the cost of the amendment for the remainder of the budget year.

POLICY REVIEW

10. The Board shall review this policy at least every three years to ensure that it remains relevant and appropriate.

POLICY HISTORY

11. This policy was adopted by the Board of Retirement on February 19, 2002.
12. The policy was revised on October 27, 2003, May 16, 2005, March 24, 2008, March 22, 2010, January 18, 2011, June 18, 2012, and July 20 2015.

2016 Amended Budget Summary

	Board	Executive	Investment	Comm	Legal	Member Services	Finance	Disability	Admin Services	IT	Internal Audit	Total
Personnel cost*	$15,000	$1,243,540	$1,384,807	$257,414	$1,193,631	$2,788,727	$1,178,702	$454,592	$909,589	$1,664,881	$410,203	$11,501,086
Services and supplies	460,200	168,540	40,281,854	228,600	427,150	101,450	625,642	285,350	949,620	2,069,956	361,855	45,960,217
Capital expenditures	-	-	-	-	-	-	-	-	98,000	2,000,000	-	2,098,000
2016 Budget	**475,200**	**1,412,080**	**41,666,661**	**486,014**	**1,620,781**	**2,890,177**	**1,804,344**	**739,942**	**1,957,209**	**5,734,837**	**772,058**	**59,559,303**

	Admin	Invest	Total
Personnel cost*	10,116,279	1,384,807	11,501,086
Services and supplies	5,678,363	40,281,854	45,960,217
Capital expenditures	2,098,000		2,098,000
2016 Budget	**17,892,642**	**41,666,661**	**59,559,303**

Appendix F

Orange County Employees Retirement System
Basis Points Test for Calendar Year 2015

Actuarial Accrued Liability (AAL) as of 12/31/15	17,050,357
Maximum allowed for Administrative Expenses (AAL * .21%)	35,806
Actual Administrative Expenses through 6/30/2015	8,115
Excess of Allowed Over Actual Expenses	27,691
Actual Administrative Expense as a Percentage of Projected Actuarial Accrued Liability as of 6/30/16	.05%
Actual Administrative Expense as Percentage of Projected Actuarial Accrued Liability as of 6/30/15	.04%

Administrative Expense Reconciliation

Administrative Expense per Statement of Changes in Fiduciary Net Position	$8,789
Less administrative expense no considered per CERL section 31596.1	(674)
Administrative expense allowable under CERL section 31580.2	$8,115

Historical Actuarial Asset and Liability Data
(dollar amounts in thousands)

Valuation Summary data for OCERS	12/31/2015	12/31/2014	12/31/2013	12/31/2012	12/31/2011
Actuarial Value of Assets	$11,521,872	$11,449,911	$10,417,125	$9,469,208	$9,064,355
Actuarial Value of Liabilities	$17,050,357	$16,413,124	$15,785,042	$15,144,888	$13,522,978