ORANGE COUNTY FIRE AUTHORITY
AGENDA

Budget and Finance Committee Regular Meeting
Wednesday, July 11, 2018
12:00 Noon

Orange County Fire Authority
Regional Fire Operations and Training Center
1 Fire Authority Road
Room AE117
Irvine, California 92602

Joe Muller, Chair
Shelley Hasselbrink, Vice Chair
Ed Sachs Gene Hernandez Al Murray Don Sedgwick Tri Ta
Jennifer Cervantez - Ex Officio

This Agenda contains a brief general description of each item to be considered. Except as otherwise provided by law, no action or discussion shall be taken on any item not appearing on the following Agenda. Unless legally privileged, all supporting documents, including staff reports, and any writings or documents provided to a majority of the Budget and Finance Committee after the posting of this agenda are available for review at the Orange County Fire Authority Regional Fire Operations & Training Center, 1 Fire Authority Road, Irvine, CA 92602 or you may contact Sherry A.F. Wentz, Clerk of the Authority, at (714) 573-6040 Monday through Thursday, and every other Friday from 8 a.m. to 5 p.m. and available online at http://www.ocfa.org

If you wish to speak before the Budget and Finance Committee, please complete a Speaker Form identifying which item(s) you wish to address. Please return the completed form to the Clerk of the Authority. Speaker Forms are available on the counter noted in the meeting room.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, you should contact the Clerk of the Authority at (714) 573-6040. Notification 48 hours prior to the meeting will enable the Authority to make reasonable arrangements to assure accessibility to the meeting.

CALL TO ORDER

PLEDGE OF ALLEGIANCE by Chair Murray

ROLL CALL

1. PRESENTATIONS
No items.

PUBLIC COMMENTS

Any member of the public may address the Committee on items within the Committee's subject matter jurisdiction but which are not listed on this agenda during PUBLIC COMMENTS. However, no action may be taken on matters that are not part of the posted agenda. We request comments made on the agenda be made at the time the item is considered and that comments be limited to three minutes per person. Please address your comments to the Committee as a whole, and do not engage in dialogue with individual Committee Members, Authority staff, or members of the audience.

2. MINUTES

A. Minutes for the May 9, 2018, Budget and Finance Committee Meeting
Submitted by: Sherry Wentz, Clerk of the Authority

Recommended Action:
Approve as submitted.

3. CONSENT CALENDAR

A. Orange County Employees' Retirement System Quarterly Status Update
Submitted by: Lori Zeller, Assistant Chief/Business Services Department

Recommended Action:
Receive and file the report.

B. 2017 Urban Areas Security Initiative Grant Program Agreement to Transfer Property or Funds
Submitted by: Mark Sanchez, Assistant Chief/Operations Department

Recommended Action:
Review the proposed agenda item and direct staff to place the item on the agenda for the Board of Directors meeting of July 26, 2018, with Budget and Finance Committee's recommendations that the Board of Directors:

1. Approve the FY 2017 Urban Areas Security Initiative Grant Program Agreement and authorize the Fire Chief to execute it and any necessary attachments and agreement(s) to accept and administer the UASI Grant.
2. Approve a budget adjustment to the FY 2018/19 General Fund (121) budget increasing revenues and expenditures by $100,000.

4. DISCUSSION CALENDAR

A. Monthly Investment Reports

Presented by: Patricia Jakubiak, Treasurer

Recommended Action:
Review the proposed agenda item and direct staff to place the item on the agenda for the Executive Committee meeting of July 26, 2018, with the Budget and Finance Committee's recommendation that the Executive Committee receive and file the reports.

B. Director Request to Explore Using the Orange County Investment Pool as an Additional Investment Option

Presented by: Lori Zeller, Assistant Chief/Business Services Department

Recommended Actions:
In response to Director Bartlett's request:

1. Review the attached response from the County Treasurer.
2. Direct staff to place the item on the agenda for the Board of Directors meeting of July 26, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors approve the Orange County Investment Pool as an authorized and suitable investment under OCFA's Investment Policy.

REPORTS

No items.

COMMITTEE MEMBER COMMENTS

ADJOURNMENT – The next regular meeting of the Budget and Finance Committee is scheduled for Wednesday, August 8, 2018, at 12:00 noon.

AFFIDAVIT OF POSTING

I hereby certify under penalty of perjury under the laws of the State of California, that the foregoing Agenda was posted in the lobby and front gate public display case of the Orange County Fire Authority, Regional Training and Operations Center, 1 Fire Authority Road, Irvine, CA, not less than 72 hours prior to the meeting. Dated this 5th day of July 2018.

Sherry A.F. Wentz, CMC
Clerk of the Authority

UPCOMING MEETINGS:

Claims Settlement Committee Meeting	Thursday, July 26, 2018, 5:00 p.m.
Executive Committee Meeting	Thursday, July 26, 2018, 5:30 p.m.
Board of Directors Meeting	Thursday, July 26, 2018, 6:00 p.m.

MINUTES
ORANGE COUNTY FIRE AUTHORITY

Budget and Finance Committee Regular Meeting
Wednesday, May 9, 2018
12:00 Noon

Regional Fire Operations and Training Center
Room AE117
1 Fire Authority Road
Irvine, CA 92602

CALL TO ORDER
A regular meeting of the Orange County Fire Authority Budget and Finance Committee was called to order on May 9, 2018, at 12:00 p.m. by Chair Muller.

PLEDGE OF ALLEGIANCE
Director Hernandez led the assembly in the Pledge of Allegiance to our Flag.

ROLL CALL

Present: Shelley Hasselbrink, Los Alamitos
Gene Hernandez, Yorba Linda
Joseph Muller, Dana Point
Al Murray, Tustin
Ed Sachs, Mission Viejo
Tri Ta, Westminster

Absent: Elizabeth Swift, Buena Park

Also present were:

Assistant Chief Lori Smith	Human Resources Director Brigette Gibb
Assistant Chief Lori Zeller	Assistant Chief Dave Anderson
Assistant Chief Brian Young	Assistant Chief Mike Schroeder
General Counsel David Kendig	Assistant Clerk of the Authority Martha Halvorson

PUBLIC COMMENTS (F: 12.02B3)
Chair Muller opened the Public Comments portion of the meeting. Chair Muller closed the Public Comments portion of the meeting without any comments from the general public.

1. **PRESENTATIONS**
   No items.

2. **MINUTES**

   A. **Minutes for the April 11, 2018, Budget and Finance Committee Regular Meeting** (F: 12.02B2)

   On motion of Director Ta and second by Director Hernandez, the Budget and Finance Committee voted by those present to approve the Minutes of the April 11, 2018, regular meeting as submitted. Director Murray was absent for the vote.

3. **CONSENT CALENDAR**

   A. **Monthly Investment Reports** (F: 11.10D2)

   On motion of Director Ed Sachs and second by Director Hernandez, the Committee voted by those present to direct staff to place the item on the agenda for the Executive Committee meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Executive Committee receive and file the reports. Director Murray was absent for the vote.

   B. **Third Quarter Financial Newsletter** (F: 15.07)

   On motion of Director Ed Sachs and second by Director Hernandez, the Committee voted by those present to direct staff to place the item on the agenda for the Executive Committee meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Executive Committee receive and file the reports. Director Murray was absent for the vote.

   C. **Updated Cost Reimbursement Rates** (F: 15.12)

   On motion of Director Ed Sachs and second by Director Hernandez, the Committee voted by those present to direct staff to place the item on the agenda for the Board of Directors meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors approve and adopt the proposed Cost Reimbursement Rate schedules to be effective July 1, 2018. Director Murray was absent for the vote.

4. DISCUSSION CALENDAR

A. Proposed Adjustment – Santa Ana Service Charge (F: 17.16)

Assistant Chief Lori Zeller provided an overview of the Proposed Adjustment – Santa Ana Service Charge.

Director Murray arrived at this point (12:05 p.m.).

On motion of Director Sachs and second by Director Hernandez, the Committee voted unanimously by those present to direct staff to place the item on the agenda for the Board of Directors meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors approve and authorize staff to adjust the City of Santa Ana's service charge to exclude the impact of OCFA's Accelerated Pension Payments from FY 2015/16 forward.

B. Rosenow Spevacek Group, Inc. Final Property Tax Revenue Projections (F: 15.10)

Assistant Chief Lori Zeller introduced Budget Analyst Alma Penalosa who provided a PowerPoint presentation on the Final Secured Property Tax Revenue Projections.

Budget Analyst Alma Penalosa introduced Hitta Mosesman, Principal and Brett Poirer, Senior Analyst of Rosenow Spevacek Group, Inc. (RSG). Hitta Mosesman provided an overview of the Final Property Tax Revenue Projections.

On motion of Director Ta and second by Director Murray, the Committee voted unanimously by those present to receive and file the report.

C. Review of the Fiscal Year 2018/19 Proposed Budget (F: 15.04 FY 18/19)

Assisted Chief Lori Zeller provided a PowerPoint presentation on the review of the FY 2018/19 Proposed Budget.

Assistant Chief Lori Zeller introduced and welcomed City Manager Jennifer Cervantez (Rancho Santa Margarita), who was recently appointed as the Ex Offico for the Budget and Finance Committee.

Director Ta left at this point (12:55 p.m.).

On motion of Director Murray and second by Director Hernandez, the Committee voted by those present to direct staff to place the item on the agenda for the Board of Directors meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors Review the proposed agenda item and direct staff to place the item on the agenda for the Board of Directors meeting of May 24, 2018, with the Budget and

Finance Committee's recommendation that the Board of Directors take the following actions:

1. Conduct a Public Hearing
2. Adopt the proposed FY 2018/19 Budget as submitted.
3. Adopt the resolution entitled A RESOLUTION OF THE ORANGE COUNTY FIRE AUTHORITY BOARD OF DIRECTORS ADOPTING AND APPROVING THE APPROPRIATIONS BUDGET FOR THE ORANGE COUNTY FIRE AUTHORITY FOR FISCAL YEAR 2018/19.
4. Approve and authorize the temporary transfer of up to $46 million from the following funds to cover a projected temporary cash flow shortfall for FY 2018/19:
   a. Fund 123 Fire Stations and Facilities - $10 million
   b. Fund 133 Fire Apparatus - $20 million
   c. Fund 190 Workers' Compensation Reserve Fund - $16 million
5. Approve and authorize the repayment of $46 million borrowed funds from Fund 121 to the above funds along with interest when General Fund revenues become available in FY 2018/19.
6. Approve an update to the Financial Stability Budget Policy allowing for as needed transfers to the CIP funds at fiscal year onset.
7. Approve and authorize FY 2017/18 budget adjustments to increase General Fund (121) revenues by net $2,242,077 and General Fund (121) expenditures by $2,587,327; decrease expenditures in Fire Stations and Facilities Fund (123) by $7,500,000 and decrease Fire Apparatus Fund (133) by $145,000.

Director Ta was absent for the vote.

D. Proposed Procurement Policy Manual (15.02A1)

Purchasing Manager Debbie Casper provided an overview of the Proposed Procurement Policy Manual.

On motion of Director Hernandez and second by Vice Chair Hasselbrink, the Committee voted by those present to direct staff to place the item on the agenda for the Board of Directors meeting of May 24, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors receive and file the Procurement Policy Manual.

Director Ta was absent for the vote.

REPORTS

No items.

COMMITTEE MEMBER COMMENTS (F: 12.02B4)

Director Murray thanked Division Chiefs Black and Kovacs and those staff members that participated in the Emergency Expo in Tustin on Saturday, April 28, 2018, and stated the event was a great success.

Chair Muller thanked the firefighters for doing a fantastic job on the brush fire from a homeless encampment in Dana Point.

ADJOURNMENT – Chair Muller adjourned the meeting at 1:15 p.m. The next regular meeting of the Budget and Finance Committee is scheduled for Wednesday, June 13, 2018, at 12:00 noon.

Martha Halvorson, CMC
Assistant Clerk of the Authority

Orange County Fire Authority

AGENDA STAFF REPORT

Budget and Finance Committee Meeting **Agenda Item No. 3A**
July 11, 2018 **Consent Calendar**

Orange County Employees' Retirement System Quarterly Status Update

Contact(s) for Further Information

Lori Zeller, Assistant Chief Business Services Department	lorizeller@ocfa.org	714.573.6020
Tricia Jakubiak, Treasurer Treasury & Financial Planning	triciajakubiak@ocfa.org	714.573.6301

Summary
This agenda item is a routine quarterly transmittal to the Committee to provide a report on actions taken by the Orange County Employees' Retirement System (OCERS) relating to financial issues, procedures, and business practices.

Prior Board/Committee Action
Not Applicable.

RECOMMENDED ACTION(S)
Receive and file the report.

Impact to Cities/County
Not Applicable.

Fiscal Impact
Based on the 2017 Actuarial Valuation, OCFA's Unfunded Actuarial Accrued Liability (UAAL) increased slightly from $400.4 million to $400.6 million. By making additional payments towards its UAAL, OCFA was able to keep its UAAL virtually flat despite major assumption changes by OCERS including lowering the interest rate assumption from 7.25% to 7.0% and updating the mortality tables. OCFA's total plan funding improved from 76.7% funded in 2016 to 78.6% funded in 2017. Contribution rate impacts are further described herein.

Background
Actions Taken/Financial Policies & Practices April – June 2018

OCERS BOARD OF RETIREMENT MEETING April 18, 2018:

OCERS FUNDING POLICY

Following up on the actuary's informational presentation in March regarding OCERS Funding Policy, further discussion led to no recommended change to OCERS present 20-year amortization of Unfunded Actuarially Accrued Liabilities (Attachment 1).

There was quite a long discussion of the pros and cons of the two methods used in collecting employer contributions to pay those liabilities. One method is the "percent of salary" method, which is what OCERS presently uses. The actuary indicated that is by far the most common approach to funding, and in fact the method that Segal would recommend as they see it as the least volatile of the two methods. The other method is "level dollar," whereby an employer pays a set dollar amount over a set time period. CalPERS has recently begun to move to that method, which is what led to the discussion. OCERS will be arranging further discussion of this topic at a future meeting of the OCERS Board.

OCERS BOARD OF RETIREMENT MEETING May 14, 2018:
The OCERS Board received the initial findings of the December 31, 2017, annual actuarial valuation from their outside actuary, Segal Consulting. The annual actuarial valuation is a snap shot in time evaluating the health of the retirement system as of that date, compared to what had been actuarially assumed, and its findings are then used as the basis for setting member and employer contribution rates that will first be effective as of July 1, 2019. The presentation was informational only, allowing both labor and employer to review the data and offer comment. The item returns to the OCERS Board on June 18 for final review and adoption (Attachment 2).

OCERS BOARD OF RETIREMENT MEETING June 18, 2018:
Following an informational only discussion last month of the December 31, 2017, actuarial valuation, Andy Yeung of Segal Consulting provided additional comments and the OCERS Board approved the actuarial valuation report and adopted the FY 2019/20 employer and employee pension contribution rates (Attachment 3).

With an 14.8% return in 2017, the system-wide funding level declined slightly from 73.1% to 72.3%. The Unfunded Actuarial Accrued Liability (UAAL) is $5.4 billion up from last year's $4.83 billion. The increase in the UAAL is mainly due to a lowering of the interest rate assumption, a change in the mortality tables and unfavorable investment returns from prior years (after 5-year smoothing). With the system's UAAL increasing from last year, most employer rates have increased. However, OCFA's rates for Safety and General Employees have decreased (Attachment 2, Page 8).

In 2017, the OCFA made additional contributions towards its UAAL totaling $32.1 million as part of its Accelerated Pension Paydown Plan. In addition, for the past three years, OCFA chose not to utilize the 3-year phase-in of the cost impact resulting from the Triennial Study changes made to actuarial assumptions for safety members and instead paid the higher contribution rates. Both of these actions have had a positive impact. Pages 10 and 11 of Attachment 2 (line item 4.b) shows the "effect of additional UAAL contributions from OCFA," indicating an offsetting reduction of -3.92% for general rates and -1.02% for safety rates.

The actuarial calculation shows reductions to OCFA's required rates as a result of our additional UAAL contributions; however, part of OCFA's Accelerated Pension Paydown Plan is to continue paying towards the UAAL without taking advantage of this offsetting reduction. This voluntary action is what results in the "snowball effect" of the Plan, causing the acceleration to continue increasing at a faster pace over the latter years of the Plan.

After adjusting for the fact that OCFA chose not to utilize the 3-year phase-in and instead, paid the higher contribution rates, combined with our Accelerated Pension Paydown Plan, which has OCFA paying greater contributions without taking advantage of offsetting reductions that resulted from our Accelerated Plan, the rate changes for OCFA are as follows:

	OCFA General Rate Group #10	**OCFA Safety Rate Group #8**
FY 2018/19 Rate w/voluntary exclusion of rate reduction from additional UAAL payments and 3-year phase-in	32.66%	50.26%
FY 2019/20 Rate w/voluntary exclusion of rate reduction from additional UAAL payments and 3-year phase in	34.76%	49.55%
FY 2019/20 Employer Rate Changes for OCFA	**2.10%**	**(0.71%)**

OCERS INVESTMENT RETURN

OCERS return for May was 0.5% and the year-to-date (YTD) return was 1.2%. OCERS is on a calendar year-basis and has an assumed rate of return of 7.0%.

OCFA staff will continue to monitor actions taken by OCERS and will report back in October regarding actions taken during the next quarter.

Attachment(s) (On file with the Clerk of the Authority, available upon request.)

1. Segal Consulting Review of Elements in Current UAAL Amortization Policy – Second Discussion, Power Point Presentation, April 18, 2018
2. Segal Consulting December 31, 2017 - Actuarial Valuation Power Point Presentation, May 14, 2018
3. Segal Consulting Actuarial Valuation and Review as of December 31, 2017

Attachment 1

Memorandum

DATE: April 9, 2018

TO: Members of the Board of Retirement

FROM: Steve Delaney, CEO

SUBJECT: OCERS Actuarial Funding Policy

Recommendation

Approve revisions to Appendix A of OCERS Actuarial Funding Policy which incorporate the demographic and economic assumptions approved by the Board of Retirement in October 2017 and affirm all other provisions of the existing policy.

Background/Discussion

At last month's Board of Retirement meeting, Paul Angelo from Segal presented materials related to OCERS Funding Policy as an informational item. The Board did not indicate any specific terms within the policy that needed to be further discussed, however the policy is due for its triennial review. The existing policy includes an Appendix which lists all of the current actuarial assumptions used in the annual actuarial valuation. The Appendix should be updated to include the most recently adopted assumptions approved by the Board in October 2017. A red-lined and clean version of the Board's Actuarial Funding Policy is attached. In addition, Segal will be present at the April 18, 2018 Board of Retirement to discuss the materials in the attached presentation.

Approved by:

Steve Delaney

CEO

Segal Consulting

Orange County Employees Retirement System

Review of Elements in Current UAAL Amortization Policy - Second Discussion

April 18, 2018

Paul Angelo, FSA

Segal Consulting

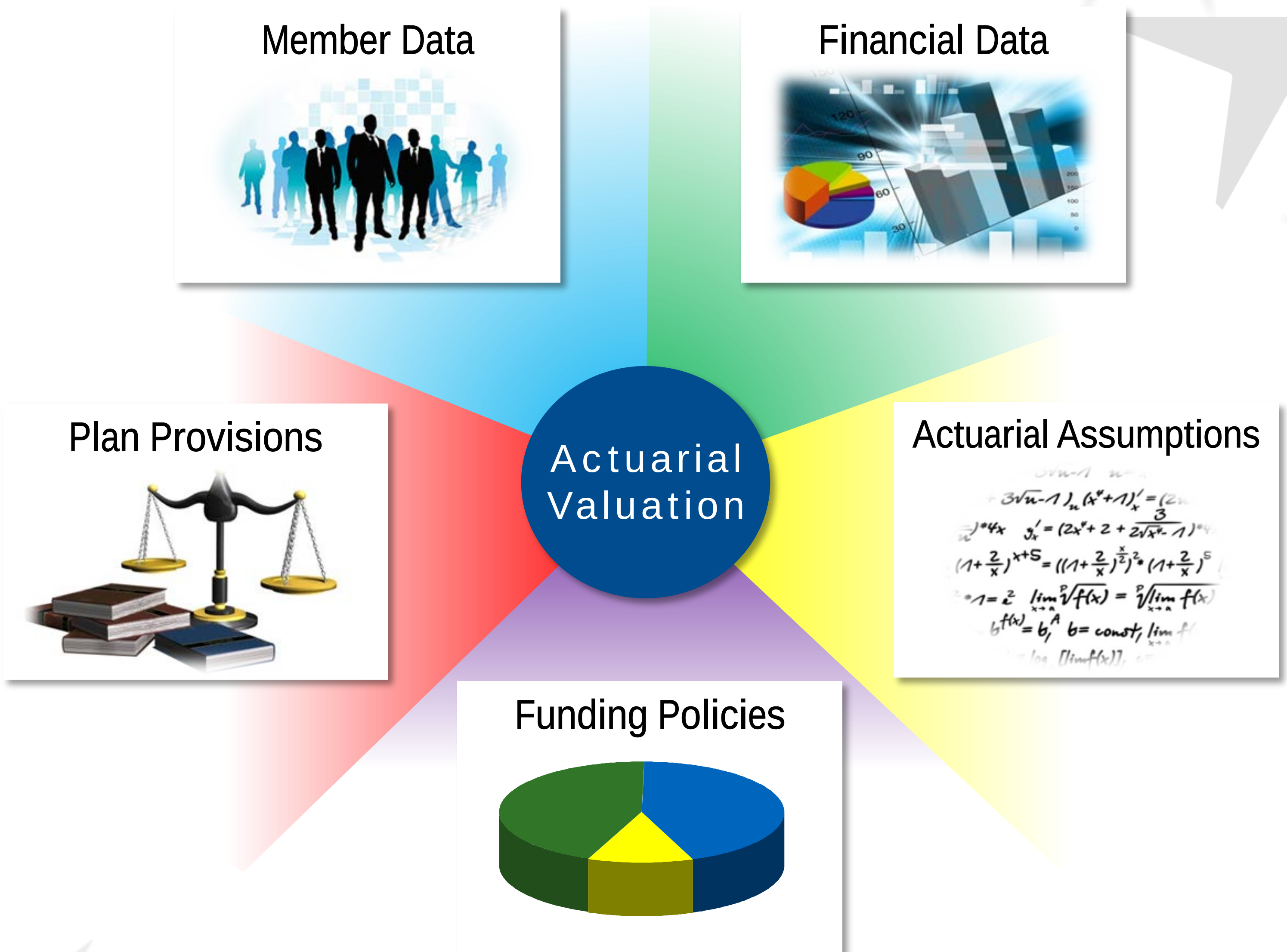
San Francisco

5533778v1

Agenda

- Same presentation as for March 19 discussion
  - One additional UAAL amortization illustration added
- Review of funding policy components and cost elements
- Review of OCERS funding policy objectives and parameters
- Review of OCERS UAAL amortization policy
  - Reviewed and approved by the Board in 2013 and 2014
  - Effective with December 31, 2013 Valuation
- Illustration of UAAL amortization periods and methods
- OCERS December 31, 2016 UAAL Amortization Schedule
- Recent changes made to CalPERS UAAL amortization policy

What goes into an Actuarial Valuation?

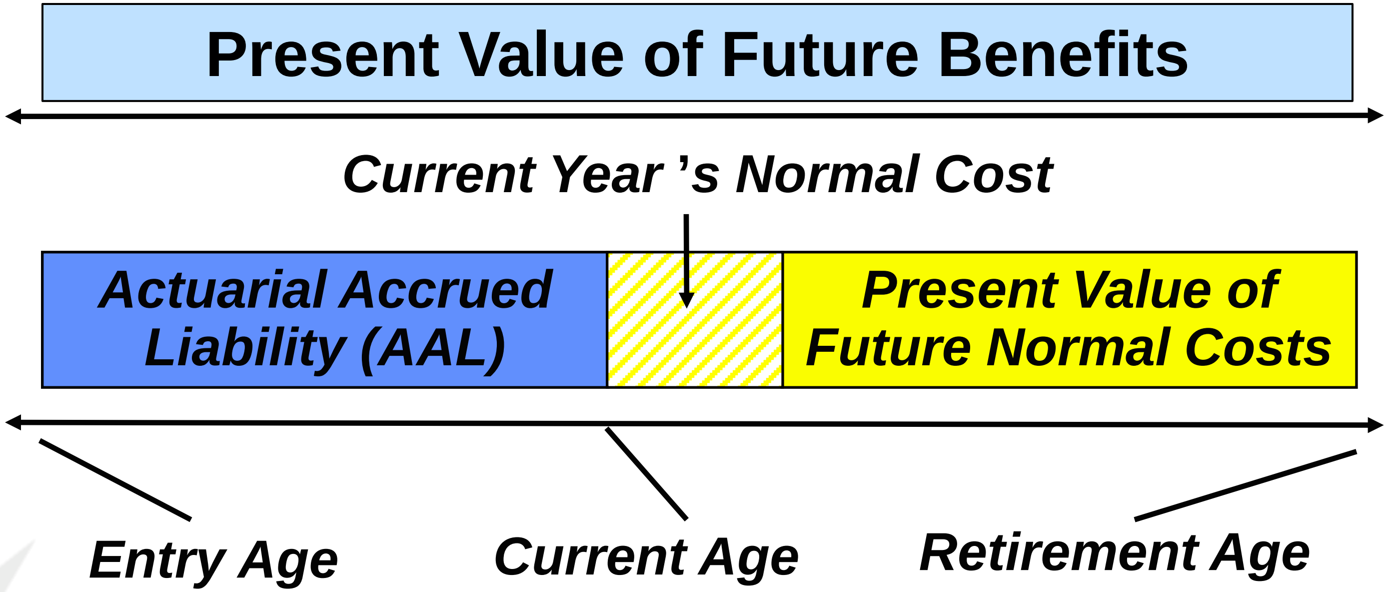


Funding Policy Components

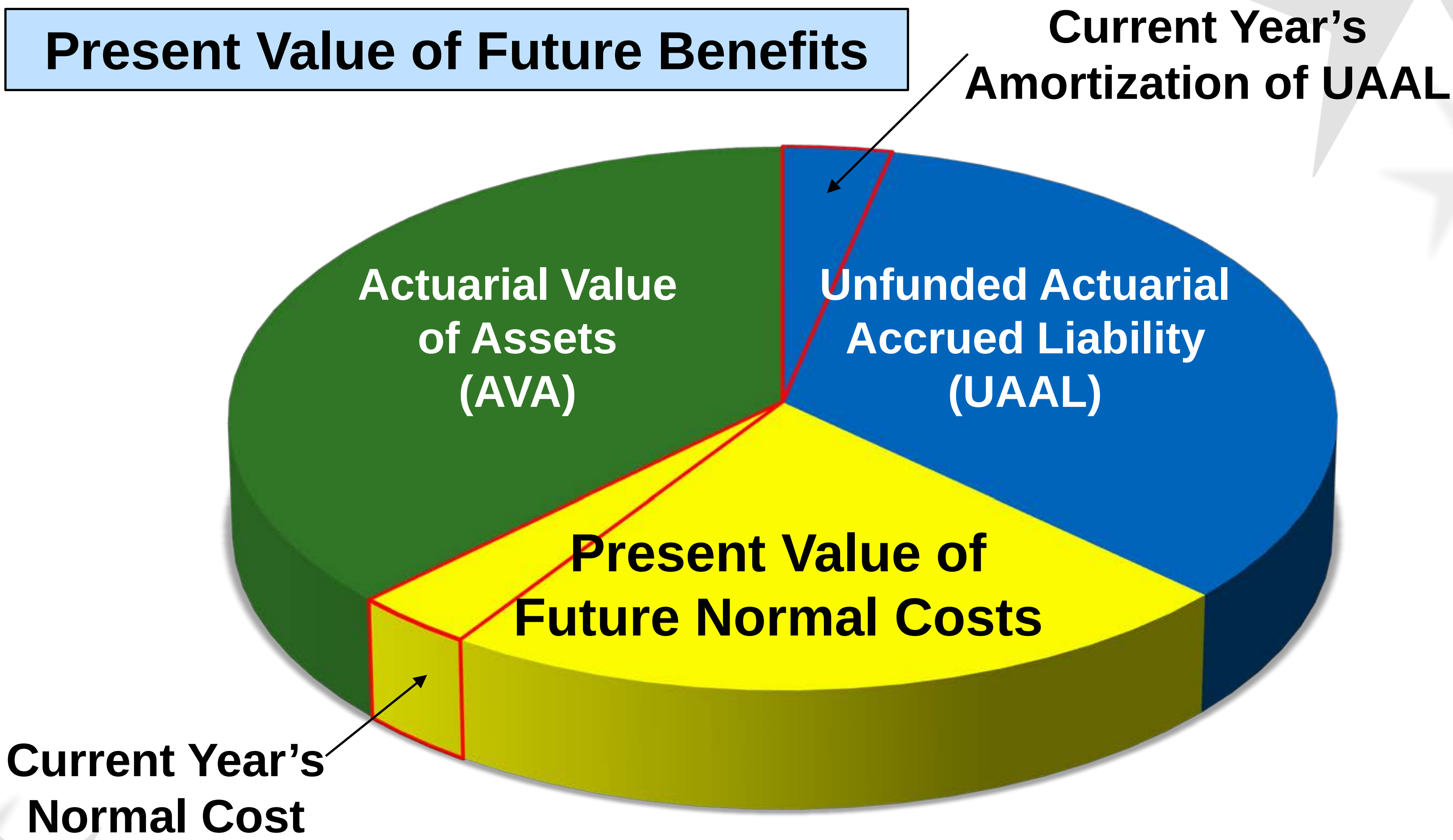
- **Actuarial Cost (or Funding) Method** –
  allocates present value of member's projected benefits to years of service: past, current and future
  - Defines Normal Cost and Actuarial Accrued Liability (AAL)
- **Asset Smoothing Method** –
  determines an Actuarial Value of Assets that recognizes investment gains or losses over a period of time
  - Manages short term volatility while tracking market value
  - Defines the Unfunded Actuarial Accrued Liability (UAAL)
- **UAAL Amortization Policy** –
  sets contributions to systematically reduce any UAAL
  - Includes structure, periods and pattern of payments

Funding Policy – Cost Elements

- **The Normal Cost** is the portion of the value of projected benefits for active members that is allocated to each plan year.
  - Normal Cost is shared between employees and employers
- **The Actuarial Accrued Liability (AAL) measures the Normal Costs from past years**—for retired members, the AAL is the entire value of their benefit.
  - Any unfunded AAL (UAAL) is funded by the employers



Funding Policy – Cost Elements



Policy Objectives of Actuarial Funding Policy

1. Achieve long-term full funding of the cost of benefits provided by OCERS
   - Future contributions plus current assets sufficient to fund all benefits for current members
   - Current Contribution = Normal Cost + full UAAL payment
2. Seek a reasonable and equitable allocation of the cost of benefits over time
   - Both expected costs and variations from expected costs
3. Minimize volatility of the plan sponsor's contribution
   - To the extent reasonably possible, consistent with other policy objectives
4. Support public policy goals of accountability and transparency
   - Allow for an assessment of how and when plan sponsors will meet the funding requirements of the plan

Relationship among Policy Objectives

- Policy Objectives 2 and 3 reflect two aspects of the general policy objective of “interperiod equity”
- Policy Objective #2 promotes “demographic matching”
  - Current taxpayers incur cost of benefits for current public employees serving those taxpayers
- Policy Objective #3 promotes “volatility management”
  - Current taxpayers’ cost compares equitably with costs just before and after
- These objectives tend to move funding policy in opposite directions.
  - Policy objectives 2 and 3 combined seek to balance demographic matching vs. volatility management

2013 and 2014 Review of Actuarial Funding Policy

- Funding policy elements approved
  - Continuation of Entry Age actuarial cost method
  - Continuation of 5-year asset smoothing method
  - UAAL amortization policy starting with 12/31/2013 valuation
    - Continuation of level percent of payroll amortization
    - 12/31/2012 UAAL layers combined and reamortized over 20 years
    - Amortization policy for changes in UAAL after 12/31/2012

Source		Years
Actuarial gains or losses		20
Assumption or method changes		20
Plan amendments		15
Early Retirement Incentives		Up to 5
Actuarial surplus		30

Level Percent of Payroll UAAL Amortization

- UAAL payments structured to increase with total payroll
  - Payroll assumed to increase with inflation and real wage growth
    - Assumptions approved for December 31, 2017 valuation
    - 2.75% (inflation) + 0.50% (real wage growth) = 3.25% (total)
    - Assumes constant active head count
  - Shortfall in UAAL contributions if actual payroll increase is less than assumed
    - Mitigated by actuarial gains from individual salaries increases less than expected

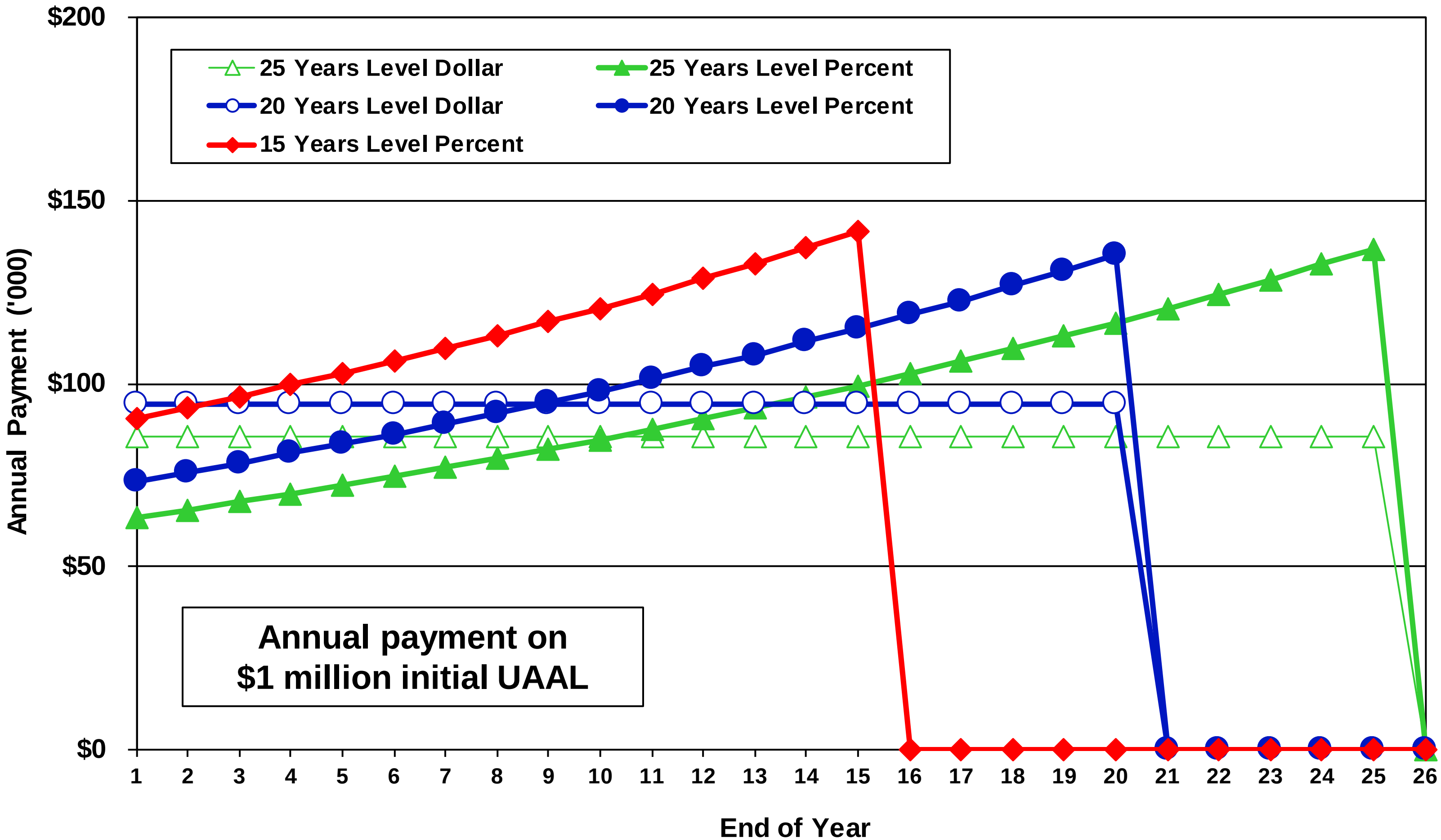
Illustration of UAAL Amortization Periods and Methods

- $1,000,000 initial UAAL, 7.00% investment return assumption

7.00% interest 3.25% salary incr.		25 years Level dollar		25 years % of pay		20 years Level dollar		20 years % of pay		15 years % of pay
Increase in AAL		1,000,000		1,000,000		1,000,000		1,000,000		1,000,000
Amortization factor		11.6536		15.7365		10.5940		13.6021		11.0509
(first year)		0.085811		0.063546		0.094393		0.073518		0.090490
Amortization amount										
Year 1	$	85,811	$	63,546	$	94,393	$	73,518	$	90,490
Year 15	$	85,811	$	99,438	$	94,393	$	115,041	$	141,600
Year 20	$	85,811	$	116,682	$	94,393	$	134,991	$	0
Year 25	$	85,811	$	136,916	$	0	$	0	$	0
Total amount paid										
Principal	$	1,000,000	$	1,000,000	$	1,000,000	$	1,000,000	$	1,000,000
Interest		1,145,263		1,394,425		887,859		1,026,467		714,202
Total	$	2,145,263	$	2,394,425	$	1,887,859	$	2,026,467	$	1,714,202

Illustration of UAAL Amortization Periods and Methods

- Annual payment amounts for $1,000,000 initial UAAL
  - Payments increase 3.25% per year

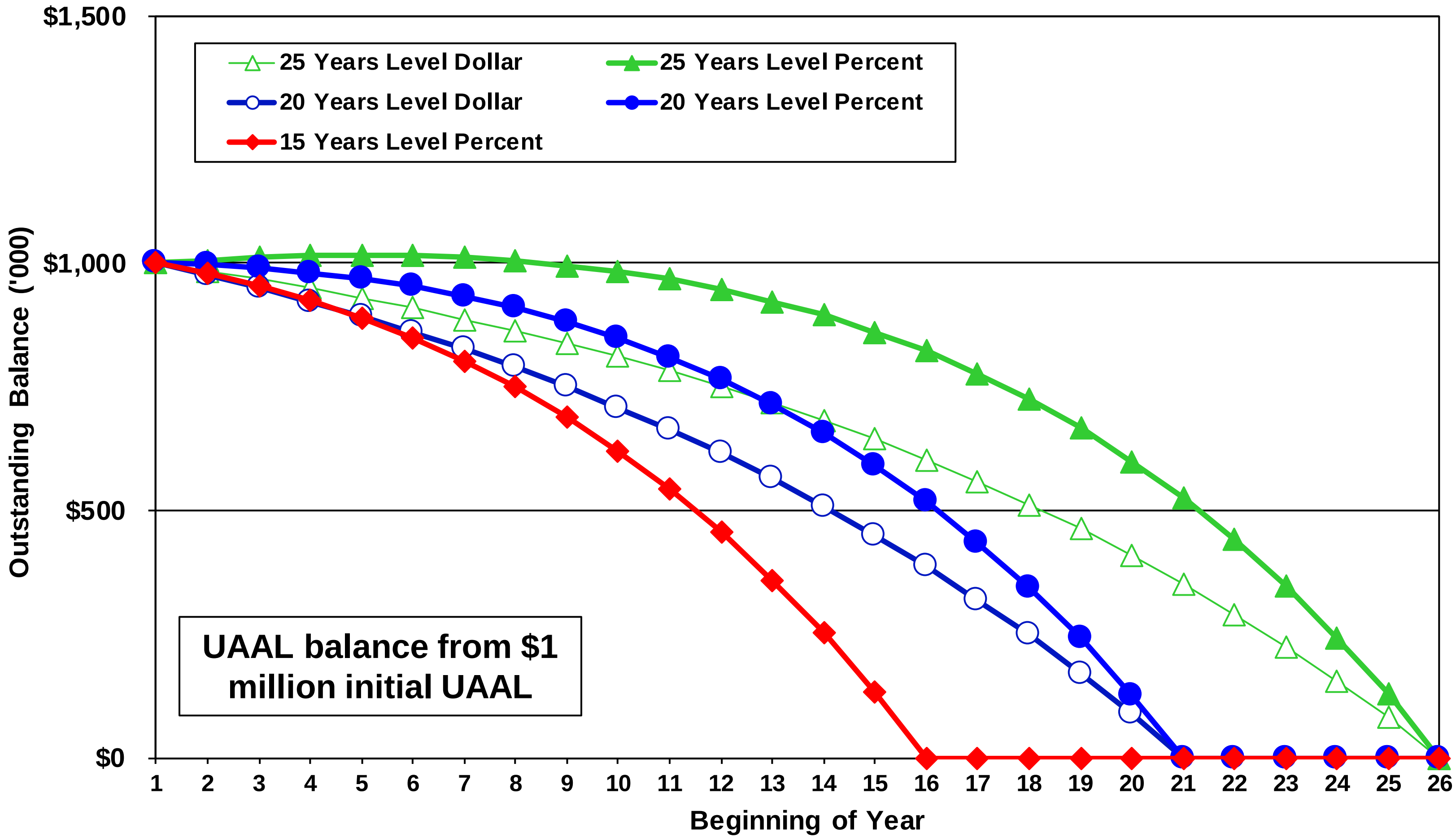


Negative Amortization

- $1,000,000 liability, 7.00% interest
- First year interest only is $70,000
- With level dollar payments, payments are always greater than interest
- With level percentage payments, early payments can be less than interest
  - UAAL increases (but not as a percentage of payroll!)
  - Eventually larger payments cover interest plus increased UAAL
- For OCERS, 20 year amortization means no negative amortization even in first year of new layer

Illustration of UAAL Amortization Periods and Methods

➤Outstanding UAAL balance for $1,000,000 initial UAAL

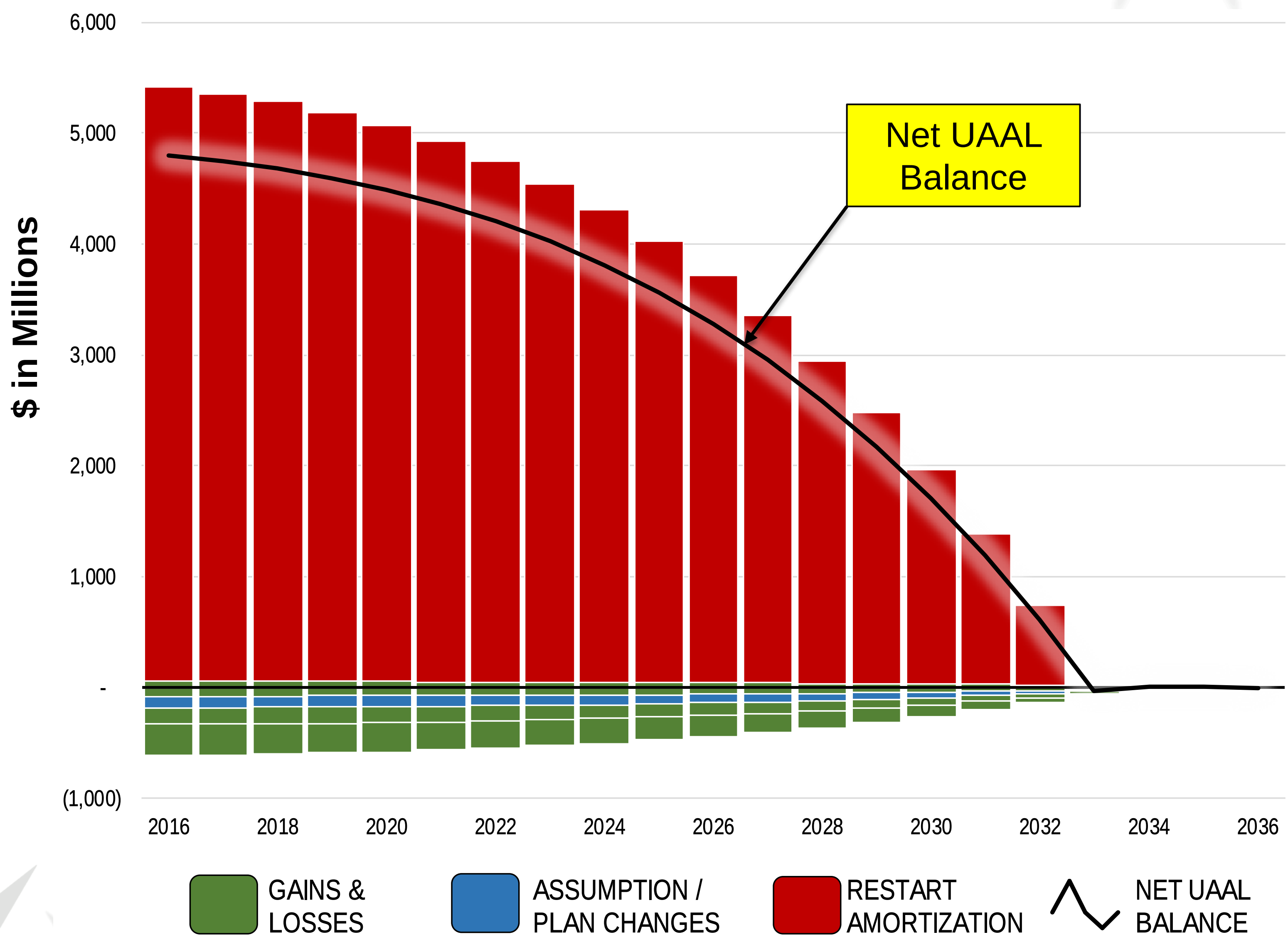


OCERS December 31, 2016 Amortization Schedule

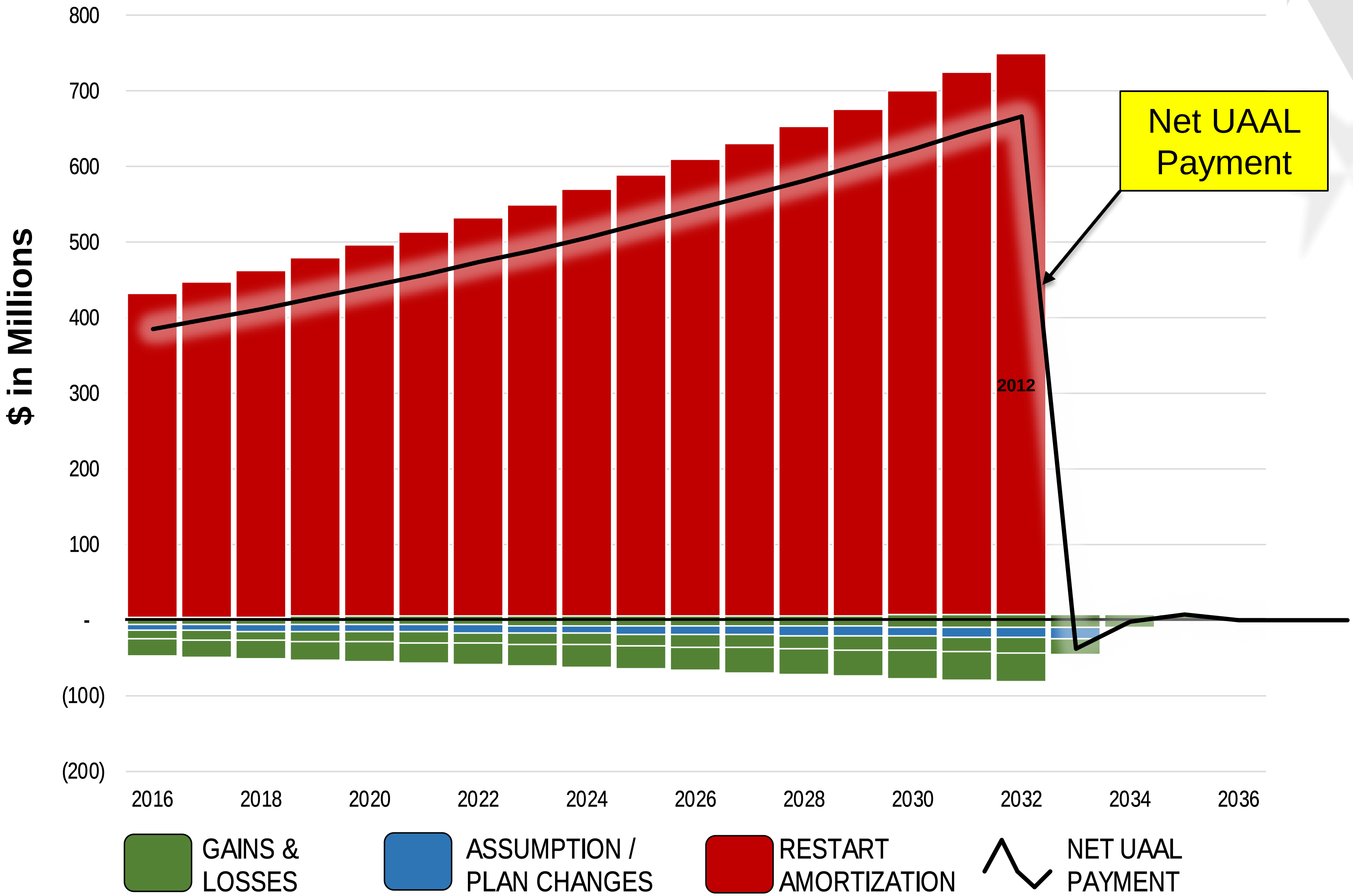
Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2016

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	

OCERS Layered UAAL Amortization **Balances** as of December 31, 2016



OCERS Layered UAAL Amortization Payments as of December 31, 2016



Recent changes to CalPERS Amortization Policy

- Unlike most systems, CalPERS does not use asset smoothing
  - In April 2013 CalPERS adopted "5 year direct rate smoothing"
  - Mimics asset smoothing without using a smoothed asset value
    - Five year "ramp up / ramp down" of contribution rate impact built into amortization payments
  - Extended smoothing / phase-in to all actuarial experience and assumption changes
- CalPERS 2013 layered amortization periods
  - Actuarial gains or losses: 30 years
    - Similar to 26 year amortization with 5 year smoothing
  - Assumption or method changes: 20 years
    - Similar to 16 year amortization with 5 year phase-in / phase out

Recent changes to CalPERS Amortization Policy

- CalPERS amortization policy revised in February 2018
  - Effective with 6/30/2019 valuation
- For investment gains and losses
  - 20 year UAAL amortization with 5 year ramp up (not down!)
- For non-investment gains and losses
  - 20 year UAAL amortization with <u>no</u> ramp up/down
- For assumption changes
  - 20 year UAAL amortization with <u>no</u> ramp up/down
- New layers will use level dollar amortization

Questions and Discussion

OCERS Board Policy

Actuarial Funding Policy

Purpose and Background

The Orange County Employees Retirement System (OCERS) is charged with administering defined benefit plans for its members. Administering the system includes establishing systematic funding of current and future benefit payments for members of OCERS. In doing so, the Board of Retirement engages the services of an actuary to assist in establishing contributions that will fully fund the System's liabilities, and that, as a percentage of payroll, will remain as level as possible for each generation of active members. In order for the actuary to perform the requested services, the Board must approve specific funding objectives, methods, and assumptions to be used in the actuarial valuation for the purpose of funding member benefits.

Policy Objectives

- Achieve long-term full funding of the cost of benefits provided by OCERS;
- Seek reasonable and equitable allocation of the cost of benefits over time;
- Minimize volatility of the plan sponsor's contribution to the extent reasonably possible, consistent with other policy goals; and,
- Support the general public policy goals of accountability and transparency by being clear as to both intent and effect, allowing for an assessment of how and when plan sponsors will meet the funding requirements of the plan.

Definitions

1. **Actuarial Accrued Liability (AAL)** – The portion of the present value of projected benefits that is attributed to past service by the actuarial funding method.

2. **Actuarial Funding Method** – A process used to allocate present value of projected benefits among past and future periods of service.

3. **Actuarial Gains and Losses** – changes in unfunded actuarial accrued liability or surplus due to actual experience different from what is assumed in the actuarial valuation. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in unfunded actuarial accrued liability, or "actuarial gain" as of the next valuation.

4. **Actuarial Surplus** – the positive difference, if any, between the Valuation Value of Assets and the Actuarial Accrued Liability

5. **Actuarial Value of Assets (AVA)** – The market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.

6. **Entry Age Method** - An actuarial cost method designed to fund a member's total plan benefit over the course of his or her career. This method is designed to produce stable employer and employee contributions in amounts that increase at the same rate as the members' payroll (i.e., level % of payroll).

7. **Market Value of Assets (MVA)** – the fair value of assets of the plan as reported under generally accepted accounting principles.

8. **Normal Cost** – The portion of the present value of projected benefits that is attributed to current service by the actuarial funding method.

9. **Unfunded Actuarial Accrued Liability (UAAL)** – the portion of the Actuarial Accrued Liability that is not currently covered by plan assets. It is calculated by subtracting the Valuation Value of Assets from the Actuarial Accrued Liability.

10. **Valuation Value of Assets (VVA)** –the value of assets used in the actuarial valuation to determine contribution rate requirements. It is equal to the Actuarial Value of Assets reduced by the value of any non-valuation reserves.

11. **Valuation Period** – The year for which the actuarial valuation is being performed, which is the calendar year preceding the December 31 actuarial valuation date.

Policy Guidelines

OCERS annual funding requirement is comprised of a payment of the Normal Cost and a payment on the Unfunded Actuarial Accrued Liability (UAAL). The Normal Cost and the amount of payment on UAAL are determined by the following three components of this funding policy

a. Actuarial Cost Method: the process used to allocate the total present value of future benefits to each year (Normal Cost), and all past years (Actuarial Accrued Liability);

b. Asset Smoothing Method: the process used that spreads the recognition of investment gains or losses over a period of time for the purposes of determining the Actuarial Value of Assets used in the actuarial valuation process; and

c. Amortization Policy: the decisions on how, in terms of duration and pattern, to reduce the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets (after adjustment for non-valuation reserves) in a systematic manner.

Actuarial Cost Method

The Entry Age cost method with Normal Cost developed as a level percentage of pay of shall be applied to each member's retirement benefit in determining the Normal Cost and the Actuarial Accrued Liability.

Asset Smoothing Method

The investment gains or losses of each Valuation Period, as a result of comparing the actual return on the Market Value of Assets at the end of the period with what the expected return on the Market Value of Assets would have been if the assumed rate of return on assets was realized during the period, shall be recognized in a level amount over a fixed five (5) years in calculating the Actuarial Value of Assets.

Amortization Policy

a. The Unfunded Actuarial Accrued Liability, the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets (after again adjustment for non-valuation reserves), shall be amortized over various periods of time, depending on how the unfunded liability arose;

b. he total Unfunded Actuarial Accrued Liability as of December 31, 2013 (which consists of the outstanding balance of the UAAL from the December 31, 2012 valuation and any new actuarial gains or losses from calendar year 2013) shall be amortized over twenty (20) years;

c. Actuarial Gains or Losses incurred in a single year shall be amortized over twenty (20) years;

d. Changes in actuarial assumptions and cost methods shall be amortized over twenty (20) years;

e. Plan amendments other than Early Retirement Incentives shall be amortized over fifteen (15) years;

f. Early Retirement Incentives shall be amortized over a period not to exceed five (5) years;

g. Unfunded Actuarial Accrued Liabilities shall be amortized in multiple layers by source over “closed” amortization periods;

h. Unfunded Actuarial Accrued Liabilities shall be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase;

i. If an overfunding or “surplus” exists (i.e., the adjusted Actuarial Value of Assets is greater than the Actuarial Accrued Liability) and the amount of such surplus is in excess of 20% of the AAL per Section 7522.52 of California Public Employee Pension Reform Act, such actuarial surplus in excess of 20% of the AAL and any subsequent surpluses will be amortized over an “open” amortization period of 30 years. Any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

Other Policy Considerations

a. In order to allow Plan Sponsors to more accurately budget for pension contributions and other practical considerations, the contribution rates determined in each actuarial valuation (as of December 31) will generally apply to the fiscal year beginning eighteen months after the Actuarial Valuation date. The UAAL contribution rates in the current actuarial valuation are adjusted to account for any shortfall or excess contributions as a result of the implementation lag;

b. Any change in contribution rate requirement that results from a plan amendment is generally implemented as of the effective date of the plan amendment or as soon as administratively feasible;

c. When calculating a retirement benefit amount under allowable optional benefit allowances per Government Code sections 31761-31764(known as Options 2, 3 and 4), the actuary shall include a cost of living assumption;

d. When calculating both employer and member contribution rates (basic and COLA portions) for Legacy members, the actuary shall include an assumption for the additional cash out of accumulated annual leave, sick leave or compensatory leave both earned and permitted to be cashed out during the final average measuring period, applied on a pooled basis (General, Safety-Probation, Safety-Law and Safety-Fire).

e. The actuarial assumptions adopted by the Board for use in the actuarial valuation affect only the timing of contributions; the ultimate contribution level is determined by the benefits and the expense actually paid offset by actual investment returns. To the extent that actual experience deviates from the assumptions, experience gains and losses will occur. These gains (or losses) then serve to reduce (or increase) the future contribution requirements.

Actuarial assumptions are generally grouped into two major categories:

- Demographic assumptions – including rates of withdrawal, service retirement, disability retirement, mortality etc.
- Economic assumptions – including price inflation, wage inflation, investment return, salary increase, etc.

The actuarial assumptions represent the Board's best estimate of anticipated experience under OCERS and are intended to be long term in nature. Therefore, in developing the actuarial assumptions, the Board considers not only past experience but also trends, external forces and future expectations. The Board will review all assumptions triennially. The current assumptions used by the actuary are listed in Appendix A.

Policy Review

The Board of Retirement will review this policy every three years or more frequently if recommended by the actuary to ensure that it remains relevant and appropriate.

Policy History

The Board adopted this policy on January 21, 2014. This policy was revised on December 15, 2014.

Secretary's Certificate

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

~~12/15/14~~04/18/2018

Steve Delaney
Secretary of the Board

Date

OCERS Board Policy

Appendix A

The following are current assumptions used by the actuary when producing the annual actuarial valuation for OCERS.

Economic Assumptions

INFLATION

2.75~~3.00~~% per annum, retiree cost of living adjustments are subject to a 3.0% maximum change per year.

INVESTMENT RETURN

7.00~~25~~% per annum net of investment and administrative expenses.

EMPLOYEE CONTRIBUTION CREDITING RATE:

5.00%, compounded semi-annually.

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INDIVIDUAL SALARY INCREASES:

- Inflationary i~~I~~ncreases: 2.75~~3.00~~%
- Real "across the board" increases: 0.50%
- Merit and promotion increases:

YEARS OF SERVICE	GENERAL	SAFETY
Less than 1	9~~10~~.00%	14.00%
1	7.25	10.00
2	6.00	7.75~~8.50~~
3	5.00~~4.75~~	6.00~~75~~
4	4.00	5.50~~25~~
5	3.50~~25~~	4.50
6	2.50~~25~~	3.75~~50~~
7	2.25~~00~~	3.25
8	1.75~~50~~	2.50~~25~~
9	1.50~~25~~	2.25
10	1.50~~25~~	1.75
11	1.50~~25~~	1.75
12	1.50~~25~~	1.75
13	1.50~~25~~	1.75
14	1.50~~25~~	1.75

YEARS OF SERVICE	GENERAL	SAFETY
15	1.50~~25~~	1.75
16	1.00~~0.75~~	1.50
17	1.00~~0.75~~	1.50
18	1.00~~0.75~~	1.50
19	1.00~~0.75~~	1.50
20 & over	1.00~~0.75~~	1.50

Note: in addition to the individual salary increase assumptions, also assume an average two hours of additional salary annually for leap-year salary adjustment.

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ACTIVE MEMBER PAYROLL INCREASES

3.25~~50~~% per annum

Non-Economic Assumptions

Post-Retirement Mortality Rates:

HEALTHY

- For General Members and all Beneficiaries: Headcount-Weighted RP-2014 ~~00 Combined~~ Healthy Annuitant Mortality Table~~-~~, projected generationally with the two-dimensional MP-2016 scale~~ed with Scale BB to 2020~~.
- For Safety Members: Headcount-Weighted RP-2014~~00~~ ~~Combined~~ Healthy Annuitant Mortality Table set back four years, projected generationally with the two-dimensional MP-2016 scale.

DISABLED

- For General Members: Headcount-Weighted RP-2014~~00~~ Healthy Annuitant Mortality Table ~~Combined Healthy Mortality Table~~set forward five years, projected generationally with the two-dimensional MP-2016 scale~~ with Scale BB to 2020 with ages set forward six years for males and set forward three years for females~~.
- For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional MP-2016 scale.~~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.

EMPLOYEE CONTRIBUTION RATES

- For General Members: Headcount-Weighted RP-2014~~00~~ ~~Combined~~ Healthy Annuitant Mortality Table (separate tables for males and females) projected 20 years with the two-dimensional mortality improvement scale MP-2016 scale~~with Scale BB to 2020~~, weighted 40% male and 60% female.
- For Safety Members: Headcount-Weighted RP-2014~~00~~ Healthy Annuitant ~~Combined Healthy~~ Mortality Table set back four years (separate tables for males and females)~~-~~, projected 20 years with the two-dimensional mortality improvement scale MP-2016 scale, ~~ed with Scale BB to 2020 with ages set back two years~~, weighted 80% male and 20% female.

PRE-RETIREMENT MORTALITY RATES

~~Termination Rates Before Retirement~~

For General and Safety Members; Headcount-Weighted RP-2014 Employee Mortality Table times 80% projected generationally with the two-dimensional MP-2016 projection scale.

Termination Rates Before Retirement

	RATE (%) MORTALITY[1]			
	General		Safety	
Age	Male	Female	Male	Female
25	0.05~~4~~	0.02	0.05~~4~~	0.02
30	0.05~~4~~	0.02	0.05~~4~~	0.02
35	0.05~~7~~	0.03~~4~~	0.05~~6~~	0.03~~4~~
40	0.06~~10~~	0.04~~7~~	0.06~~9~~	0.04~~6~~
45	0.10~~4~~	0.07~~11~~	0.10~~2~~	0.07~~9~~
50	0.17~~20~~	0.11~~6~~	0.17~~8~~	0.11~~4~~
55	0.27~~34~~	0.17~~25~~	0.27	0.17~~21~~
60	0.45~~59~~	0.24~~41~~	0.45~~8~~	0.24~~33~~
65	0.78~~1.00~~	0.36~~76~~	0.78~~82~~	0.36~~60~~
70	1.27	0.59	1.27	0.59

Note that generational projections beyong the base year (2014) are not reflected in the above mortality rates.

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

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Appendix A

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Appendix A

	RATE (%)DISABILITY			
Age	**General All Other**(1)	**General OCTA**(2)	**Safety-Law & Fire** (3)	**Safety-Probation** (4~~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	0.23~~6~~	0.13~~0~~
45	0.13~~1~~	0.43	0.40~~2~~	0.21~~16~~
50	0.18~~4~~	0.48	1.10~~0.92~~	0.28~~0~~
55	0.23~~18~~	0.65~~74~~	2.40~~1.98~~	0.42~~23~~
60	0.31~~29~~	1.26~~41~~	4.80~~5.20~~	0.2~~1~~0

(1) 60~~55~~% of General All Other disabilities are assumed to be service connected disabilities. The other 40~~5~~% 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.

~~(3)~~(4) 75% of Safety Probation disabilities are assumed to be service connected disabilities. The other 25% are assumed to be non-service connected.

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Appendix A

	RATE (%) TERMINATION			
Years of Service	General All Other [1]	General OCTA [1]	Safety- Law & Fire [2]	Safety – Probation [2]
0	11.0	17.50	4.50~~00~~	14~~6~~.00
1	7.50~~8.0~~	11.00~~13.50~~	2.50~~3.00~~	13.00
2	6.50~~7.0~~	9.00~~10.50~~	2.00	10.00
3	5.0	8.5~~10.0~~0	1.50~~00~~	5~~6~~.00
4	4.50~~0~~	7.50~~9.00~~	1.25~~00~~	4.00
5	4.25~~3.75~~	7.00	1.00	3.50
6	3.75~~3.50~~	4.5~~5.0~~0	0.95	2.75~~3.00~~
7	3.25~~00~~	4~~5~~.00	0.90	2.00~~50~~
8	3.00~~2.75~~	3.50~~4.00~~	0.85	2.00~~25~~
9	2.75~~50~~	3.00~~50~~	0.80	1.75~~2.00~~
10	2.50~~25~~	3.00~~50~~	0.75	1.75
11	2.00	3.00~~50~~	0.65	1.50~~75~~
12	2.00	3.00	0.60	1.25~~50~~
13	1.75	2.50~~3.00~~	0.55~~0~~	1.00~~25~~
14	1.50~~75~~	2.50~~3.00~~	0.50	0.75~~1.00~~
15	1.40~~75~~	2.50~~3.00~~	0.45~~50~~	0.75~~1.00~~
16	1.30~~50~~	2.00~~3.00~~	0.40~~50~~	0.75~~1.00~~
17	1.20~~50~~	1.80~~2.75~~	0.35~~50~~	0.25~~50~~
18	1.10~~50~~	1.60~~2.75~~	0.30~~50~~	0.25~~50~~
19	1.00~~50~~	1.40~~2.75~~	0.25~~50~~	0.25~~50~~
20 or more	.90~~1.25~~	1.20~~1.75~~	0.20~~5~~	0.25~~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.~~

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Proportion of Total Termination Assumed to Withdraw Contributions

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	Election for Withdrawal of Contributions (%)			
Years of Service	General ALL Other	General OCTA	Safety Law and Fire	Safety Probation
0-4	35.0	40.0	20.0	25.0
5-9	30.0	35.0	20.0	25.0
10-14	25.0	30.0	20.0	25.0
15 or more	20.0	20.0	20.0	25.0

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Appendix A

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]
48	0.00	0.00	0.00	0.00~~10.0~~	0.00~~0~~	0.00	0.0	0.0
49	30.00	25.00	0.00	12.00	0.00	2.00	0.00	0.00
50	2.50	~~2.5~~2.00	3.00	~~16.0~~18.00	11.50	~~6.0~~5.00	8.00	~~3.0~~3.25
51	2.00~~0~~0	~~2.5~~2.00	3.00	~~16.0~~18.00	12.00	~~8.0~~7.00	10.00	~~3.0~~3.25
52	~~2.0~~2.50	~~2.5~~2.00	3.00	~~16.0~~17.00	12.70~~12.7~~	~~9.0~~9.50	~~11.0~~11.00	~~4.0~~4.25
53	2.5~~0~~0	~~2.5~~2.75	3.00	~~16.0~~17.00	17.90	10.50~~0~~	12.00	4.25~~0~~
54	5.5~~0~~0	2.75~~5~~	3.00	22.0	18.80	15.00~~16.0~~	14.00	7.00~~6.0~~
55	15.00	3.25~~0~~	4.00	22.0	30.70	18~~9~~.00	24.00	12.00~~1.0~~
56	10.00	3.50	5.00	20.00	20.00	20.00	23.00	12.00~~1.0~~
57	10.00	5.50~~0~~	6.00	20.00	20.00	21.00~~3.0~~	27.00	18.00~~7.0~~
58	11.00~~10.0~~	5.50~~0~~	7.00	20.00	25.00	28.00~~30.0~~	27.00	18.00~~20.0~~
59	11.00	6.5~~7.0~~	9.00	26.00	30.00	28.00~~30.0~~	36.00	18.00~~20.0~~
60	12.00	9.25~~0~~	11.00	3~~4~~5.00	40.00~~100.0~~	30.00~~45.0~~	40.00~~100.0~~	20.00
61	12.00	12.00~~0.0~~	13.00	3~~4~~5.00	40.00~~100.0~~	30.00~~45.0~~	40.00~~100.0~~	20.00
62	14~~5~~.00	16.00~~0~~	15.00	40~~5~~.00	40.00~~100.0~~	35.00~~45.0~~	40.00~~100.0~~	25.00
63	16.00	16.00	15.00	40~~5~~.00	40.00~~100.0~~	35.00~~45.0~~	40.00~~100.0~~	40.00~~50.0~~
64	16.00	18.00	20.00	40~~5~~.00	40.00~~100.0~~	35.00~~45.0~~	40.00~~100.0~~	40.00~~50.0~~
65	22~~1~~.00	22.00~~21.0~~	20.00	100.00	100.00	100.00	40.00~~100.0~~	100.00

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Appendix A

	RATE (%)							
66	22.00	28.00~~26.0~~	24.00	100.00	100.00	100.00	100.00	100.00
67	23.00	24.00~~21.0~~	24.00	100.00	100.00	100.00	100.00	100.00
68	23.00	24.00~~21.0~~	24.00	100.00	100.00	100.00	100.00	100.00
69	23.00	20.00~~21.0~~	24.00	100.00	100.00	100.00	100.00	100.00
70	25~~40~~.00	20.00~~30.0~~	50.00~~100.0~~	100.00	100.00	100.00	100.00	100.00
71	25~~40~~.00	25.00~~30.0~~	50.00~~100.0~~	100.00	100.00	100.00	100.00	100.00
72	25~~40~~.00	25.00~~30.0~~	50.00~~100.0~~	100.00	100.00	100.00	100.00	100.00
73	25~~40~~.00	25.00~~30.0~~	50.00~~100.0~~	100.00	100.00	100.00	100.00	100.00
74	25.00~~40.0~~	25.00~~30.0~~	50.00~~100.0~~	100.00	100.00	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(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.

	RATE (%)			
Age	**CalPEPRA 2.5% @ 67 General Formula**	**CalPEPRA Safety – Probation Formula (1)**	**CalPEPRA Safety – Law Formula (1)**	**CalPEPRA Safety – Fire Formula (1)**
50	0.00	2.50	11.00	6.00~~.5~~
51	0.00	2.50	11.50	7.00~~8.0~~
52	4.00	3.00	12.00	9.00
53	1.50	3.00	16.00	10.00
54	1.50	5.50	17.00	11.50~~12.0~~
55	2.50	10.00	28.00	21.00
56	3.50	10.00	18.00	20.00
57	5.50	15.00	17.50	22.00
58	7.50	20.00	22.00	25.00
59	7.50	20.00	26.00	30.00~~31.5~~
60	7.50	40.00~~100.0~~	40.00~~100.0~~	40.00~~100.0~~
61	7.50	40.00~~100.0~~	40.00~~100.0~~	40.00~~100.0~~
62	14.00	40.00~~100.0~~	40.00~~100.0~~	40.00~~100.0~~
63	14.00	40.00~~100.0~~	40.00~~100.0~~	40.00~~100.0~~
64	14.00	40.00~~100.0~~	40.00~~100.0~~	40.00~~100.0~~
65	18.00	100.00	100.00	100.00
66	22.00	100.00	100.00	100.00
67	23.00	100.00	100.00	100.00
68	23.00	100.00	100.00	100.00
69	23.00	100.00	100.00	100.00
70	25.00~~30.0~~	100.00	100.00	100.00
71	25.00~~30.0~~	100.00	100.00	100.00
72	25.00~~30.0~~	100.00	100.00	100.00
73	25.00~~30.0~~	100.00	100.00	100.00

	RATE (%)			
74	25.00~~30.0~~	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00

(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 deferred vested members, the following assumptions are made:

General Retirement Age: 59~~8~~

Safety Retirement Age: 53

Assume that 15~~20~~% of future General and 25~~30~~% of future Safety deferred vested members are reciprocal. For reciprocals, assume 4.25~~25~~% compensation increases for General and ~~5.00~~4.75% 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, use an average salary. For those members without salary information that have less than 3 years of service or for those members without service information, assume 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.

Form of Payment

All members are assumed to elect the unmodified option at retirement.

Percent married:	75% of male members and 55~~0~~% 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.
~~Employee Contribution Crediting Rate:~~	~~5.00%, compounded semi-annually.~~

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Additional Cashout Assumptions For 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: 3.00~~50~~% / 2.80% Safety – Probation: 3.80% / 3.4~~2.8~~0% Safety – Law: 5.20% / 4.6~~7~~0% Safety – Fire: 2.00% / 1.70~~2.00~~% The additional cashout assumptions ~~annual payoffs assumptions~~ are the same for service and disability retirements.
Additional Cashout Assumptions For CalPEPRA Formulas	None

	Final One Year Salary	Final Three Year Salary
General Members	3.00~~50~~%	2.80%
Safety – Probation	3.80%	3.4~~2.8~~0%
Safety – Law	5.20%	4.6~~7~~0%
Safety – Fire	2.00%	1.70~~2.00~~%

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Actuarial Funding Policy

Purpose and Background

The Orange County Employees Retirement System (OCERS) is charged with administering defined benefit plans for its members. Administering the system includes establishing systematic funding of current and future benefit payments for members of OCERS. In doing so, the Board of Retirement engages the services of an actuary to assist in establishing contributions that will fully fund the System's liabilities, and that, as a percentage of payroll, will remain as level as possible for each generation of active members. In order for the actuary to perform the requested services, the Board must approve specific funding objectives, methods, and assumptions to be used in the actuarial valuation for the purpose of funding member benefits.

Policy Objectives

- Achieve long-term full funding of the cost of benefits provided by OCERS;
- Seek reasonable and equitable allocation of the cost of benefits over time;
- Minimize volatility of the plan sponsor's contribution to the extent reasonably possible, consistent with other policy goals; and,
- Support the general public policy goals of accountability and transparency by being clear as to both intent and effect, allowing for an assessment of how and when plan sponsors will meet the funding requirements of the plan.

Definitions

1. **Actuarial Accrued Liability (AAL)** – The portion of the present value of projected benefits that is attributed to past service by the actuarial funding method.

2. **Actuarial Funding Method** – A process used to allocate present value of projected benefits among past and future periods of service.

3. **Actuarial Gains and Losses** – changes in unfunded actuarial accrued liability or surplus due to actual experience different from what is assumed in the actuarial valuation. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in unfunded actuarial accrued liability, or "actuarial gain" as of the next valuation.

4. **Actuarial Surplus** – the positive difference, if any, between the Valuation Value of Assets and the Actuarial Accrued Liability

5. **Actuarial Value of Assets (AVA)** – The market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.

6. **Entry Age Method** - An actuarial cost method designed to fund a member's total plan benefit over the course of his or her career. This method is designed to produce stable employer and employee contributions in amounts that increase at the same rate as the members' payroll (i.e., level % of payroll).

7. **Market Value of Assets (MVA)** – the fair value of assets of the plan as reported under generally accepted accounting principles.

8. **Normal Cost** – The portion of the present value of projected benefits that is attributed to current service by the actuarial funding method.

9. **Unfunded Actuarial Accrued Liability (UAAL)** – the portion of the Actuarial Accrued Liability that is not currently covered by plan assets. It is calculated by subtracting the Valuation Value of Assets from the Actuarial Accrued Liability.

10. **Valuation Value of Assets (VVA)** –the value of assets used in the actuarial valuation to determine contribution rate requirements. It is equal to the Actuarial Value of Assets reduced by the value of any non-valuation reserves.

11. **Valuation Period** – The year for which the actuarial valuation is being performed, which is the calendar year preceding the December 31 actuarial valuation date.

Policy Guidelines

OCERS annual funding requirement is comprised of a payment of the Normal Cost and a payment on the Unfunded Actuarial Accrued Liability (UAAL). The Normal Cost and the amount of payment on UAAL are determined by the following three components of this funding policy

a. Actuarial Cost Method: the process used to allocate the total present value of future benefits to each year (Normal Cost), and all past years (Actuarial Accrued Liability);

b. Asset Smoothing Method: the process used that spreads the recognition of investment gains or losses over a period of time for the purposes of determining the Actuarial Value of Assets used in the actuarial valuation process; and

c. Amortization Policy: the decisions on how, in terms of duration and pattern, to reduce the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets (after adjustment for non-valuation reserves) in a systematic manner.

Actuarial Cost Method

The Entry Age cost method with Normal Cost developed as a level percentage of pay of shall be applied to each member's retirement benefit in determining the Normal Cost and the Actuarial Accrued Liability.

Asset Smoothing Method

The investment gains or losses of each Valuation Period, as a result of comparing the actual return on the Market Value of Assets at the end of the period with what the expected return on the Market Value of Assets would have been if the assumed rate of return on assets was realized during the period, shall be recognized in a level amount over a fixed five (5) years in calculating the Actuarial Value of Assets.

Amortization Policy

a. The Unfunded Actuarial Accrued Liability, the difference between the Actuarial Accrued Liability and the Actuarial Value of Assets (after again adjustment for non-valuation reserves), shall be amortized over various periods of time, depending on how the unfunded liability arose;

b. he total Unfunded Actuarial Accrued Liability as of December 31, 2013 (which consists of the outstanding balance of the UAAL from the December 31, 2012 valuation and any new actuarial gains or losses from calendar year 2013) shall be amortized over twenty (20) years;

c. Actuarial Gains or Losses incurred in a single year shall be amortized over twenty (20) years;

d. Changes in actuarial assumptions and cost methods shall be amortized over twenty (20) years;

e. Plan amendments other than Early Retirement Incentives shall be amortized over fifteen (15) years;

f. Early Retirement Incentives shall be amortized over a period not to exceed five (5) years;

g. Unfunded Actuarial Accrued Liabilities shall be amortized in multiple layers by source over “closed” amortization periods;

h. Unfunded Actuarial Accrued Liabilities shall be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase;

i. If an overfunding or “surplus” exists (i.e., the adjusted Actuarial Value of Assets is greater than the Actuarial Accrued Liability) and the amount of such surplus is in excess of 20% of the AAL per Section 7522.52 of California Public Employee Pension Reform Act, such actuarial surplus in excess of 20% of the AAL and any subsequent surpluses will be amortized over an “open” amortization period of 30 years. Any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

Other Policy Considerations

a. In order to allow Plan Sponsors to more accurately budget for pension contributions and other practical considerations, the contribution rates determined in each actuarial valuation (as of December 31) will generally apply to the fiscal year beginning eighteen months after the Actuarial Valuation date. The UAAL contribution rates in the current actuarial valuation are adjusted to account for any shortfall or excess contributions as a result of the implementation lag;

b. Any change in contribution rate requirement that results from a plan amendment is generally implemented as of the effective date of the plan amendment or as soon as administratively feasible;

c. When calculating a retirement benefit amount under allowable optional benefit allowances per Government Code sections 31761-31764(known as Options 2, 3 and 4), the actuary shall include a cost of living assumption;

d. When calculating both employer and member contribution rates (basic and COLA portions) for Legacy members, the actuary shall include an assumption for the additional cash out of accumulated annual leave, sick leave or compensatory leave both earned and permitted to be cashed out during the final average measuring period, applied on a pooled basis (General, Safety-Probation, Safety-Law and Safety-Fire).

e. The actuarial assumptions adopted by the Board for use in the actuarial valuation affect only the timing of contributions; the ultimate contribution level is determined by the benefits and the expense actually paid offset by actual investment returns. To the extent that actual experience deviates from the assumptions, experience gains and losses will occur. These gains (or losses) then serve to reduce (or increase) the future contribution requirements.

Actuarial assumptions are generally grouped into two major categories:

- Demographic assumptions – including rates of withdrawal, service retirement, disability retirement, mortality etc.
- Economic assumptions – including price inflation, wage inflation, investment return, salary increase, etc.

The actuarial assumptions represent the Board's best estimate of anticipated experience under OCERS and are intended to be long term in nature. Therefore, in developing the actuarial assumptions, the Board considers not only past experience but also trends, external forces and future expectations. The Board will review all assumptions triennially. The current assumptions used by the actuary are listed in Appendix A.

Policy Review

The Board of Retirement will review this policy every three years or more frequently if recommended by the actuary to ensure that it remains relevant and appropriate.

Policy History

The Board adopted this policy on January 21, 2014. This policy was revised on December 15, 2014.

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 — 04/18/2018

Steve Delaney
Secretary of the Board

Date

The following are current assumptions used by the actuary when producing the annual actuarial valuation for OCERS.

Economic Assumptions

INFLATION

2.75% per annum, retiree cost of living adjustments are subject to a 3.0% maximum change per year.

INVESTMENT RETURN

7.00% per annum net of investment and administrative expenses.

EMPLOYEE CONTRIBUTION CREDITING RATE:

5.00%, compounded semi-annually.

INDIVIDUAL SALARY INCREASES:

- Inflationary increases: 2.75%
- Real "across the board" increases: 0.50%
- Merit and promotion increases:

YEARS OF SERVICE	GENERAL	SAFETY
Less than 1	9.00%	14.00%
1	7.25	10.00
2	6.00	7.75
3	5.00	6.00
4	4.00	5.50
5	3.50	4.50
6	2.50	3.75
7	2.25	3.25
8	1.75	2.50
9	1.50	2.25
10	1.50	1.75
11	1.50	1.75
12	1.50	1.75
13	1.50	1.75
14	1.50	1.75

YEARS OF SERVICE	GENERAL	SAFETY
15	1.50	1.75
16	1.00	1.50
17	1.00	1.50
18	1.00	1.50
19	1.00	1.50
20 & over	1.00	1.50

Note: in addition to the individual salary increase assumptions, also assume an average two hours of additional salary annually for leap-year salary adjustment.

ACTIVE MEMBER PAYROLL INCREASES

3.25% per annum

Non-Economic Assumptions

Post-Retirement Mortality Rates:

HEALTHY

- For General Members and all Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally with the two-dimensional MP-2016 scale.
- For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back four years, projected generationally with the two-dimensional MP-2016 scale.

DISABLED

- For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward five years, projected generationally with the two-dimensional MP-2016 scale.
- For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table projected generationally with the two-dimensional MP-2016 scale.

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: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females) projected 20 years with the two-dimensionalmortality improvement scale MP-2016 scale, weighted 40% male and 60% female.
- For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back four years (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016 scale, , weighted 80% male and 20% female.

PRE-RETIREMENT MORTALITY RATES

For General and Safety Members; Headcount-Weighted RP-2014 Employee Mortality Table times 80% projected generationally with the two-dimensional MP-2016 projection scale.

Termination Rates Before Retirement

	RATE (%) MORTALITY[i]			
	General		Safety	
Age	**Male**	**Female**	**Male**	**Female**
25	0.05	0.02	0.05	0.02
30	0.05	0.02	0.05	0.02
35	0.05	0.03	0.05	0.03
40	0.06	0.04	0.06	0.04
45	0.10	0.07	0.10	0.07
50	0.17	0.11	0.17	0.11
55	0.27	0.17	0.27	0.17
60	0.45	0.24	0.45	0.24
65	0.78	0.36	0.78	0.36
70	1.27	0.59	1.27	0.59

Note that generational projections beyong the base year (2014) are not reflected in the above mortality rates.

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

	RATE (%)DISABILITY			
Age	**General All Other**[(1)]	**General OCTA**[(2)]	**Safety-Law & Fire** [(3)]	**Safety-Probation** [(4)]
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.01	0.03
30	0.01	0.03	0.04	0.08
35	0.03	0.20	0.14	0.10
40	0.08	0.36	0.23	0.13

	RATE (%)DISABILITY			
45	0.13	0.43	0.40	0.21
50	0.18	0.48	1.10	0.28
55	0.23	0.65	2.40	0.42
60	0.31	1.26	4.80	0.20

(1) 60% of General All Other disabilities are assumed to be service connected disabilities. The other 40% 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.
(4) 75% of Safety Probation disabilities are assumed to be service connected disabilities. The other 25% are assumed to be non-service connected.

	RATE (%) TERMINATION			
Years of Service	**General All Other** (1)	**General OCTA** (1)	**Safety- Law & Fire** (2)	**Safety – Probation** (2)
0	11.0	17.50	4.50	14.00
1	7.50	11.00	2.50	13.00
2	6.50	9.00	2.00	10.00
3	5.0	8.50	1.50	5.00
4	4.50	7.50	1.25	4.00
5	4.25	7.00	1.00	3.50
6	3.75	4.50	0.95	2.75
7	3.25	4.00	0.90	2.00
8	3.00	3.50	0.85	2.00
9	2.75	3.00	0.80	1.75
10	2.50	3.00	0.75	1.75
11	2.00	3.00	0.65	1.50
12	2.00	3.00	0.60	1.25
13	1.75	2.50	0.55	1.00
14	1.50	2.50	0.50	0.75
15	1.40	2.50	0.45	0.75

	RATE (%) TERMINATION			
16	1.30	2.00	0.40	0.75
17	1.20	1.80	0.35	0.25
18	1.10	1.60	0.30	0.25
19	1.00	1.40	0.25	0.25
20 or more	.90	1.20	0.20	0.25

Proportion of Total Termination Assumed to Withdraw Contributions

	Election for Withdrawal of Contributions (%)			
Years of Service	General ALL Other	General OCTA	Safety Law and Fire	Safety Probation
0-4	35.0	40.0	20.0	25.0
5-9	30.0	35.0	20.0	25.0
10-14	25.0	30.0	20.0	25.0
15 or more	20.0	20.0	20.0	25.0

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)
48	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0
49	30.00	25.00	0.00	12.00	0.00	2.00	0.00	0.00
50	2.50	2.00	3.00	18.00	11.50	5.00	8.00	3.25
51	2.00	2.00	3.00	18.00	12.00	7.00	10.00	3.25
52	2.50	2.00	3.00	17.00	12.70	9.50	11.00	4.25
53	2.50	2.75	3.00	17.00	17.90	10.50	12.00	4.25
54	5.50	2.75	3.00	22.0	18.80	15.00	14.00	7.00
55	15.00	3.25	4.00	22.0	30.70	18.00	24.00	12.00
56	10.00	3.50	5.00	20.00	20.00	20.00	23.00	12.00
57	10.00	5.50	6.00	20.00	20.00	21.00	27.00	18.00
58	11.00	5.50	7.00	20.00	25.00	28.00	27.00	18.00
59	11.00	6.5	9.00	26.00	30.00	28.00	36.00	18.00
60	12.00	9.25	11.00	35.00	40.00	30.00	40.00	20.00
61	12.00	12.00	13.00	35.00	40.00	30.00	40.00	20.00
62	14.00	16.00	15.00	40.00	40.00	35.00	40.00	25.00
63	16.00	16.00	15.00	40.00	40.00	35.00	40.00	40.00
64	16.00	18.00	20.00	40.00	40.00	35.00	40.00	40.00
65	22.00	22.00	20.00	100.00	100.00	100.00	40.00	100.00
66	22.00	28.00	24.00	100.00	100.00	100.00	100.00	100.00
67	23.00	24.00	24.00	100.00	100.00	100.00	100.00	100.00
68	23.00	24.00	24.00	100.00	100.00	100.00	100.00	100.00
69	23.00	20.00	24.00	100.00	100.00	100.00	100.00	100.00
70	25.00	20.00	50.00	100.00	100.00	100.00	100.00	100.00
71	25.00	25.00	50.00	100.00	100.00	100.00	100.00	100.00

	RATE (%)							
72	25.00	25.00	50.00	100.00	100.00	100.00	100.00	100.00
73	25.00	25.00	50.00	100.00	100.00	100.00	100.00	100.00
74	25.00	25.00	50.00	100.00	100.00	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(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.

	RATE (%)			
Age	**CalPEPRA 2.5% @ 67 General Formula**	**CalPEPRA Safety – Probation Formula (1)**	**CalPEPRA Safety – Law Formula (1)**	**CalPEPRA Safety – Fire Formula (1)**
50	0.00	2.50	11.00	6.00
51	0.00	2.50	11.50	7.00
52	4.00	3.00	12.00	9.00
53	1.50	3.00	16.00	10.00
54	1.50	5.50	17.00	11.50
55	2.50	10.00	28.00	21.00
56	3.50	10.00	18.00	20.00
57	5.50	15.00	17.50	22.00
58	7.50	20.00	22.00	25.00
59	7.50	20.00	26.00	30.00
60	7.50	40.00	40.00	40.00
61	7.50	40.00	40.00	40.00
62	14.00	40.00	40.00	40.00
63	14.00	40.00	40.00	40.00
64	14.00	40.00	40.00	40.00
65	18.00	100.00	100.00	100.00
66	22.00	100.00	100.00	100.00
67	23.00	100.00	100.00	100.00

	RATE (%)			
68	23.00	100.00	100.00	100.00
69	23.00	100.00	100.00	100.00
70	25.00	100.00	100.00	100.00
71	25.00	100.00	100.00	100.00
72	25.00	100.00	100.00	100.00
73	25.00	100.00	100.00	100.00
74	25.00	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00

(1) 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 deferred vested members, the following assumptions are made:

General Retirement Age: 59

Safety Retirement Age: 53

Assume that 15% of future General and 25% of future Safety deferred vested members are reciprocal. For reciprocals, assume 4.25% compensation increases for General and 4.75% 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, use an average salary. For those members without salary information that have less than 3 years of service or for those members without service information, assume 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.
Form of Payment	All members are assumed to elect the unmodified option at retirement.
Percent married:	75% of male members and 55% 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.

Additional Cashout Assumptions For 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	3.00%	2.80%
Safety – Probation	3.80%	3.40%
Safety – Law	5.20%	4.60%
Safety – Fire	2.00%	1.70%

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

Additional Cashout Assumptions For CalPEPRA Formulas	None

Segal Consulting

Orange County Employees Retirement System

December 31, 2017 Actuarial Valuation

May 14, 2018

Prepared by: *Paul Angelo, Andy Yeung and Molly Calcagno*

Segal Consulting

San Francisco

5534048v1

Attachment 2

Agenda

- Changes Since Last Valuation
- Plans of Benefit Offered at OCERS
- Summary of Employer Contribution Rates
- Calculation of Net Market, Actuarial and Valuation Value of Assets
- Unfunded Actuarial Accrued Liability and Funded Ratio
- Summary of Active and Retired Membership
- Contribution Rates for Employers and Members

Changes Since Last Valuation

- December 31, 2016 Triennial Experience Study
  - Non-Economic assumptions adopted for December 31, 2017 valuation
    - Retirement rates:
      - » Overall, slight adjustments to retirement rates
    - Termination rates:
      - » Decrease in termination rates
      - » Decrease assumption for proportion of members electing a refund
    - Disability incidence:
      - » Increase assumption for all except General OCTA members
    - Mortality Rates:
      - » Use SOA tables (RP-2014 Headcount-Weighted) as a starting point ("base table"), projected generationally using the two-dimensional Scale MP-2016, with age adjustments
      - » Each future year has its own mortality table that reflects the forecasted improvements at every age
      - » Administrative tables still use static projection for member contribution rates, optional benefits and reserve factors

Changes Since Last Valuation

- December 31, 2016 Triennial Experience Study (Continued)
  - Economic assumptions adopted for December 31, 2017 valuation
    - Price inflation (CPI):
      - Reduce from 3.00% to 2.75%
    - Investment return:
      - Reduce price inflation component from 3.00% to 2.75%
      - Reduce nominal return assumption from 7.25% to 7.00%
    - Salary increases:
      - Reduce price inflation component from 3.00% to 2.75%
      - Maintain the "Across the Board" real wage growth component at 0.50%
      - Total wage inflation and payroll growth reduced from 3.50% to 3.25%
      - Merit and promotional: Slight increases overall for General and slight decreases overall for Safety
- The Board approved a three-year phase-in of the UAAL employer cost impact due to assumption changes
  - Employer contribution rates as of December 31, 2017 have been adjusted to reflect only 1/3 of the UAAL cost impact

Changes Since Last Valuation (Continued)

- OCFA contributed an additional $32.1 million to pay off part of their UAAL
- Children and Families Commission (Rate Group #2) and Law Library (Rate Group #12) paid off their Unfunded Actuarial Accrued Liability (UAAL) as of December 31, 2016
  - New UAAL layer established to reflect the impact of assumption changes in December 31, 2017 valuation
- Withdrawing employer policy applied to Cypress Parks and Recreation District
  - District's share of UAAL is $0.7 million as of December 31, 2016
- For Rate Group #3, asset transfer of $24.0 million required from O.C. Sanitation District UAAL Deferred Account to Valuation Assets to offset UAAL increase for assumption changes

Plans of Benefit Offered at OCERS

General Plans

- Plan A (§31676.12) – 2% @ 57
- Plan B (§31676.1) – 1.67% @ 57.5
- Plans G and H (§31676.18) – 2.5% @ 55
- Plans I and J (§31676.19) – 2.7% @ 55
- Plans M and N (§31676.16) – 2% @ 55
- Plans O and P (§31676.01) – 1.62% @ 65
- Plan S (§31676.12) – 2% @ 57
- Plan T (§31676.01) – 1.62% @ 65 CalPEPRA
- Plan U (§7522.20(a)) – 2.5% @ 67 CalPEPRA
- Plan W (§31676.01) – 1.62% @ 65 CalPEPRA

Safety Plans

- Plans E and F (§31664.1) – 3% @ 50
- Plans Q and R (§31664.2) – 3% @ 55
- Plan V (§7522.25(d)) – 2.7% @ 57 CalPEPRA

Employer Contributions

- The sum of:
  - Normal Cost
  - Level percentage of payroll amortization of:
    - Balance of December 31, 2012 UAAL combined and re-amortized over 20 years as of December 31, 2013
    - New UAAL established after December 31, 2012 amortized over separate 20-year periods
  - Adjustment to reflect 18-month delay between date of valuation and date of rate implementation
- Expressed as percent of pay

Employer Contribution Rates – Fiscal Years Beginning July 1, 2018 and July 1, 2019 (% of payroll)

	FY 19-20[1]	FY 18-19[2]	Difference
Rate Group #1			
General Plans A, B and U (non-OCTA, non-OCSD)[3],[4]	18.27%	16.37%	1.90%
Rate Group #2			
General Plans I, J, O, P, S, T, U and W (County et al.)	35.33%	33.34%[5]	1.99%
Rate Group #3			
General Plans B, G, H and U (OCSD)	12.46%	11.42%	1.04%
Rate Group #5			
General Plans A, B and U (OCTA)	27.96%	25.47%	2.49%
Rate Group #9			
General Plans M, N and U (TCA)	24.51%	23.53%	0.98%
Rate Group #10			
General Plans I, J, M, N and U (OCFA)	28.96%	30.40%	-1.44%
Rate Group #11			
General Plans M and N, future service, and U (Cemetery)	12.48%	10.81%	1.67%
Rate Group #12			
General Plans G, H and U (Law Library)	13.85%	13.14%[6]	0.71%
Rate Group #6			
Safety Plans E, F and V (Probation)	52.32%	47.81%	4.51%
Rate Group #7			
Safety Plans E, F, Q, R and V (Law Enforcement)	62.38%	62.39%	-0.01%
Rate Group #8			
Safety Plans E, F, Q, R and V (Fire Authority)	46.24%	47.31%	-1.07%
Aggregate Total	37.97%	36.43%	1.54%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.
(2) The FY 18-19 composite rates for some Rate Groups have changed due to payroll shifting among plans within the Rate Groups.
(3) Liability associated with Vector Control has been excluded in determining rates for RG #1.
(4) These rates are before adjustments to reflect the UAAL paid by Cypress Parks and Recreation, U.C.I. and DOE.
(5) These rates are after adjustment to the contribution rates for FY 18-19 for additional UAAL contributions made by Children and Families Commission during calendar year 2017.
(6) These rates are after adjustment to the contribution rates for FY 18-19 for additional UAAL contributions made during calendar year 2017.

Reconciliation of Aggregate Employer Contributions ($000)

	Contribution Rate	Estimated Amount[1]
1. Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	36.45%	$660,428
2. Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	-0.02%	-$323
3. Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	36.43%	$660,105
4. Actuarial (gain)/loss items:		
a) Effect of investment gain (after smoothing)	-0.10%	-$1,812
b) Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	-0.14%	-$2,536
c) Effect of difference in actual versus expected contributions	0.15%	$2,718
d) Effect of difference in actual versus expected COLA increases	-0.38%	-$6,885
e) Effect of difference in actual versus expected salary increases	-0.26%	-$4,711
f) Effect of growth in total payroll greater than expected	-0.01%	-$181
g) Effect of other experience (gain)/loss	-0.06%[2]	-$1,050
h) Effect of changes in actuarial assumptions	4.81%[3],[4]	$87,151
i) Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-2.47%	-$44,804
j) Subtotal	1.54%	$27,890
5. Aggregate Recommended Contribution Rate as of December 31, 2017	37.97%	$687,995

(1) Based on December 31, 2017 projected compensation of $1,811,877,000.

(2) Net of an adjustment of 0.35% to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.

(3) Includes the effect of $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account.

(4) Normal Cost increased by 1.10% and UAAL cost increased by 3.71%.

Reconciliation of Employer Contributions for General Members

		RG #1[1]	RG #2	RG #3	RG #5	RG #9	RG #10	RG #11	RG #12
1.	Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	16.37%[2]	33.36%	11.42%	25.47%	23.53%	30.40%	10.81%	22.88%
2.	Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	0.00%	-0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	-9.74%
3.	Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	16.37%[2]	33.34%	11.42%	25.47%	23.53%	30.40%	10.81%	13.14%
4.	Actuarial (gain)/loss items:								
a)	Effect of investment gain (after smoothing)	-0.06%	-0.09%	N/A[3]	-0.08%	-0.06%	-0.08%	N/A[4]	N/A[4]
b)	Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	-0.31%	0.00%	N/A[3]	0.00%	0.00%	-3.92%	N/A[4]	N/A[4]
c)	Effect of difference in actual versus expected contributions	-0.10%	0.16%	N/A[3]	0.22%	-0.11%	-0.01%	N/A[4]	N/A[4]
d)	Effect of difference in actual versus expected COLA increases	-0.18%	-0.33%	N/A[3]	-0.24%	-0.17%	-0.28%	N/A[4]	N/A[4]
e)	Effect of difference in actual versus expected salary increases	0.24%	-0.28%	N/A[3]	-0.38%	0.27%	-0.21%	N/A[4]	N/A[4]
f)	Effect of growth in total payroll (greater)/less than expected	0.21%	0.15%	N/A[3]	0.71%	-0.40%	0.73%	N/A[4]	N/A[4]
g)	Effect of other experience (gain)/loss[5]	0.06%	0.11%	0.06%	-0.30%	-0.03%	0.28%	0.11%	-0.10%
h)	Effect of changes in actuarial assumptions[6]	3.73%	4.65%	0.98%[7]	4.88%	2.73%	3.93%	2.52%	0.81%
i)	Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-1.69%	-2.38%	0.00%	-2.32%	-1.25%	-1.88%	-0.96%	0.00%
j)	Subtotal	1.90%	1.99%	1.04%	2.49%	0.98%	-1.44%	1.67%	0.71%
6.	Aggregate Recommended Contribution Rate as of December 31, 2017	18.27%[8]	35.33%	12.46%	27.96%	24.51%	28.96%	12.48%	13.85%

[1] Liability associated with Vector Control has been excluded in determining rates for RG #1.

[2] As of December 31, 2016, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for U.C.I. and DOE is 13.30%.

[3] N/A because RG #3 has paid off their UAAL after reflecting asset transfer from O.C. Sanitation District UAAL Deferred Account 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.

[4] N/A because RG #11 and RG #12 have become overfunded and, under CalPEPRA and before reflecting the effect of changes in actuarial assumptions, 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.

[5] Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.

[6] Actual effect of changes in actuarial assumptions on December 31, 2017 valuation is somewhat higher than the effect that we estimated in the experience study which was based on the December 31, 2016 valuation. This is primarily due to the effect of lower mortality rates based on the generational tables applied at two different measurement dates.

[7] Includes the effect of $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account to eliminate entire UAAL rate impact.

[8] As of December 31, 2017, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for Cypress Parks and Recreation, U.C.I. and DOE is 14.99% after adjustment for phase-in.

Reconciliation of Employer Contributions for Safety Members

	RG #6	RG #7	RG #8
1. Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	47.81%	62.39%	47.31%
2. Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	0.00%	0.00%	0.00%
3. Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	47.81%	62.39%	47.31%
4. Actuarial (gain)/loss items:			
a) Effect of investment gain (after smoothing)	-0.11%	-0.14%	-0.13%
b) Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	0.00%	0.00%	-1.02%
c) Effect of difference in actual versus expected contributions	0.53%	0.18%	0.04%
d) Effect of difference in actual versus expected COLA increases	-0.31%	-0.73%	-0.49%
e) Effect of difference in actual versus expected salary increases	-0.71%	0.02%	-0.90%
f) Effect of growth in total payroll (greater)/less than expected	1.29%	-1.58%	-0.06%
g) Effect of other experience (gain)/loss[1],[2]	-0.26%	-0.76%	-0.24%
h) Effect of changes in actuarial assumptions[3],[4]	8.34%	6.71%	4.02%
i) Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-4.26%	-3.71%	-2.29%
j) Subtotal	4.51%	-0.01%	-1.07%
6. Aggregate Recommended Contribution Rate as of December 31, 2017	52.32%	62.38%	46.24%

(1) Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.

(2) Effect of other experience (gain)/loss for RG #7 includes: -0.33% due to changes in demographics and -0.31% adjustment due to 18-month delay.

(3) Actual effect of changes in actuarial assumptions on December 31, 2017 valuation is somewhat higher than the effect that we estimated in the experience study which was based on the December 31, 2016 valuation. This is primarily due to the effect of lower mortality rates based on the generational tables applied at two different measurement dates.

(4) Effect of changes in actuarial assumptions for RG #6 is greater than RGs #7 and #8 primarily due to the higher cashout assumption adopted for Rate Group #6 and lower cashout assumptions adopted for RGs #7 and #8. Also, for RG #8, we are no longer assuming 100% retirement after a member's benefit reaches 100% of Final Average Compensation.

Reconciliation of Aggregate Member Contributions ($000)

	Contribution Rate	Estimated Amount[1]
Aggregate Recommended Contribution Rate as of December 31, 2016	11.97%	$216,914
Effect of changes in demographics	-0.11%	-$1,977
Effect of changes in actuarial assumptions	0.77%	13,951
Subtotal	0.66%	$11,974
Aggregate Recommended Contribution Rate as of December 31, 2017	12.63%	$228,888

[1] Based on December 31, 2017 projected compensation of $1,811,877,000.

Calculation of Net Market, Actuarial and Valuation Value of Assets

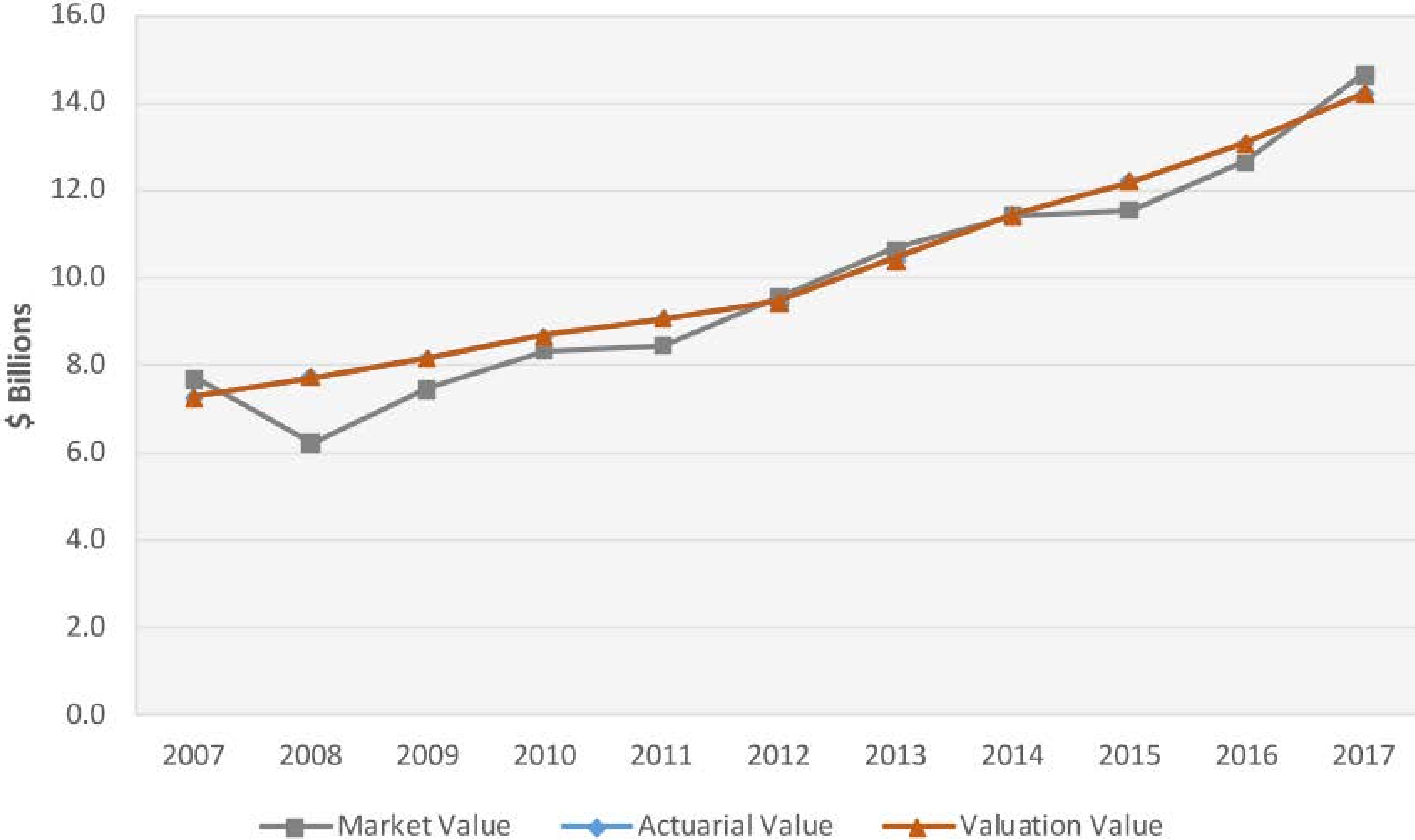
- Net market value of Pension Fund is total market value reduced by:
  - Obligations under securities lending program including securities purchased
  - Unearned contributions, retiree payroll payable and other liabilities
  - County investment account and remaining O.C. Sanitation District UAAL Deferred Account of $14.9 million after asset transfer of $24.0 million
  - Amount held in Health Care Funds
- Actuarial value is a "smoothed" value to dampen short-term effect of market volatility
  - Based on spreading any difference between actual market return and expected market return (7.25% starting in 2013) over 5 years
  - Return for 2017 on market value was 14.79%
  - Return for 2017 on actuarial value was 7.44%
  - As of December 31, 2017, there were $455.4 million in net deferred investment gains or about 3% of the net market value
    - Prior year: $445.6 million in net deferred investment losses or about 4% of net market value
- Valuation value is actuarial value reduced by non-valuation reserves:
  - Medicare medical insurance reserve (only $86,000 as of December 31, 2017)

Market, Actuarial and Valuation Value of Assets ($000)

Valuation Date	Net Market Value of Assets[1][2]	Actuarial Value of Assets[2]	Valuation Value of Assets
December 31, 2007	$7,719,690	$7,292,205	$7,288,900
December 31, 2008	$6,248,558	$7,750,751	$7,748,380
December 31, 2009	$7,464,761	$8,155,654	$8,154,687
December 31, 2010	$8,357,835	$8,673,473	$8,672,592
December 31, 2011	$8,465,593	$9,064,580	$9,064,355
December 31, 2012	$9,566,874	$9,469,423	$9,469,208
December 31, 2013	$10,679,507	$10,417,340	$10,417,125
December 31, 2014	$11,428,223	$11,450,001	$11,449,911
December 31, 2015	$11,548,529	$12,228,098	$12,228,009
December 31, 2016	$12,657,418	$13,103,066	$13,102,978
December 31, 2017	$14,652,607	$14,197,211	$14,197,125

(1) Net of amounts in County investment account, prepaid employer contributions and O.C. Sanitation District UAAL Deferred Account (after transfer), if any.
(2) Includes amounts in unclaimed member reserve and Medicare medical insurance reserve.

Market Value of Assets, Actuarial Value of Assets and Valuation Value of Assets as of December 31, 2007 - 2017

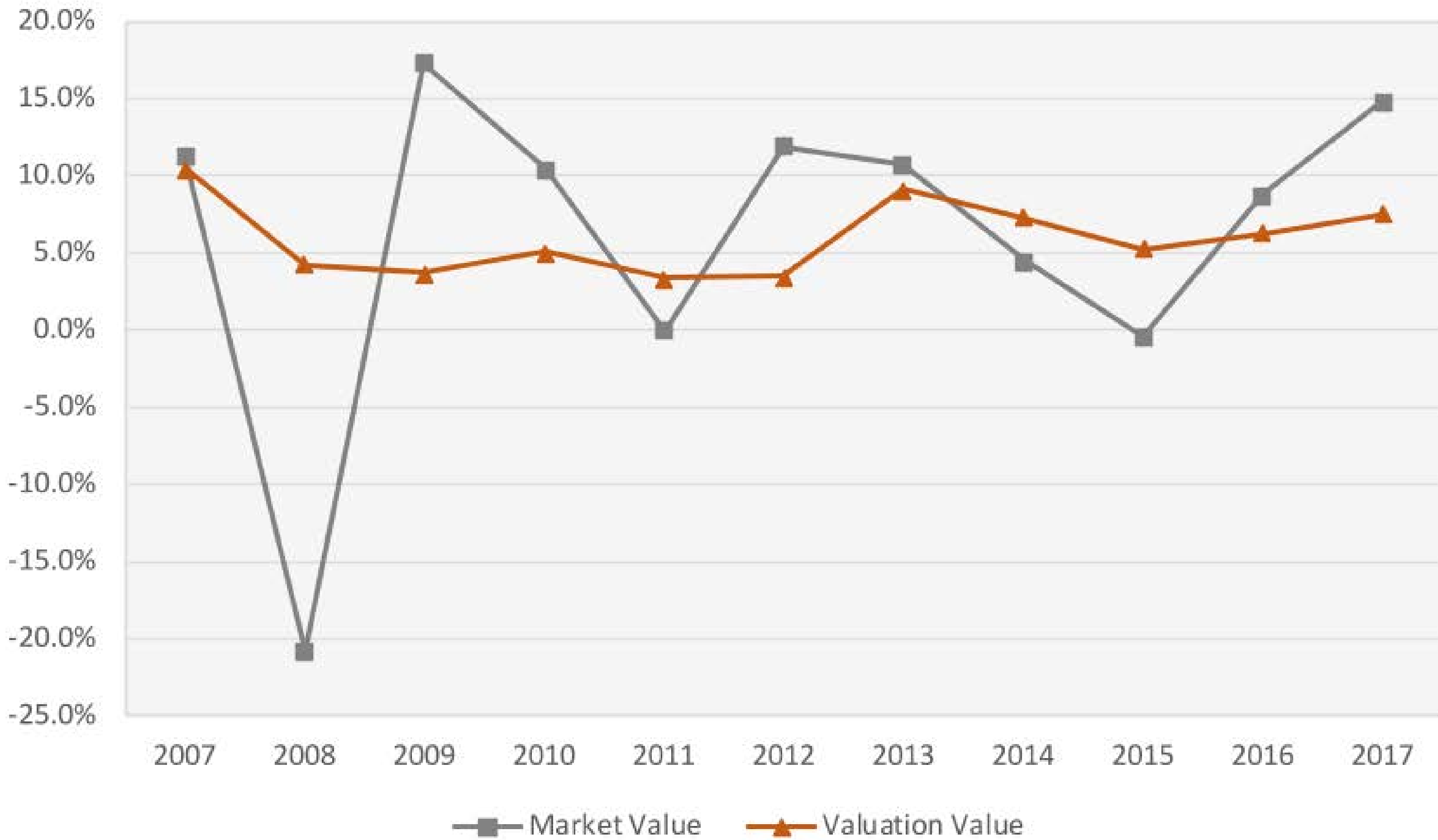


History of Return on Assets

	Market	Valuation	Expected
December 31, 2008	-20.76%	4.25%	7.75%
December 31, 2009	17.32%	3.62%	7.75%
December 31, 2010	10.47%	5.02%	7.75%
December 31, 2011	0.04%	3.29%	7.75%
December 31, 2012	11.92%	3.49%	7.75%
December 31, 2013	10.73%	9.11%	7.25%
December 31, 2014	4.52%	7.34%	7.25%
December 31, 2015	-0.45%	5.26%	7.25%
December 31, 2016	8.72%	6.33%	7.25%
December 31, 2017	14.79%	7.44%	7.25%[1]
Annualized 5-Year Average	7.53%	7.09%	
Annualized 10-Year Average	5.16%	5.50%	

[1] 7.00% is the expected return starting with 2018 Plan year.

Market Value and Valuation Value Rates of Return for Years Ended December 31, 2007 - 2017



Unfunded Actuarial Accrued Liability ($000) and Funded Ratio

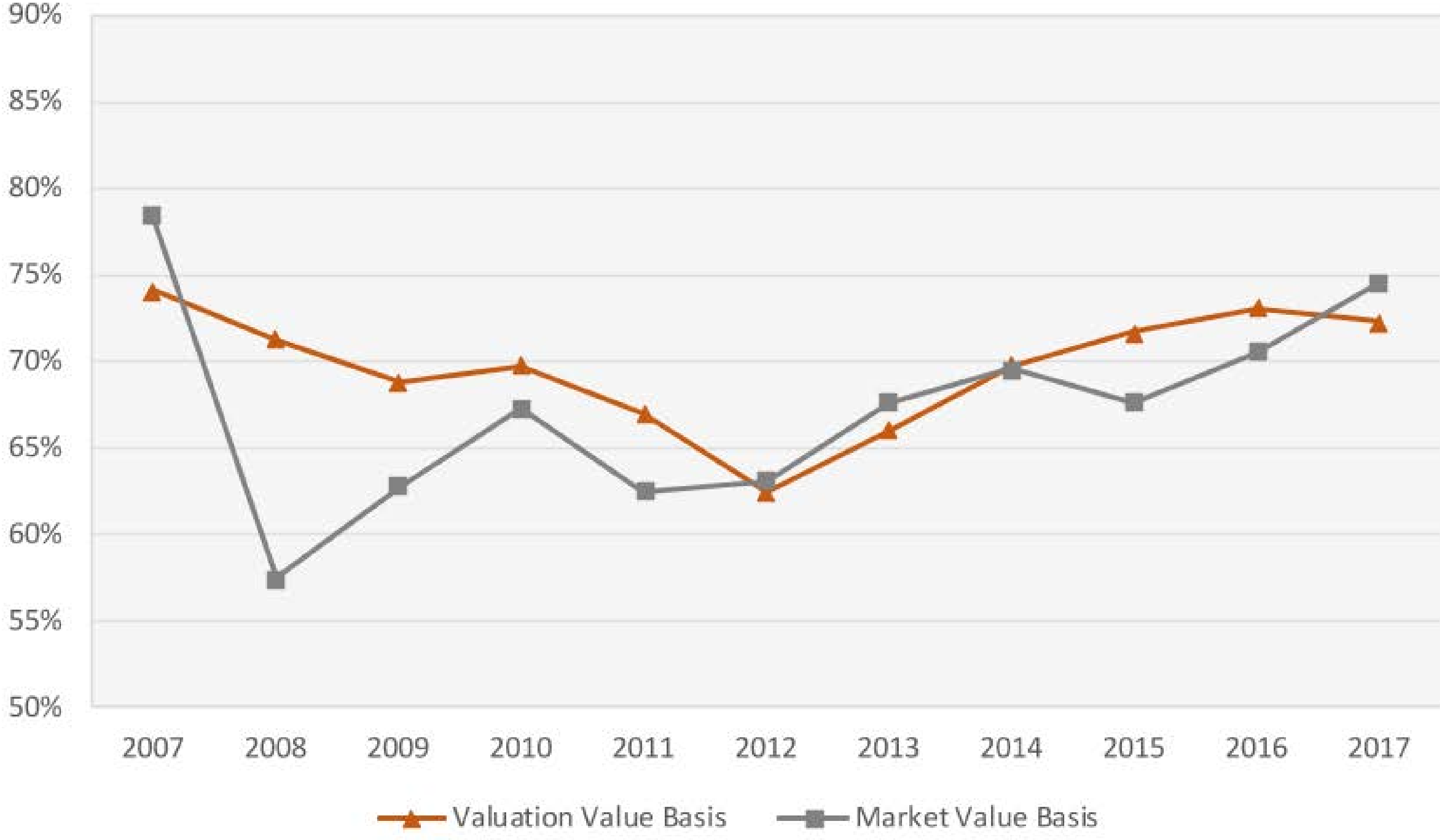
	December 31, 2017	December 31, 2016
Actuarial Accrued Liability	$19,635,427	$17,933,461
Valuation Value of Assets[1]	14,197,125	13,102,978
Unfunded Actuarial Accrued Liability	5,438,302	4,830,483
Percent Funded on Valuation Value	72.30%	73.06%
Market Value of Assets[1]	$14,652,521	$12,657,330
Percent Funded on Market Value	74.62%	70.58%

[1] Excludes County investment account, prepaid employer contributions, Medicare medical insurance reserve and O.C. Sanitation District UAAL Deferred Account (after transfer), if any.

Unfunded Actuarial Accrued Liability ($000) and Funded Ratio

Valuation Date	UAAL	Valuation Value Funded Ratio	Market Value Funded Ratio
December 31, 2007	$2,549,786	74.1%	78.4%
December 31, 2008	$3,112,335	71.3%	57.5%
December 31, 2009	$3,703,891	68.8%	62.9%
December 31, 2010	$3,753,281	69.8%	67.3%
December 31, 2011	$4,458,623	67.0%	62.6%
December 31, 2012	$5,675,680	62.5%	63.2%
December 31, 2013	$5,367,917	66.0%	67.7%
December 31, 2014	$4,963,213	69.8%	69.6%
December 31, 2015	$4,822,348	71.7%	67.7%
December 31, 2016	$4,830,483	73.1%	70.6%
December 31, 2017	$5,438,302	72.3%	74.6%

Market Value and Valuation Value Funded Ratios for Years Ended December 31, 2007 - 2017



Changes in UAAL since December 31, 2016 Valuation

December 31, 2016 valuation

• Total UAAL	$4,830 million

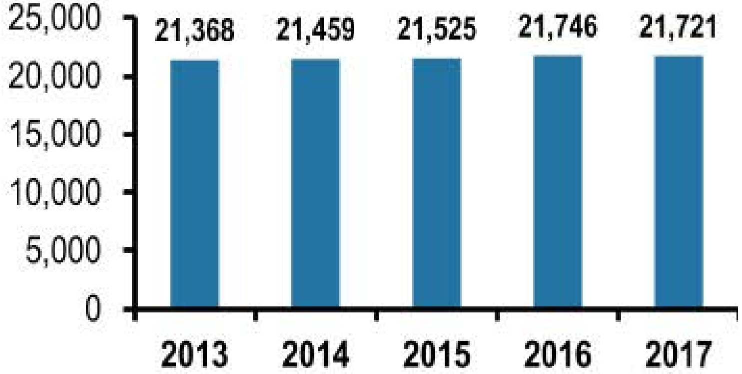
Changes during calendar year 2017

• Interest minus expected payments to UAAL	-$50 million
• Difference in actual versus expected contributions	$38 million
• Additional UAAL payments from Children & Families Commission, Law Library and OCFA	-$40 million
• Investment gain (on smoothed value of assets)	-$24 million
• Difference in actual versus expected salary increases	-$66 million
• Difference in actual versus expected COLA increases	-$96 million
• Transfer from OCSD UAAL Deferred Account	-$24 million
• Other losses	$17 million
• Changes in actuarial assumptions	$853 million
• Subtotal	$608 million

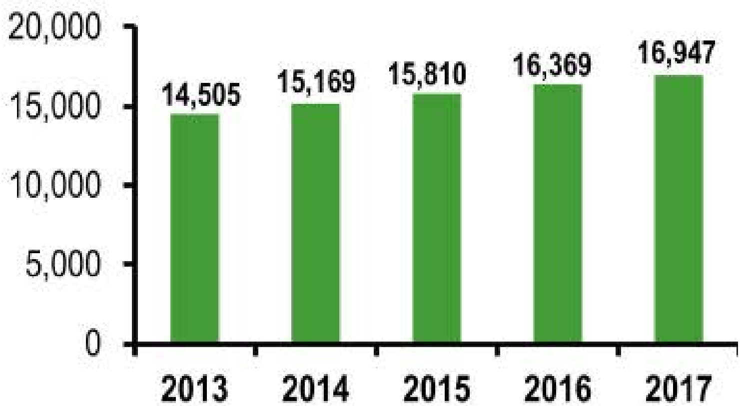
December 31, 2017 valuation

• Total UAAL	$5,438 million

Entire OCERS Membership Demographics (as of December 31)



	2017	2016
Active Members	21,721	21,746
• Average Age	45.3	45.4
• Average Service	12.9	12.9
• Average Compensation	$83,416	$80,927



	2017	2016
Retired Members and Beneficiaries	16,947	16,369
• Average Age	69.8	69.7
• Average Annual Benefit	$44,939	$43,641
Terminated Vested Members	5,803	5,370

Questions and Discussion

Summary of Active Membership

Rate Group #1 General – non-OCTA, non-OCSD	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	1,555	1,640	-5.2%
Average age	43.1	42.0	1.1
Average service	9.8	8.9	0.9
Projected total compensation	$83,675,611	$83,218,758	0.5%
Projected average compensation	$53,811	$50,743	6.0%

Summary of Active Membership

Rate Group #2 General Plans I, J, O, P, S, T, U and W	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	14,097	14,075	0.2%
Average age	45.7	45.9	-0.2
Average service	12.9	13.0	-0.1
Projected total compensation	$1,093,044,342	$1,064,427,772	2.7%
Projected average compensation	$77,537	$75,625	2.5%

Summary of Active Membership

Rate Group #3 General – OCSD	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	592	578	2.4%
Average age	48.0	48.0	0.0
Average service	12.7	13.2	-0.5
Projected total compensation	$69,138,987	$65,370,761	5.8%
Projected average compensation	$116,789	$113,098	3.3%

Summary of Active Membership

Rate Group #5 General – OCTA	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	1,313	1,372	-4.3%
Average age	50.4	50.0	0.4
Average service	13.8	13.3	0.5
Projected total compensation	$102,731,350	$104,111,593	-1.3%
Projected average compensation	$78,242	$75,883	3.1%

Summary of Active Membership

Rate Group #9 General – TCA	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	64	68	-5.9%
Average age	49.2	49.3	-0.1
Average service	8.4	10.0	-1.6
Projected total compensation	$7,317,008	$6,835,138	7.0%
Projected average compensation	$114,328	$100,517	13.7%

Summary of Active Membership

Rate Group #10 General – OCFA	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	281	302	-7.0%
Average age	45.5	44.1	1.4
Average service[1]	10.8	10.0	0.8
Projected total compensation	$26,691,539	$26,836,736	-0.5%
Projected average compensation	$94,988	$88,863	6.9%

[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.

Summary of Active Membership

Rate Group #11 General – Cemetery District	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	25	22	13.6%
Average age	49.3	48.1	1.2
Average service	15.7	16.8	-1.1
Projected total compensation	$1,637,025	$1,397,215	17.2%
Projected average compensation	$65,481	$63,510	3.1%

Summary of Active Membership

Rate Group #12 General – Law Library	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	14	15	-6.7%
Average age	57.5	57.1	0.4
Average service	17.5	16.5	1.0
Projected total compensation	$1,119,773	$1,164,792	-3.9%
Projected average compensation	$79,984	$77,653	3.0%

Summary of Active Membership

Rate Group #6 Safety – Probation Officers	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	763	806	-5.3%
Average age	44.6	43.8	0.8
Average service	17.1	16.2	0.9
Projected total compensation	$64,062,602	$65,135,279	-1.6%
Projected average compensation	$83,961	$80,813	3.9%

Summary of Active Membership

Rate Group #7 Safety – Law Enforcement	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	2,010	1,907	5.4%
Average age	41.0	41.7	-0.7
Average service	13.4	14.1	-0.7
Projected total compensation	$236,373,080	$219,505,701	7.7%
Projected average compensation	$117,599	$115,105	2.2%

Summary of Active Membership

Rate Group #8 Safety – Fire Authority	Year Ended December 31		Change from Prior Year
	2017	2016	
Number	1,007	961	4.8%
Average age	43.3	44.1	-0.8
Average service[1]	13.9	14.3	-0.4
Projected total compensation	$126,088,193	$121,829,553	3.5%
Projected average compensation	$125,212	$126,774	-1.2%

[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.

Summary of Retired Members and Beneficiaries

Rate Group #1 General – non-OCTA, non-OCSD	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	627	617	1.6%
Average monthly benefit[1]	$2,645	$2,626	0.7%
Disabled members			
Number in pay status	37	38	-2.6%
Average monthly benefit[1]	$2,337	$2,290	2.1%
Beneficiaries			
Number in pay status	96	93	3.2%
Average monthly benefit[1]	$1,360	$1,324	2.7%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #2 General Plans I, J, O, P, S, T, U and W	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	9,067	8,772	3.4%
Average monthly benefit[1]	$3,628	$3,513	3.3%
Disabled members			
Number in pay status	582	569	2.3%
Average monthly benefit[1]	$2,477	$2,438	1.6%
Beneficiaries			
Number in pay status	1,433	1,397	2.6%
Average monthly benefit[1]	$1,829	$1,765	3.6%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #3 General – OCSD	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	372	355	4.8%
Average monthly benefit[1]	$5,321	$5,075	4.8%
Disabled members			
Number in pay status	15	13	15.4%
Average monthly benefit[1]	$3,633	$3,259	11.5%
Beneficiaries			
Number in pay status	72	71	1.4%
Average monthly benefit[1]	$2,282	$2,154	5.9%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #5 General – OCTA	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	903	863	4.6%
Average monthly benefit[1]	$2,463	$2,402	2.5%
Disabled members			
Number in pay status	258	256	0.8%
Average monthly benefit[1]	$2,304	$2,254	2.2%
Beneficiaries			
Number in pay status	167	166	0.6%
Average monthly benefit[1]	$1,349	$1,294	4.3%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #9 General – TCA	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	44	40	10.0%
Average monthly benefit[1]	$2,944	$2,768	6.4%
Disabled members			
Number in pay status	0	0	N/A
Average monthly benefit[1]	N/A	N/A	N/A
Beneficiaries			
Number in pay status	4	3	33.3%
Average monthly benefit[1]	$451	$427	5.6%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #10 General – OCFA	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	157	141	11.3%
Average monthly benefit[1]	$4,424	$4,446	-0.5%
Disabled members			
Number in pay status	10	10	0.0%
Average monthly benefit[1]	$2,522	$2,473	2.0%
Beneficiaries			
Number in pay status	12	10	20.0%
Average monthly benefit[1]	$1,273	$1,419	-10.3%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #11 General – Cemetery District	Year Ended December 31 2017	 2016	Change from Prior Year
Retired members			
Number in pay status	5	5	0.0%
Average monthly benefit[1]	$2,455	$2,406	2.0%
Disabled members			
Number in pay status	0	0	N/A
Average monthly benefit[1]	N/A	N/A	N/A
Beneficiaries			
Number in pay status	4	4	0.0%
Average monthly benefit[1]	$1,598	$1,567	2.0%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #12 General – Law Library	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	11	10	10.0%
Average monthly benefit[1]	$2,200	$2,165	1.6%
Disabled members			
Number in pay status	0	0	N/A
Average monthly benefit[1]	N/A	N/A	N/A
Beneficiaries			
Number in pay status	0	0	N/A
Average monthly benefit[1]	N/A	N/A	N/A

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #6 Safety – Probation Officers	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	306	283	8.1%
Average monthly benefit[1]	$5,444	$5,429	0.3%
Disabled members			
Number in pay status	29	28	3.6%
Average monthly benefit[1]	$2,872	$2,821	1.8%
Beneficiaries			
Number in pay status	25	26	-3.8%
Average monthly benefit[1]	$2,473	$2,387	3.6%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #7 Safety – Law Enforcement	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	1,333	1,283	3.9%
Average monthly benefit[1]	$6,876	$6,756	1.8%
Disabled members			
Number in pay status	351	350	0.3%
Average monthly benefit[1]	$4,977	$4,817	3.3%
Beneficiaries			
Number in pay status	351	320	9.7%
Average monthly benefit[1]	$3,011	$2,886	4.3%

[1] Excludes monthly benefits payable from the STAR COLA.

Summary of Retired Members and Beneficiaries

Rate Group #8 Safety – Fire Authority	Year Ended December 31		Change from Prior Year
	2017	2016	
Retired members			
Number in pay status	414	397	4.3%
Average monthly benefit[1]	$7,976	$7,788	2.4%
Disabled members			
Number in pay status	164	155	5.8%
Average monthly benefit[1]	$6,628	$6,602	0.4%
Beneficiaries			
Number in pay status	97	93	4.3%
Average monthly benefit[1]	$3,206	$3,025	6.0%

[1] Excludes monthly benefits payable from the STAR COLA.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #1	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plans A and B		
Normal Cost	10.73%	9.51%
UAAL	7.89%[2]	7.25%[3]
Total	18.62%	16.76%
Plan U		
Normal Cost	9.93%	8.63%
UAAL	7.89%[2]	7.25%[3]
Total	17.82%	15.88%
Rate Group 1 combined		
Normal Cost	10.38%	9.12%
UAAL	7.89%[2]	7.25%[3]
Total	18.27%	16.37%

[1] These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

[2] For FY 19-20, the net UAAL contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for Cypress Parks and Recreation, U.C.I. and DOE is 4.61%.

[3] For FY 18-19, the net UAAL contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for U.C.I. and DOE is 4.18%.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #1 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plans A and B		
TIER 1		
Entry Age: 30	6.72%	6.13%
Entry Age: 35	7.28%	6.70%
Entry Age: 40	7.92%	7.34%
TIER 2		
Entry Age: 30	9.04%	8.28%
Entry Age: 35	9.80%	9.03%
Entry Age: 40	10.65%	9.89%
Plan U		
Entry Age: 30	9.34%	8.16%
Entry Age: 35	10.11%	8.90%
Entry Age: 40	10.96%	9.72%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #2	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plans I and J (non-Children & Families)		
Normal Cost	14.39%	13.19%
UAAL[2]	22.67%	21.72%
Total	37.06%	34.91%
Plans I and J (Children & Families)		
Normal Cost	14.39%	13.19%
UAAL	1.04%	0.00%[3]
Total	15.43%	13.19%
Plans O and P		
Normal Cost	6.21%	5.53%
UAAL[2]	22.67%	21.72%
Total	28.88%	27.25%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

(2) Before adjustments for future service benefit improvements.

(3) These rates are after adjustment to the contribution rates for FY 18-19 for additional UAAL contributions made during calendar year 2017.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #2 (Continued)	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plan S		
Normal Cost	11.51%	10.35%
UAAL	22.67%	21.72%
Total	34.18%	32.07%
Plan T		
Normal Cost	7.11%	6.58%
UAAL[2]	22.67%	21.72%
Total	29.78%	28.30%
Plan U (non-Children & Families)		
Normal Cost	8.78%	8.28%
UAAL[2]	22.67%	21.72%
Total	31.45%	30.00%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

(2) Before adjustments for future service benefit improvements.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #2 (Continued)	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plan U (Children & Families)		
Normal Cost	8.78%	8.28%
UAAL	1.04%	0.00%[2]
Total	9.82%	8.28%
Plan W [3]		
Normal Cost	8.56%	6.68%
UAAL	22.67%	21.72%
Total	31.23%	28.40%
Rate Group 2 combined		
Normal Cost	12.68%	11.64%
UAAL	22.65%	21.70%
Total	35.33%	33.34%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

(2) These rates are after adjustment to the contribution rates for FY 18-19 for additional UAAL contributions made during calendar year 2017.

(3) No active members were reported for Plan W in the December 31, 2016 valuation. An entry age of 35, based on hypothetical demographic profile in our letter dated October 8, 2015 was used to estimate the Normal Cost rate. However, based on 1 employee reported in the December 31, 2017 valuation, the entry age was 57.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #2 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plans I and J		
TIER 1		
Entry Age: 30	13.16%	12.35%
Entry Age: 35	14.31%	13.53%
Entry Age: 40	15.52%	14.78%
TIER 2		
Entry Age: 30	12.58%	11.76%
Entry Age: 35	13.67%	12.87%
Entry Age: 40	14.75%	13.98%
Plan P		
TIER 2		
Entry Age: 30	8.29%	7.62%
Entry Age: 35	8.98%	8.32%
Entry Age: 40	9.76%	9.10%
Plan S		
TIER 2		
Entry Age: 30	10.80%	9.94%
Entry Age: 35	11.70%	10.85%
Entry Age: 40	12.72%	11.87%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #2 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plan T		
Entry Age: 30	6.50%	5.94%
Entry Age: 35	7.05%	6.48%
Entry Age: 40	7.67%	7.10%
Plan U		
Entry Age: 30	8.34%	7.59%
Entry Age: 35	9.03%	8.29%
Entry Age: 40	9.78%	9.05%
Plan W		
Entry Age: 30	6.12%	6.00%
Entry Age: 35	6.64%	6.55%
Entry Age: 40	7.22%	7.18%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #3	Employer Rate	
	FY 19 – 20	FY 18 – 19
Plans G and H		
Normal Cost	13.30%	12.28%
UAAL	0.00%[(1)]	0.00%
Total	13.30%	12.28%
Plan B		
Normal Cost	11.25%	10.21%
UAAL	0.00%[(1)]	0.00%
Total	11.25%	10.21%
Plan U		
Normal Cost	10.37%	9.27%
UAAL	0.00%[(1)]	0.00%
Total	10.37%	9.27%
Rate Group 3 combined		
Normal Cost	12.46%	11.42%
UAAL	0.00%[(1)]	0.00%
Total	12.46%	11.42%

[(1)] These rates are after adjustment for $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #3 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plans G and H		
TIER 1		
Entry Age: 30	12.90%	12.16%
Entry Age: 35	14.03%	13.31%
Entry Age: 40	15.22%	14.54%
TIER 2		
Entry Age: 30	12.34%	11.57%
Entry Age: 35	13.41%	12.66%
Entry Age: 40	14.46%	13.76%
Plan B		
TIER 2		
Entry Age: 30	9.10%	8.34%
Entry Age: 35	9.86%	9.10%
Entry Age: 40	10.72%	9.96%
Plan U		
Entry Age: 30	8.83%	7.94%
Entry Age: 35	9.56%	8.66%
Entry Age: 40	10.36%	9.46%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #5	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plans A and B		
Normal Cost	12.10%	10.76%
UAAL	15.94%	14.76%
Total	28.04%	25.52%
Plan U		
Normal Cost	11.32%	10.25%
UAAL	15.94%	14.76%
Total	27.26%	25.01%
Rate Group 5 combined		
Normal Cost	12.02%	10.71%
UAAL	15.94%	14.76%
Total	27.96%	25.47%

[1] These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #5 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plans A and B		
TIER 1		
Entry Age: 30	6.83%	6.26%
Entry Age: 35	7.41%	6.84%
Entry Age: 40	8.05%	7.49%
TIER 2		
Entry Age: 30	9.15%	8.40%
Entry Age: 35	9.92%	9.17%
Entry Age: 40	10.78%	10.03%
Plan U		
Entry Age: 30	9.76%	8.74%
Entry Age: 35	10.57%	9.54%
Entry Age: 40	11.46%	10.42%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #9	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plans M and N		
Normal Cost	14.51%	13.30%
UAAL	11.49%	11.46%
Total	26.00%	24.76%
Plan U		
Normal Cost	11.02%	10.40%
UAAL	11.49%	11.46%
Total	22.51%	21.86%
Rate Group 9 combined		
Normal Cost	13.02%	12.07%
UAAL	11.49%	11.46%
Total	24.51%	23.53%

[1] These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #9 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plans M and N		
TIER 1		
Entry Age: 30	9.90%	9.23%
Entry Age: 35	10.73%	10.08%
Entry Age: 40	11.67%	11.04%
TIER 2		
Entry Age: 30	9.47%	8.79%
Entry Age: 35	10.26%	9.60%
Entry Age: 40	11.15%	10.50%
Plan U		
Entry Age: 30	8.75%	7.95%
Entry Age: 35	9.48%	8.68%
Entry Age: 40	10.27%	9.47%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #10	Employer Rate	
	FY 19 – 20(1)	FY 18 – 19
Plans I and J		
Normal Cost	14.72%	13.61%
UAAL	15.74%	18.35%
Total	30.46%	31.96%
Plans M and N		
Normal Cost	13.46%	12.64%
UAAL	15.74%	18.35%
Total	29.20%	30.99%
Plan U		
Normal Cost	10.41%	8.99%
UAAL	15.74%	18.35%
Total	26.15%	27.34%
Rate Group 10 combined		
Normal Cost	13.22%	12.05%
UAAL	15.74%	18.35%
Total	28.96%	30.40%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #10 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plans I and J		
TIER 1		
Entry Age: 30	13.15%	12.38%
Entry Age: 35	14.30%	13.55%
Entry Age: 40	15.51%	14.80%
TIER 2		
Entry Age: 30	12.58%	11.78%
Entry Age: 35	13.67%	12.89%
Entry Age: 40	14.74%	14.00%
Plan N		
TIER 2		
Entry Age: 30	9.59%	8.81%
Entry Age: 35	10.39%	9.62%
Entry Age: 40	11.29%	10.52%
Plan U		
Entry Age: 30	9.11%	8.05%
Entry Age: 35	9.87%	8.79%
Entry Age: 40	10.70%	9.59%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #11	Employer Rates	
	FY 19 – 20[1]	FY 18 – 19
Plans M and N		
Normal Cost	11.98%	11.09%
UAAL	0.48%	0.00%
Total	12.46%	11.09%
Plan U		
Normal Cost	12.03%	9.98%
UAAL	0.48%	0.00%
Total	12.51%	9.98%
Rate Group 11 combined		
Normal Cost	12.00%	10.81%
UAAL	0.48%	0.00%
Total	12.48%	10.81%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #11 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plans M and N		
TIER 1		
Entry Age: 30	9.90%	9.23%
Entry Age: 35	10.73%	10.08%
Entry Age: 40	11.67%	11.04%
TIER 2		
Entry Age: 30	9.47%	8.79%
Entry Age: 35	10.26%	9.60%
Entry Age: 40	11.15%	10.50%
Plan U		
Entry Age: 30	9.43%	8.26%
Entry Age: 35	10.21%	9.01%
Entry Age: 40	11.06%	9.84%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #12	Employer Rates	
	FY 19 – 20	FY 18 – 19
Plans G and H		
Normal Cost	14.11%	13.32%
UAAL	0.00%	0.00%[1]
Total	14.11%	13.32%
Plan U		
Normal Cost	9.36%[2]	7.59%
UAAL	0.00%	0.00%[1]
Total	9.36%	7.59%
Rate Group 12 combined		
Normal Cost	13.85%	13.14%
UAAL	0.00%	0.00%[1]
Total	13.85%	13.14%

[1] These rates are after adjustment to the contribution rates for FY 18-19 for additional UAAL contributions made during calendar year 2017.

[2] There is only one member in Plan U. The increase in the employer Normal Cost rate from last year to this year is primarily due to changes in actuarial assumptions. There is also an impact due to rounding of the Normal Cost to the nearest $1000 when we calculate that rate.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #12 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plan H		
TIER 2		
Entry Age: 30	12.34%	11.60%
Entry Age: 35	13.41%	12.70%
Entry Age: 40	14.47%	13.79%
Plan U		
Entry Age: 30	8.77%	7.81%
Entry Age: 35	9.50%	8.52%
Entry Age: 40	10.30%	9.30%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #6	Employer Rates	
	FY 19 – 20[(1)]	FY 18 – 19
Plans E and F		
Normal Cost	23.71%	21.87%
UAAL	28.74%	26.06%
Total	52.45%	47.93%
Plan V		
Normal Cost	16.63%	15.24%
UAAL	28.74%	26.06%
Total	45.37%	41.30%
Rate Group 6 combined		
Normal Cost	23.58%	21.75%
UAAL	28.74%	26.06%
Total	52.32%	47.81%

(1) These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #6 (Continued)	Sample Member Rates	
	FY 19 – 20	FY 18 – 19
Plans E and F		
TIER 1		
Entry Age: 30	13.28%	12.34%
Entry Age: 35	14.31%	13.30%
Entry Age: 40	15.55%	14.44%
TIER 2		
Entry Age: 30	18.04%	16.89%
Entry Age: 35	19.38%	18.14%
Entry Age: 40	20.80%	19.52%
Plan V		
Entry Age: 30	16.85%	15.60%
Entry Age: 35	18.06%	16.71%
Entry Age: 40	19.44%	17.99%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #7	Employer Rate	
	FY 19 – 20[1]	FY 18 – 19
Plans E and F		
Normal Cost	26.69%	25.63%
UAAL	37.36%	38.19%
Total	64.05%	63.82%
Plans Q and R		
Normal Cost	23.69%	23.00%
UAAL	37.36%	38.19%
Total	61.05%	61.19%
Plan V		
Normal Cost	19.29%	19.39%
UAAL	37.36%	38.19%
Total	56.65%	57.58%
Rate Group 7 combined		
Normal Cost	25.02%	24.20%
UAAL	37.36%	38.19%
Total	62.38%	62.39%

[1] These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #7 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plans E and F		
TIER 1		
Entry Age: 30	14.01%	13.32%
Entry Age: 35	15.10%	14.35%
Entry Age: 40	16.39%	15.58%
TIER 2		
Entry Age: 30	18.75%	17.94%
Entry Age: 35	20.13%	19.24%
Entry Age: 40	21.58%	20.66%
Plan R		
TIER 2		
Entry Age: 30	17.57%	16.82%
Entry Age: 35	18.86%	18.04%
Entry Age: 40	20.22%	19.36%
Plan V		
Entry Age: 30	18.66%	18.13%
Entry Age: 35	20.00%	19.43%
Entry Age: 40	21.53%	20.91%

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #8	Employer Rate	
	FY 19 – 20[1]	FY 18 – 19
Plans E and F		
Normal Cost	27.24%	26.84%
UAAL	20.80%	22.27%
Total	48.04%	49.11%
Plans Q and R		
Normal Cost	21.97%	21.86%
UAAL	20.80%	22.27%
Total	42.77%	44.13%
Plan V		
Normal Cost	15.44%	14.84%
UAAL	20.80%	22.27%
Total	36.24%	37.11%
Rate Group 8 combined		
Normal Cost	25.44%	25.04%
UAAL	20.80%	22.27%
Total	46.24%	47.31%

[1] These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.

Contribution Rates - Fiscal Years Beginning July 1, 2018 and July 1, 2019

Rate Group #8 (Continued)	Sample Member Rate	
	FY 19 – 20	FY 18 – 19
Plans E and F		
TIER 1		
Entry Age: 30	13.45%	12.74%
Entry Age: 35	14.50%	13.73%
Entry Age: 40	15.77%	14.92%
TIER 2		
Entry Age: 30	18.16%	17.35%
Entry Age: 35	19.52%	18.64%
Entry Age: 40	21.00%	20.07%
Plan R		
TIER 2		
Entry Age: 30	17.18%	16.50%
Entry Age: 35	18.47%	17.73%
Entry Age: 40	19.87%	19.09%
Plan V		
Entry Age: 30	15.77%	14.92%
Entry Age: 35	16.91%	15.99%
Entry Age: 40	18.20%	17.20%

ORANGE COUNTY OCERS EMPLOYEES RETIREMENT SYSTEM

Memorandum

DATE: June 07, 2018

TO: Members of the Board of Retirement

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

SUBJECT: **DECEMBER 31, 2017 ACTUARIAL VALUATION**

Recommendation

Approve the Actuarial Valuation and Review as of December 31, 2017 and adopt contribution rates for Fiscal Year 2019 – 2020 as recommended by Segal Consulting.

Background/Discussion

In May the OCERS Board of Retirement considered the preliminary results of the December 31, 2017 Actuarial Valuation in PowerPoint format with Mr. Paul Angelo from Segal Consulting.

On June 18, Mr. Andy Yeung will present the complete Actuarial Valuation and Review as of December 31, 2017 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 2019-2020.

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, 2017.

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, 2017

Segal Consulting

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.

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

June 5, 2018

*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, 2017. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2019/2020 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	Andy Yeung, ASA, EA, MAAA, FCA	Molly Calcagno, ASA, MAAA
Senior Vice President and Actuary	Vice President and Actuary	Assistant Actuary

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SECTION 1

VALUATION SUMMARY

SECTION 2

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Segal Consulting

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Orange County Employees Retirement System as of December 31, 2017. 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, 2017, provided by OCERS;
- The assets of the Plan as of December 31, 2017, provided by OCERS;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2017 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2017 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.

Ref: Pgs. 108 - 119

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 (and reaffirmed in 2018) 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 an early retirement incentive program 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, 2019 through June 30, 2020 (the rates will go into effect during the pay period which includes July 1, 2019).

Significant Issues in Valuation Year

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

- The results of this valuation reflect changes in the economic and non-economic assumptions as recommended by Segal and adopted by the Board for the December 31, 2017 valuation. These changes were documented in our Actuarial Experience Study dated August 14, 2017 and PowerPoint presentation dated October 16, 2017. They are also outlined in Section 4, Exhibit II of this report. These assumption changes resulted in an increase in the average employer rate of 4.81% of payroll and an increase in the aggregate member rate of 0.77% of payroll. Of the 4.81% increase in the employer rate, 1.10% is due to an increase in the Normal Cost and 3.71% is due to an increase in the UAAL rate.
- The Board approved a three-year phase-in of the UAAL employer cost impact due to assumption changes. The employer contribution rates as of December 31, 2017 have been adjusted to reflect only one-third of the UAAL cost impact.

Ref: Pgs. 36 and 140

Ref: Pgs. 67 and 144 - 145

- The ratio of the valuation value of assets to the actuarial accrued liabilities has decreased from 73.1% to 72.3%. 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 70.6% to 74.6%. The System's UAAL, measured using the valuation value of assets, has increased from $4,830.5 million as of December 31, 2016 to $5,438.3 million as of December 31, 2017. The increase in UAAL is mainly due to (a) changes in actuarial assumptions, (b) actual contributions less than expected, and (c) other actuarial losses, offset somewhat by (d) favorable investment return (after smoothing), (e) lower than expected salary increases, (f) lower than expected COLA increases, (g) a transfer from the O.C. Sanitation District UAAL Deferred Account, and (h) additional UAAL payments made by Children and Families Commission, Law Library and OCFA. 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 aggregate employer rate calculated in this valuation has increased from 36.43% of payroll to 37.97% of payroll. The 36.43% aggregate rate was calculated after adjusting for the additional UAAL contributions made by Children and Families Commission and Law Library during 2017. The December 31, 2016 contribution rate without adjustment for the additional UAAL contributions was 36.45% of payroll.

Ref: Pgs. 33 and 141 - 143

The reasons for the increase in the aggregate employer rate between the 2016 and 2017 valuations are (a) changes in actuarial assumptions and (b) actual contributions less than expected , offset somewhat by (c) the adjustment for the three-year phase-in of the UAAL cost impact due to assumption changes, (d) favorable investment return (after smoothing), (e) lower than expected salary increases, (f) growth in total payroll more than expected, (g) lower than expected COLA increases, (h) additional UAAL payments made by Children and Families Commission, Law Library and OCFA, and (i) other actuarial gains. 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

- OCERS has applied the withdrawing employer policy to Cypress Parks and Recreation. Similar to the presentation used in the December 31, 2016 valuation report, we have included a footnote to Chart 13 to show what the UAAL contribution rates would be for the other active employers in Rate Group #1 (i.e., the County and O.C. IHSS Public Authority) after adjustments to reflect the UAAL paid by U.C.I., Department of Education, and Cypress Parks and Recreation.

Ref: Pg. 108

- The UAAL amounts of $28.533 million, $2.848 million, and $0.653 million allocated to U.C.I., Department of Education, and Cypress Parks and Recreation, respectively, as of December 31, 2016 were provided in our December 31, 2016 valuation report and our letter dated October 23, 2017. The UAAL amounts for U.C.I., Department of Education, and Cypress Parks and Recreation have increased to $30.927 million, $3.046 million, and $0.853 million, respectively, as of December 31, 2017 primarily due to the changes in actuarial assumptions. 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. 34

- The aggregate member rate calculated in this valuation has increased from 11.97% of payroll to 12.63% of payroll due to the changes in actuarial assumptions. 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 **gain** as of December 31, 2017 is $455,396,000 (as compared to a net unrecognized **loss** of $445,648,000 as of December 31, 2016). This deferred investment gain 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, 2017 if the System does not earn the assumed rate of investment return of 7.00% per year (net of expenses) on a market value basis.

  The deferred gains of $455.4 million represent about 3.1% of the market value of assets (as compared to 3.5% in deferred losses the prior valuation). The potential impact associated with the deferred investment gains may be illustrated as follows:

  - If the deferred gains were recognized immediately in the valuation value of assets, the funded ratio would increase from 72.3% to 74.6%.

    For comparison purposes, if all the deferred losses in the December 31, 2016 valuation had been recognized immediately in the valuation value of assets, the funded ratio would have decreased from 73.1% to 70.6%.

- If the deferred gains were recognized immediately in the valuation value of assets, the aggregate employer rate would decrease from 37.97% of payroll to about 36.2% of payroll.

  For comparison purposes, if all the deferred losses in the December 31, 2016 valuation had been recognized immediately in the valuation value of assets, the aggregate employer rate would have increased from 36.56% of payroll to about 38.6% or payroll.

- The actuarial valuation report as of December 31, 2017 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.

- The balance in the O.C. Sanitation District UAAL Deferred Account as of December 31, 2017 before any transfer was $38.9 million. As of December 31, 2017, a transfer of $24.0 million was required from this account to pay off their UAAL. The balance in the O.C. Sanitation District UAAL Deferred Account as of December 31, 2017 after the transfer is $14.9 million.

- This report reflects the $1.7 million additional contributions made by Children and Families Commission to pay off their UAAL as of December 31, 2016. The $1.7 million[1] of additional contributions made by Children and Families Commission has been used to eliminate their UAAL rates starting 2018/2019. Note that because the UAAL used to determine the $1.7 million required to pay off their UAAL included the UAAL rate credit due to the future service only benefit improvement, Children and Families Commission will no longer receive any future service only benefit improvement rate credit.

  This report also reflects the $1.5 million additional contributions made by Law Library to pay off their UAAL. The $1.5 million[2] of additional contributions made by Law Library has been used to eliminate their UAAL rates starting 2018/2019.

  This report also reflects the $32.1 million additional contributions made by OCFA towards their UAAL. The $32.1 million[3] of additional contributions made by OCFA has been amortized as a level percent of pay over a period of twenty years effective on December 31, 2017 and used to reduce their UAAL rates for 2019/2020.

[1] *$1.7 million in additional contributions were made by Children and Families Commission on November 15, 2017. After adjusting with interest, those contributions have a value of $1.8 million as of December 31, 2017.*

[2] *$1.5 million in additional contributions were made by Law Library on December 15, 2017. After adjusting with interest, those contributions have a value of $1.5 million as of December 31, 2017.*

[3] *$32.1 million in additional contributions were made by OCFA continuously throughout the year. After adjusting with interest, those contributions have a value of $32.7 million as of December 31, 2017.*

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.

A general measure of the potential volatility in the level of required contributions from changes in the market value of assets and the actuarial accrued liability is provided in Section 2, Subsection F. A more specific review to illustrate the impact on contributions under various scenarios of one-year deviation in market return will be provided in a separate report later this year.

Summary of Key Valuation Results (Dollar Amounts in Thousands)

	December 31, 2017		December 31, 2016	
Aggregate Employer Contribution Rates:		Estimated		Estimated
General	Total Rate[(1)]	Annual Amount[(2)]	Total Rate[(3)]	Annual Amount[(2)]
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	18.27%	$15,287	16.37%	$13,701
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	35.33%	386,218	33.34%	364,426
Rate Group #3 – Plans B, G, H and U (OCSD)	12.46%	8,615	11.42%	7,896
Rate Group #5 – Plans A, B and U (OCTA)	27.96%	28,725	25.47%	26,164
Rate Group #9 – Plans M, N and U (TCA)	24.51%	1,794	23.53%	1,721
Rate Group #10 – Plans I, J, M, N and U (OCFA)	28.96%	7,731	30.40%	8,115
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	12.48%	205	10.81%	177
Rate Group #12 – Plans G, H, future service, and U (Law Library)	13.85%	155	13.14%	147
Safety				
Rate Group #6 – Plans E, F and V (Probation)	52.32%	$33,518	47.81%	$30,629
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	62.38%	147,440	62.39%	147,475
Rate Group #8 – Plans E, F, Q, R and V (OCFA)	46.24%	58,307	47.31%	59,654
All Groups Combined	37.97%	$687,995	36.43%	$660,105
Average Member Contribution Rates:		Estimated		Estimated
General	Total Rate	Annual Amount[(2)]	Total Rate[(4)]	Annual Amount[(2)]
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	9.61%	$8,041	8.66%	$7,246
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	11.56%	126,356	10.98%	120,016
Rate Group #3 – Plans B, G, H and U (OCSD)	12.13%	8,387	11.35%	7,847
Rate Group #5 – Plans A, B and U (OCTA)	10.10%	10,376	9.34%	9,595
Rate Group #9 – Plans M, N and U (TCA)	10.92%	799	10.21%	747
Rate Group #10 – Plans I, J, M, N and U (OCFA)	11.84%	3,160	10.97%	2,928
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	9.98%	163	9.15%	150
Rate Group #12 – Plans G, H, future service, and U (Law Library)	13.67%	153	12.77%	143
Safety				
Rate Group #6 – Plans E, F and V (Probation)	16.55%	$10,602	15.50%	$9,930
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	17.15%	40,538	16.46%	38,907
Rate Group #8 – Plans E, F, Q, R and V (OCFA)	16.11%	20,313	15.39%	19,405
All Groups Combined	12.63%	$228,888	11.97%	$216,914

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *Based on December 31, 2017 projected annual compensation.*

(3) *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, 2016 valuation to the corresponding projected payrolls reported as of December 31, 2017.*

(4) *Average rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2016 valuation to the System membership as of December 31, 2017.*

Summary of Key Valuation Results (Dollar Amounts in Thousands)

	December 31, 2017	December 31, 2016
Funded Status:		
Actuarial accrued liability (AAL)	$19,635,427	$17,933,461
Valuation value of assets (VVA)[1]	14,197,125	13,102,978
Market value of assets (MVA)[1],[2]	14,652,521	12,657,330
Funded percentage on a VVA basis	72.30%	73.06%
Funded percentage on a MVA basis	74.62%	70.58%
Unfunded Actuarial Accrued Liability on a VVA basis	$5,438,302	$4,830,483
Unfunded Actuarial Accrued Liability on a MVA basis	4,982,906	5,276,131
Key Assumptions:		
Interest rate	7.00%	7.25%
Inflation rate	2.75%	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 (after transfer) 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, 2017	December 31, 2016	Change
Active Members:			
Number of members	21,721	21,746	-0.1%
Average age	45.3	45.4	-0.1
Average service	12.9	12.9	0.0
Projected total compensation	$1,811,879,510	$1,759,833,297	3.0%
Average projected compensation	$83,416	$80,927	3.1%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	13,240	12,767	3.7%
Disability retired	1,446	1,419	1.9%
Beneficiaries	2,261	2,183	3.6%
Total	16,947	16,369	3.5%
Average age	69.8	69.7	0.1
Average monthly benefit(1)	$3,745	$3,637	3.0%
Vested Terminated Members:			
Number of vested terminated members(2)	5,803	5,370	8.1%
Average age	44.8	44.8	0.0
Summary of Financial Data (dollar amounts in thousands):			
Market value of assets(3)	$14,652,607	$12,657,418	15.8%
Return on market value of assets	14.79%	8.72%	N/A
Actuarial value of assets(3)	$14,197,211	$13,103,066	8.4%
Return on actuarial value of assets	7.44%	6.33%	N/A
Valuation value of assets(3)	$14,197,125	$13,102,978	8.4%
Return on valuation value of assets	7.44%	6.33%	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 $134,417,000 and $117,723,000 as of December 31, 2017 and December 31, 2016, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS), $244,552,000 and $222,524,000 as of December 31, 2017 and December 31, 2016, respectively, in the prepaid employer contributions account and $14,871,000 and $34,067,000 as of December 31, 2017 and December 31, 2016, respectively, in the O.C. Sanitation District UAAL Deferred Account (after transfer as of December 31, 2017).*

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: 2008 – 2017

Year Ended December 31	Active Members	Vested Terminated Members[1]	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
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
2017	21,721	5,803	16,947	1.05

(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 21,721 active members with an average age of 45.3, average years of service of 12.9 years, and average compensation of $83,416. The 21,746 active members in the prior valuation had an average age of 45.4, average service of 12.9 years, and average compensation of $80,927.

Inactive Members

In this year's valuation, there were 5,803 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 5,370 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, 2017

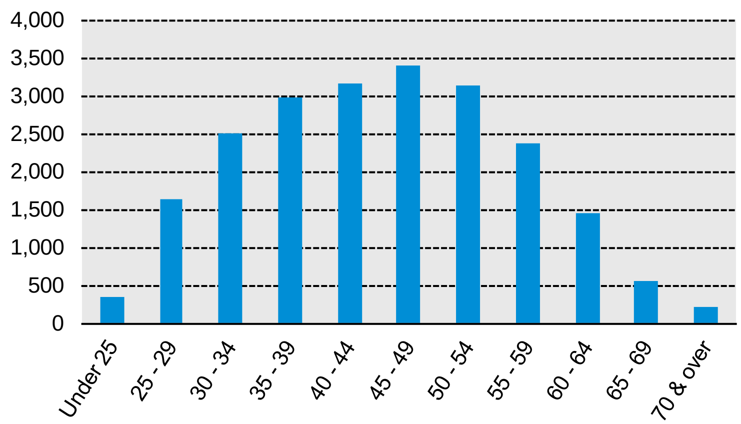
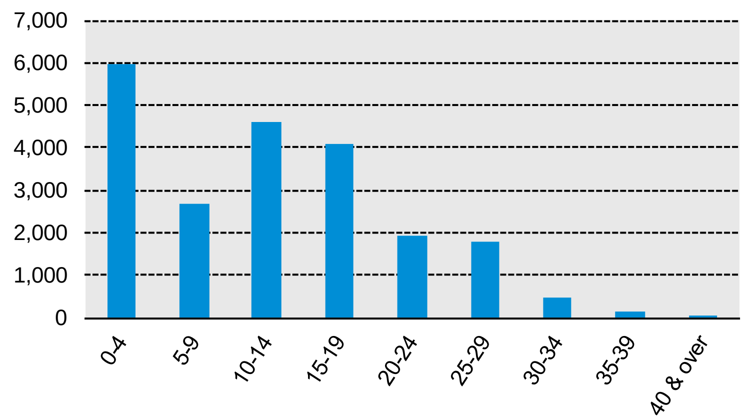


CHART 3

Distribution of Active Members by Years of Service as of December 31, 2017



Retired Members and Beneficiaries

As of December 31, 2017, 14,686 retired members and 2,261 beneficiaries were receiving total monthly benefits of $63,464,718. For comparison, in the previous valuation, there were 14,186 retired members and 2,183 beneficiaries receiving total monthly benefits of $59,529,794. 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, 2017

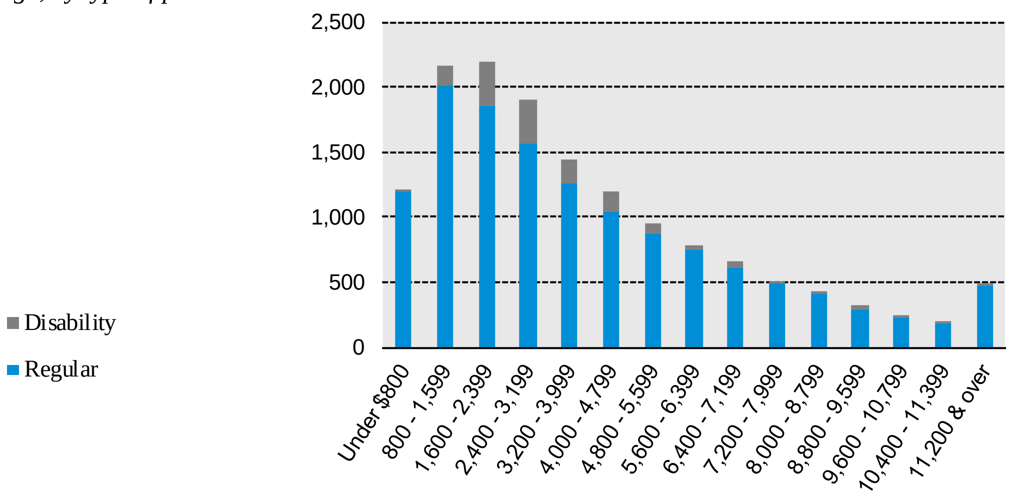
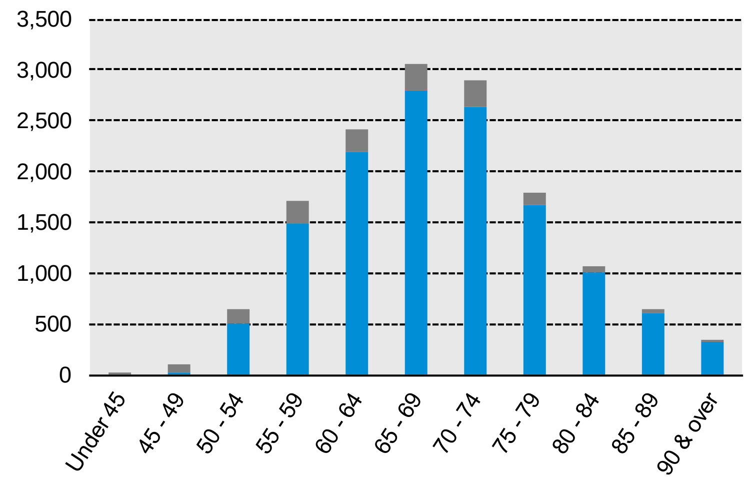


CHART 5

Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of December 31, 2017



B. FINANCIAL INFORMATION

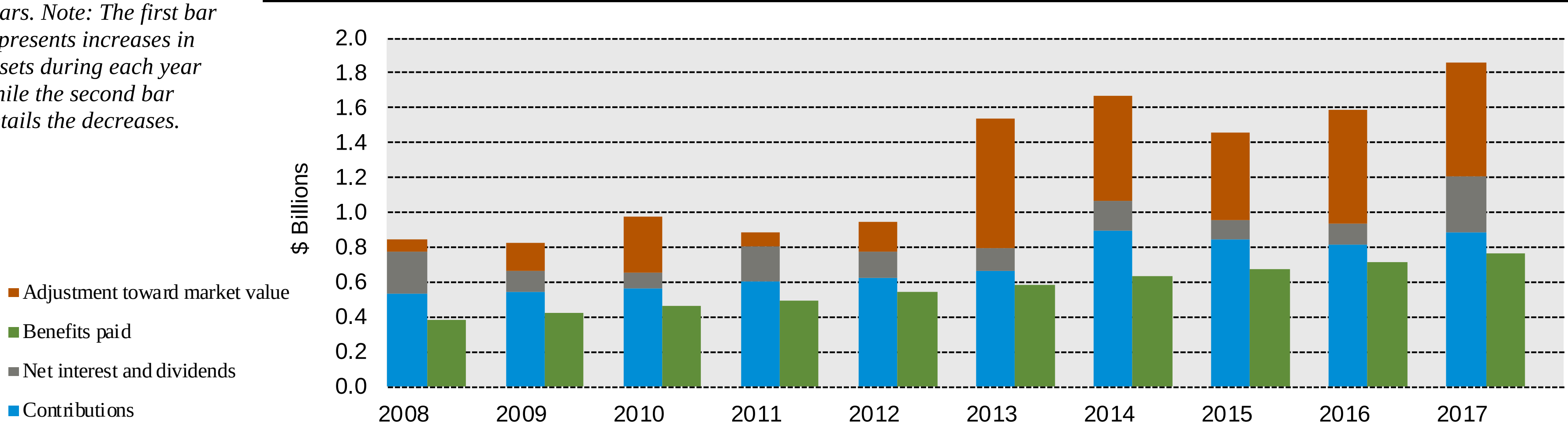
Retirement plan funding anticipates that, over the long term, both contributions and net investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments.

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, 2008 – 2017



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, 2017

Plan Year Ending	Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain / (Loss)	Deferred Factor	Deferred Return
2013	$1,031,118,000	$696,553,000	$334,565,000	0.0	$0
2014	487,104,000	780,627,000	(293,523,000)	0.2	(58,705,000)
2015	(51,601,000)	833,757,000	(885,358,000)	0.4	(354,143,000)
2016	1,010,548,000	840,469,000	170,079,000	0.6	102,047,000
2017	1,878,172,000	920,426,000	957,746,000	0.8	766,197,000
1. Total Deferred Return					$455,396,000
2. Net Market Value Of Assets (Excludes $134,417,000 in County Investment Account (funded by pension obligation bond proceeds held by OCERS), $244,552,000 in Prepaid Employer Contributions and $14,871,000[1] in O.C. Sanitation District UAAL Deferred Account)					$14,652,607,000[2]
3. Actuarial Value of Assets (2) – (1)					$14,197,211,000
4. Ratio of Actuarial Value To Market Value (3) / (2)					96.9%
5. Non-valuation Reserves					
(a) Unclaimed member deposit					$0
(b) Medicare medical insurance reserve					86,000
(c) Subtotal					$86,000
6. Valuation value of assets (3) – (5)(c)					$14,197,125,000
7. Deferred Return Recognized in Each of the Next 4 years					
(a) Amount recognized on 12/31/2018					$(10,211,000)
(b) Amount recognized on 12/31/2019					48,493,000
(c) Amount recognized on 12/31/2020					225,565,000
(d) Amount recognized on 12/31/2021					191,549,000
(e) Subtotal (may not total exactly due to rounding)					$455,396,000

[1] *After reflecting asset transfer of $24,042,000 from O.C. Sanitation District UAAL Deferred Account to valuation assets as of December 31, 2017.*

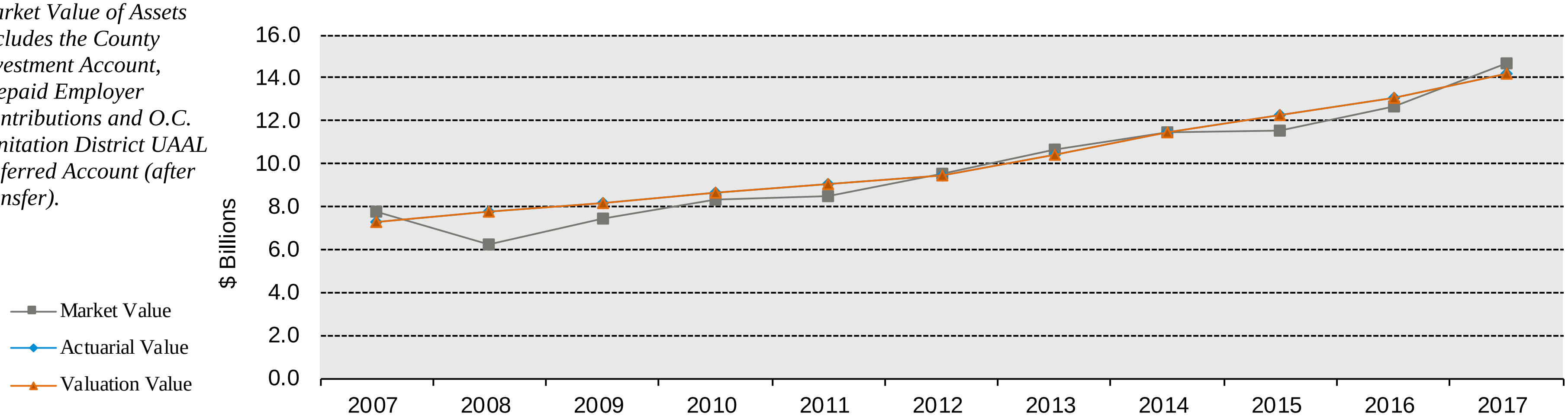
[2] *Based on the preliminary unaudited financial statement provided by OCERS for this valuation.*

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 eleven years. Note: Market Value of Assets excludes the County Investment Account, Prepaid Employer Contributions and O.C. Sanitation District UAAL Deferred Account (after transfer).

CHART 8

Market Value, Actuarial Value and Valuation Value of Assets as of December 31, 2007 – 2017



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 gain was $191.9 million, reflecting a gain of $24.4 million from investments, a net gain of $22.7 million from contribution experience (including a gain of $36.4 million from additional UAAL payments, a gain of $24.0 million transfer from O.C. Sanitation District UAAL Deferred Account and a loss of $37.7 million from all other contribution experience) and a gain of $144.8 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, 2017 (Dollar Amounts in Thousands)

1.	Net gain/(loss) from investments[1]	$24,401,000
2.	Net gain/(loss) from contribution experience	22,664,000
3.	Net gain/(loss) from other experience[2]	144,847,000
4.	Net experience gain/(loss): (1) + (2) + (3)	$191,912,000

[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, 2016 valuation). The actual rate of return on a valuation basis for the 2017 plan year was 7.44%.

Since the actual return for the year was greater than the assumed return, OCERS experienced an actuarial gain during the year ended December 31, 2017 with regard to its investments.

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

CHART 10

Investment Experience for Year Ended December 31, 2017 – Valuation Value, Actuarial Value and Market Value of Assets

	Valuation Value	Actuarial Value	Market Value
1. Actual return	$977,130,000	$977,128,000	$1,878,172,000
2. Average value of assets	$13,141,089,000	$13,141,177,000	$12,695,529,000
3. Actual rate of return: (1) ÷ (2)	7.44%	7.44%	14.79%
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	$952,729,000	$952,735,000	$920,426,000
6. Actuarial gain/(loss): (1) – (5)	$24,401,000	$24,393,000	$957,746,000

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: 2008 - 2017 (Dollar Amounts in Thousands)

	Valuation Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return	
Year Ended December 31	**Amount**	**Percent**	**Amount**	**Percent**	**Amount**	**Percent**
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%
2017	977,130	7.44%	977,128	7.44%	1,878,172	14.79%
5-Year Average Return		7.09%		7.09%		7.53%
10-Year Average Return		5.50%		5.49%		5.16%

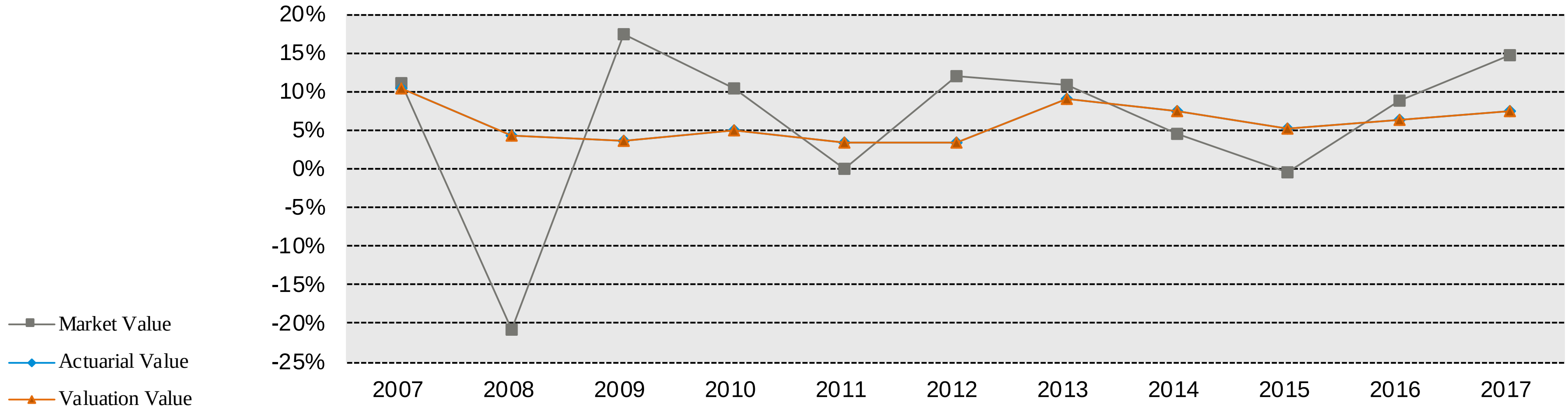
Note: The dollar amount of return on market value is net of the return on the County Investment Account (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions account and O.C. Sanitation District UAAL Deferred Account (after transfer). Furthermore, due to differences 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 eleven years.

CHART 12

Market, Actuarial, and Valuation Value Rates of Return for Years Ended December 31, 2007 – 2017



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, 2017 amounted to $144.8 million which is 0.74% 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 3.25% (i.e., 2.75% 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 also pay one-half of the total normal cost necessary to fund cost-of-living benefits which is calculated separately for each rate group, with the exception of Rate Groups #9 and #11, which are developed on a combined or pooled basis as described in our Cost Sharing Structure letter dated July 30, 2010. Within each rate group, the COLA normal cost is either pooled for Tiers 1 and 2 because the same 3% COLA is provided for both Tiers, or it differs by a set formula based on past practice we carried over from the OCERS' prior actuary. 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, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #1 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – non-OCTA, non-OCSD)				
Normal Cost	10.73%	$5,049	9.51%	$4,475
UAAL[3],[4],[5]	7.89%	3,713	7.25%	3,411
Total Contribution	18.62%	$8,762	16.76%	$7,886
Rate Group #1 – Plan U (2.5% @ 67 PEPRA)[6]				
Normal Cost	9.93%	$3,636	8.63%	$3,160
UAAL[3],[4],[5]	7.89%	2,889	7.25%	2,655
Total Contribution	17.82%	$6,525	15.88%	$5,815
Rate Group #1 – Plans A, B and U Combined				
Normal Cost	10.38%	$8,685	9.12%	$7,635
UAAL[3],[4],[5]	7.89%	6,602	7.25%	6,066
Total Contribution	18.27%	$15,287	16.37%	$13,701

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

(4) *The net UAAL contribution rates for County and IHSS Public Authority when calculated after excluding the UAAL for Cypress Parks and Recreation, U.C.I. and Department of Education is 4.61% for the December 31, 2017 valuation.*

(5) *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 is 4.18% for the December 31, 2016 valuation.*

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA, non-Children and Families Commission)				
Normal Cost	14.39%	$119,837	13.19%	$109,844
UAAL[3]	22.67%	188,792	21.72%	180,880
Total Contribution	37.06%	$308,629	34.91%	$290,724
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA, Children and Families Commission)				
Normal Cost	14.39%	$75	13.19%	$68
UAAL[3],[4]	1.04%	5	0.00%[5]	0
Total Contribution	15.43%	$80	13.19%	$68
Rate Group #2 – Plans O and P (1.62% @ 65)				
Normal Cost	6.21%	$926	5.53%	$825
UAAL[3]	22.67%	3,381	21.72%	3,239
Total Contribution	28.88%	$4,307	27.25%	$4,064
Rate Group #2 – Plan S (2.0% @ 57)				
Normal Cost	11.51%	$235	10.35%	$211
UAAL[3]	22.67%	462	21.72%	443
Total Contribution	34.18%	$697	32.07%	$654

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

(4) *UAAL rate has been adjusted to reflect future service only benefit improvement under 2.7% @ 55.*

(5) *These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2017.*

Note: For employers with future service only benefit improvements under 2.7% @ 55 (including Local Agency Formation Commission and Orange County Employees Retirement System but excluding Children and Families Commission), refer to the employer rates on page 29.

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #2 – Plan T (1.62% @ 65 PEPRA)[5]				
Normal Cost	7.11%	$15,970	6.58%	$14,779
UAAL[3]	22.67%	50,918	21.72%	48,785
Total Contribution	29.78%	$66,888	28.30%	$63,564
Rate Group #2 – Plan U (2.5% @ 67 PEPRA, non-Children and Families Commission)[6]				
Normal Cost	8.78%	$1,543	8.28%	$1,455
UAAL[3]	22.67%	3,983	21.72%	3,816
Total Contribution	31.45%	$5,526	30.00%	$5,271
Rate Group #2 – Plan U (2.5% @ 67 PEPRA, Children and Families Commission)[6]				
Normal Cost	8.78%	$41	8.28%	$39
UAAL[3],[4]	1.04%	5	0.00%[7]	0
Total Contribution	9.82%	$46	8.28%	$39

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

(4) *UAAL rate has been adjusted to reflect future service only benefit improvement under 2.7% @ 55.*

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

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

(7) *These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2017.*

Note: For employers with future service only benefit improvements under 2.7% @ 55 (including Local Agency Formation Commission and Orange County Employees Retirement System but excluding Children and Families Commission), refer to the employer rates on page 29.

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	**December 31, 2017 Valuation**		**December 31, 2016 Valuation**	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #2 – Plan W (1.62% @ 65 PEPRA)[4],[5]				
Normal Cost	8.56%	$12	6.68%	$10
UAAL[3]	22.67%	33	21.72%	32
Total Contribution	31.23%	$45	28.40%	$42
Rate Group #2 – Plans I, J, O, P, S, T, U and W Combined				
Normal Cost	12.68%	$138,639	11.64%	$127,231
UAAL[3]	22.65%	247,579	21.70%	237,195
Total Contribution	35.33%	$386,218	33.34%	$364,426

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

(4) *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).*

(5) *No active members were reported for Plan W in the December 31, 2016 valuation. An entry age of 35, based on hypothetical demographic profile in our letter dated October 8, 2015 was used to estimate the Normal Cost rate. However, based on 1 employee reported in the December 31, 2017 valuation, the entry age was 57.*

Note: For employers with future service only benefit improvements under 2.7% @ 55 (including Local Agency Formation Commission and Orange County Employees Retirement System but excluding Children and Families Commission), refer to the employer rates on page 29.

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #3 – Plans G and H (2.5% @ 55 – OCSD)				
Normal Cost	13.30%	$6,312	12.28%	$5,828
UAAL	0.00%	0	0.00%	0
Total Contribution	13.30%	$6,312	12.28%	$5,828
Rate Group #3 – Plan B (1.64% @ 57 – OCSD)				
Normal Cost	11.25%	$699	10.21%	$634
UAAL	0.00%	0	0.00%	0
Total Contribution	11.25%	$699	10.21%	$634
Rate Group #3 – Plan U (2.5% @ 67 PEPRA)[3]				
Normal Cost	10.37%	$1,604	9.27%	$1,434
UAAL	0.00%	0	0.00%	0
Total Contribution	10.37%	$1,604	9.27%	$1,434
Rate Group #3 – Plans B, G, H and U Combined				
Normal Cost	12.46%	$8,615	11.42%	$7,896
UAAL	0.00%	0	0.00%	0
Total Contribution	12.46%	$8,615	11.42%	$7,896

(1) *These rates are after adjustment for $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account.*

(2) *See page 28 for projected annual compensation.*

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #5 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – OCTA)				
Normal Cost	12.10%	$11,166	10.76%	$9,930
UAAL[3]	15.94%	14,710	14.76%	13,621
Total Contribution	28.04%	$25,876	25.52%	$23,551
Rate Group #5 – Plan U (2.5% @ 67 PEPRA)[4]				
Normal Cost	11.32%	$1,183	10.25%	$1,071
UAAL[3]	15.94%	1,666	14.76%	1,542
Total Contribution	27.26%	$2,849	25.01%	$2,613
Rate Group #5 – Plans A, B and U Combined				
Normal Cost	12.02%	$12,349	10.71%	$11,001
UAAL[3]	15.94%	16,376	14.76%	15,163
Total Contribution	27.96%	$28,725	25.47%	$26,164

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #9 – Plans M and N (2.0% @ 55 – TCA)				
Normal Cost	14.51%	$611	13.30%	$560
UAAL[3]	11.49%	484	11.46%	482
Total Contribution	26.00%	$1,095	24.76%	$1,042
Rate Group #9 – Plan U (2.5% @ 67 PEPRA)[4]				
Normal Cost	11.02%	$342	10.40%	$323
UAAL[3]	11.49%	357	11.46%	356
Total Contribution	22.51%	$699	21.86%	$679
Rate Group #9 – Plans M, N and U Combined				
Normal Cost	13.02%	$953	12.07%	$883
UAAL[3]	11.49%	841	11.46%	838
Total Contribution	24.51%	$1,794	23.53%	$1,721

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #10 – Plans I and J (2.7% @ 55 – OCFA)				
Normal Cost	14.72%	$2,183	13.61%	$2,018
UAAL[3]	15.74%	2,334	18.35%	2,721
Total Contribution	30.46%	$4,517	31.96%	$4,739
Rate Group #10 – Plans M and N (2.0% @ 55 – OCFA)				
Normal Cost	13.46%	$491	12.64%	$461
UAAL[3]	15.74%	575	18.35%	670
Total Contribution	29.20%	$1,066	30.99%	$1,131
Rate Group #10 – Plan U (2.5% @ 67 PEPRA)[4]				
Normal Cost	10.41%	$855	8.99%	$738
UAAL[3]	15.74%	1,293	18.35%	1,507
Total Contribution	26.15%	$2,148	27.34%	$2,245
Rate Group #10 – Plans I, J, M, N and U Combined				
Normal Cost	13.22%	$3,529	12.05%	$3,217
UAAL[3]	15.74%	4,202	18.35%	4,898
Total Contribution	28.96%	$7,731	30.40%	$8,115

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #11 – Plans M and N, future service (2.0% @ 55 – Cemetery)				
Normal Cost	11.98%	$155	11.09%	$143
UAAL[3]	0.48%	6	0.00%	0
Total Contribution	12.46%	$161	11.09%	$143
Rate Group #11 – Plan U (2.5% @ 67 PEPRA)[4]				
Normal Cost	12.03%	$42	9.98%	$34
UAAL[3]	0.48%	2	0.00%	0
Total Contribution	12.51%	$44	9.98%	$34
Rate Group #11 – Plans M, N and U Combined				
Normal Cost	12.00%	$197	10.81%	$177
UAAL[3]	0.48%	8	0.00%	0
Total Contribution	12.48%	$205	10.81%	$177

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #12 – Plans G and H, future service (2.5% @ 55 – Law Library)				
Normal Cost	14.11%	$151	13.32%	$143
UAAL[3],[4]	0.00%	0	0.00%[5]	0
Total Contribution	14.11%	$151	13.32%	$143
Rate Group #12– Plan U (2.5% @ 67 PEPRA)[6]				
Normal Cost	9.36%[7]	$4	7.59%	$4
UAAL[3],[4]	0.00%	0	0.00%[5]	0
Total Contribution	9.36%	$4	7.59%	$4
Rate Group #12 – Plans G, H, future service, and U Combined				
Normal Cost	13.85%	$155	13.14%	$147
UAAL[3],[4]	0.00%	0	0.00%[5]	0
Total Contribution	13.85%	$155	13.14%	$147

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

(4) *UAAL rate has been adjusted to reflect future service only benefit improvement under 2.7% @ 55.*

(5) *These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2017.*

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

(7) *There is only one member in Plan U. The increase in the employer Normal Cost rate from last year to this year is primarily due to changes in actuarial assumption. There is also impact due to calculation of Normal Cost in nearest $1000.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2017 Valuation Rate[1]	December 31, 2017 Valuation Estimated Annual Amount[2]	December 31, 2016 Valuation Rate	December 31, 2016 Valuation Estimated Annual Amount[2]
Rate Group #6 – Plans E and F (3% @ 50 – Probation)				
Normal Cost	23.71%	$14,915	21.87%	$13,758
UAAL[3]	28.74%	18,079	26.06%	16,394
Total Contribution	52.45%	$32,994	47.93%	$30,152
Rate Group #6 – Plan V (2.7% @ 57 PEPRA)[4]				
Normal Cost	16.63%	$192	15.24%	$176
UAAL[3]	28.74%	332	26.06%	301
Total Contribution	45.37%	$524	41.30%	$477
Rate Group #6 – Plans E, F and V Combined				
Normal Cost	23.58%	$15,107	21.75%	$13,934
UAAL[3]	28.74%	18,411	26.06%	16,695
Total Contribution	52.32%	$33,518	47.81%	$30,629

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*
(2) *See page 28 for projected annual compensation.*
(3) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation*
(4) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #7 – Plans E and F (3% @ 50 – Law Enforcement)				
Normal Cost	26.69%	$42,227	25.63%	$40,550
UAAL[3]	37.36%	59,108	38.19%	60,421
Total Contribution	64.05%	$101,335	63.82%	$100,971
Rate Group #7 – Plans Q and R (3% @ 55 – Law Enforcement)				
Normal Cost	23.69%	$9,835	23.00%	$9,548
UAAL[3]	37.36%	15,510	38.19%	15,855
Total Contribution	61.05%	$25,345	61.19%	$25,403
Rate Group #7 – Plan V (2.7% @ 57 PEPRA)[4]				
Normal Cost	19.29%	$7,069	19.39%	$7,106
UAAL[3]	37.36%	13,691	38.19%	13,995
Total Contribution	56.65%	$20,760	57.58%	$21,101
Rate Group #7 – Plans E, F, Q, R and V Combined				
Normal Cost	25.02%	$59,131	24.20%	$57,204
UAAL[3]	37.36%	88,309	38.19%	90,271
Total Contribution	62.38%	$147,440	62.39%	$147,475

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*
(2) *See page 28 for projected annual compensation.*
(3) *UAAL rate has been adjusted to reflect 18-month delay between date of valuation and date of rate implementation*
(4) *Applicable for members hired on or after January 1, 2013.*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Group #8 – Plans E and F (3% @ 50 – OCFA)				
Normal Cost	27.24%	$27,663	26.84%	$27,257
UAAL[3]	20.80%	21,123	22.27%	22,616
Total Contribution	48.04%	$48,786	49.11%	$49,873
Rate Group #8 – Plans Q and R (3% @ 55 – OCFA)				
Normal Cost	21.97%	$2,116	21.86%	$2,106
UAAL[3]	20.80%	2,004	22.27%	2,145
Total Contribution	42.77%	$4,120	44.13%	$4,251
Rate Group #8 – Plan V (2.7% @ 57 PEPRA)[4]				
Normal Cost	15.44%	$2,301	14.84%	$2,211
UAAL[3]	20.80%	3,100	22.27%	3,319
Total Contribution	36.24%	$5,401	37.11%	$5,530
Rate Group #8 – Plans E, F, Q, R and V Combined				
Normal Cost	25.44%	$32,080	25.04%	$31,574
UAAL[3]	20.80%	26,227	22.27%	28,080
Total Contribution	46.24%	$58,307	47.31%	$59,654

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *See page 28 for projected annual compensation.*

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

General and Safety Combined	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[1]	Estimated Annual Amount[2]	Rate	Estimated Annual Amount[2]
Rate Groups #1 – #12				
Total Contribution	37.97%	$687,995	36.43%	$660,105

[1] *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

[2] *Based on December 31, 2017 projected annual compensation (also in thousands):*

General Employers	
Rate Group #1 – Plans A and B	*$47,054*
Rate Group #1 – Plan U	*36,621*
Rate Group #2 – Plans I and J non-Children and Families Commission	*832,783*
Rate Group #2 – Plans I and J Children and Families Commission	*519*
Rate Group #2 – Plans O and P	*14,914*
Rate Group #2 – Plan S	*2,039*
Rate Group #2 – Plan T	*224,607*
Rate Group #2 – Plan U non-Children and Families Commission	*17,570*
Rate Group #2 – Plan U Children and Families Commission	*466*
Rate Group #2 – Plan W	*146*
Rate Group #3 – Plans G and H	*47,462*
Rate Group #3 – Plan B	*6,212*
Rate Group #3 – Plan U	*15,465*
Rate Group #5 – Plans A and B	*92,282*
Rate Group #5 – Plan U	*10,449*
Rate Group #9 – Plans M and N	*4,210*
Rate Group #9 – Plan U	*3,107*
Rate Group #10 – Plans I and J	*14,828*
Rate Group #10 – Plans M and N	*3,651*
Rate Group #10 – Plan U	*8,213*
Rate Group #11 – Plans M and N	*1,292*
Rate Group #11 – Plan U	*345*
Rate Group #12 – Plans G and H	*1,071*
Rate Group #12 – Plan U	*48*

Safety Employers	
Rate Group #6 – Plans E and F	*62,907*
Rate Group #6 – Plan V	*1,155*
Rate Group #7 – Plans E and F	*158,212*
Rate Group #7 – Plans Q and R	*41,515*
Rate Group #7 – Plan V	*36,646*
Rate Group #8 – Plans E and F	*101,553*
Rate Group #8 – Plans Q and R	*9,633*
Rate Group #8 – Plan V	*14,902*
Total General and Safety Combined	*$1,811,877*

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2017 (Dollar Amounts in Thousands)

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

	December 31, 2017 Valuation		December 31, 2016 Valuation	
	Rate[(1),(2)]	Rate[(1),(3)]	Rate[(2)]	Rate[(3)]
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA)				
Normal Cost	14.39%	14.39%	13.19%	13.19%
UAAL[(4)]	21.06%	22.67%	19.61%	21.72%
Total Contribution	35.45%	37.06%	32.80%	34.91%
Rate Group #2 – Plans O and P (1.62% @ 65)[(5)]				
Normal Cost	6.21%	6.21%	5.53%	5.53%
UAAL[(4)]	21.06%	22.67%	19.61%	21.72%
Total Contribution	27.27%	28.88%	25.14%	27.25%
Rate Group #2 – Plan T (1.62% @ 65 PEPRA)[(6)]				
Normal Cost	7.11%	7.11%	6.58%	6.58%
UAAL[(4)]	21.06%	22.67%	19.61%	21.72%
Total Contribution	28.17%	29.78%	26.19%	28.30%
Rate Group #2 – Plan U (2.5% @ 67 PEPRA)[(7)]				
Normal Cost	8.78%	8.78%	8.28%	8.28%
UAAL[(4)]	21.06%	22.67%	19.61%	21.72%
Total Contribution	29.84%	31.45%	27.89%	30.00%

(1) *These rates reflect only 1/3 of UAAL cost impact due to assumptions changes.*

(2) *These rates are after reflecting future service only benefit improvements under 2.7% @ 55.*

(3) *These rates are before reflecting future service only benefit improvements under 2.7% @ 55.*

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

(5) *Applicable for Local Agency Formation Commission members hired on or after July 1, 2010 but before January 1, 2013.*

(6) *Applicable for Local Agency Formation Commission members hired on or after January 1, 2013.*

(7) *Applicable for Orange County Employees Retirement System 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, 2017 Valuation Pick-Up Percentage		December 31, 2016 Valuation Pick-Up Percentage	
General Members				
Rate Group #1 Plan A/B (non-OCTA, non-OCSD)	Plan A: 100.00%	Plan B: 98.16%	Plan A: 100.00%	Plan B: 97.14%
Rate Group #2 (2.7% @ 55 – non-OCFA)	Plan I: 99.37%	Plan J: 98.38%	Plan I: 99.00%	Plan J: 97.47%
Rate Group #2 (1.62% @ 65)	Plan O: Not calculated	Plan P: 97.33%	Plan O: Not calculated	Plan P: 96.46%
Rate Group #2 (2.0% @ 57)		Plan S: 97.70%		Plan S: 96.72%
Rate Group #3 (2.5% @ 55 – OCSD)	Plan G: 100.00%	Plan H: 98.53%	Plan G: 98.21%	Plan H: 97.73%
Rate Group #3 (1.64% @ 57 – OCSD)		Plan B: 97.48%		Plan B: 96.50%
Rate Group #5 Plan A/B (OCTA)	Plan A: 98.82%	Plan B: 97.46%	Plan A: 98.17%	Plan B: 94.74%
Rate Group #9 (2.0% @ 55 – TCA)	Plan M: Not calculated	Plan N: 98.34%	Plan M: Not calculated	Plan N: 97.64%
Rate Group #10 (2.7% @ 55 – OCFA)	Plan I: Not calculated	Plan J: 98.53%	Plan I: Not calculated	Plan J: 97.72%
Rate Group #10 (2.0% @ 55 – OCFA)	Plan M: Not calculated	Plan N: 97.57%	Plan M: Not calculated	Plan N: 96.41%
Rate Group #11 (2.0% @ 55 – Cemetery)	Plan M: Not calculated	Plan N: 98.52%	Plan M: Not calculated	Plan N: 97.64%
Rate Group #12 (2.5% @ 55 – Law Library)	Plan G: Not calculated	Plan H: 98.82%	Plan G: Not calculated	Plan H: 98.04%

CHART 14 (Continued)

"Pick – Up" - Discount Percentages

	December 31, 2017 Valuation Pick-Up Percentage		December 31, 2016 Valuation Pick-Up Percentage	
Safety Members				
Rate Group #6 (3% @ 50 – Probation)	Plan E: 100.00%	Plan F: 99.43%	Plan E: 100.00%	Plan F: 98.74%
Rate Group #7 (3% @ 50 – Law Enforcement)	Plan E: 100.00%	Plan F: 99.69%	Plan E: 100.00%	Plan F: 99.60%
Rate Group #7 (3% @ 55 – Law Enforcement)	Plan Q: Not calculated	Plan R: 99.37%	Plan Q: Not calculated	Plan R: 99.23%
Rate Group #8 (3% @ 50 – OCFA)	Plan E: 100.00%	Plan F: 99.61%	Plan E: 100.00%	Plan F: 99.51%
Rate Group #8 (3% @ 55 – OCFA)	Plan Q: Not calculated	Plan R: 99.38%	Plan Q: Not calculated	Plan R: 99.30%

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 Members
General		
Orange County	101	32
Cemetery District	102	30
Law Library	103	40
Retirement System	105	32
OCFA	106	33
Transportation Corridor Agency	109	38
City of San Juan Capistrano	110	33
Sanitation District	111	34
OCTA	112	36
Children & Families Commission	118	27
Local Agency Formation Commission	119	38
Superior Court	121	32
IHSS Public Authority	122	39
Safety		
Probation	101	27
Law Enforcement	101	27
OCFA	106	30

Note: In preparing the average entry age, we only included the non-PEPRA members starting with this valuation. (Previously, we had included both non-PEPRA and PEPRA members in preparing the average entry age.)

The contribution rates as of December 31, 2017 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, 2016 to December 31, 2017 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount [1]
1. Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY 18/19 rates)	36.45%	$660,428
2. Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families Commission and Law Library	(0.02%)	(323)
3. Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY 18/19 rates)	36.43%	$660,105
4. Actuarial (gain)/loss items:		
(a) Effect of investment gain (after smoothing)	(0.10%)	$(1,812)
(b) Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and U.C.I.	(0.14%)	(2,536)
(c) Effect of actual contributions less than expected	0.15%	2,718
(d) Effect of lower than expected COLA increases	(0.38%)	(6,885)
(e) Effect of lower than expected salary increases	(0.26%)	(4,711)
(f) Effect of growth in total payroll greater than expected	(0.01%)	(181)
(g) Effect of other experience (gain)/loss[2]	(0.06%)	(1,050)
(h) Effect of changes in actuarial assumptions[3],[4]	4.81%	87,151
(i) Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	(2.47%)	(44,804)
(j) Subtotal	1.54%	$27,890
5. Aggregate Recommended Contribution Rate as of December 31, 2017	37.97%	$687,995

[1] *Based on December 31, 2017 projected annual compensation of $1,811,877,000.*

[2] *Net of an adjustment of 0.35% to reflect 18-month delay between date of valuation and date of rate implementation for the rate impact of all actuarial experience.*

[3] *Include the effect of $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account to valuation assets.*

[4] *Normal Cost increased by 1.10% and UAAL cost increased by 3.71%.*

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

The member contribution rates as of December 31, 2017 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.

CHART 16

Reconciliation of Average Recommended Member Contribution from December 31, 2016 to December 31, 2017 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount[1]
Average Recommended Contribution Rate as of December 31, 2016[2]	11.97%	$216,914
Effect of changes in demographics	(0.11%)	$(1,977)
Effect of changes in actuarial assumptions	0.77%	13,951
Subtotal	0.66%	$11,974
Average Recommended Contribution Rate as of December 31, 2017	12.63%	$228,888

(1) *Based on December 31, 2017 projected annual compensation of $1,811,877,000.*

(2) *Rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2016 valuation to the System membership as of December 31, 2017.*

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 - 2017

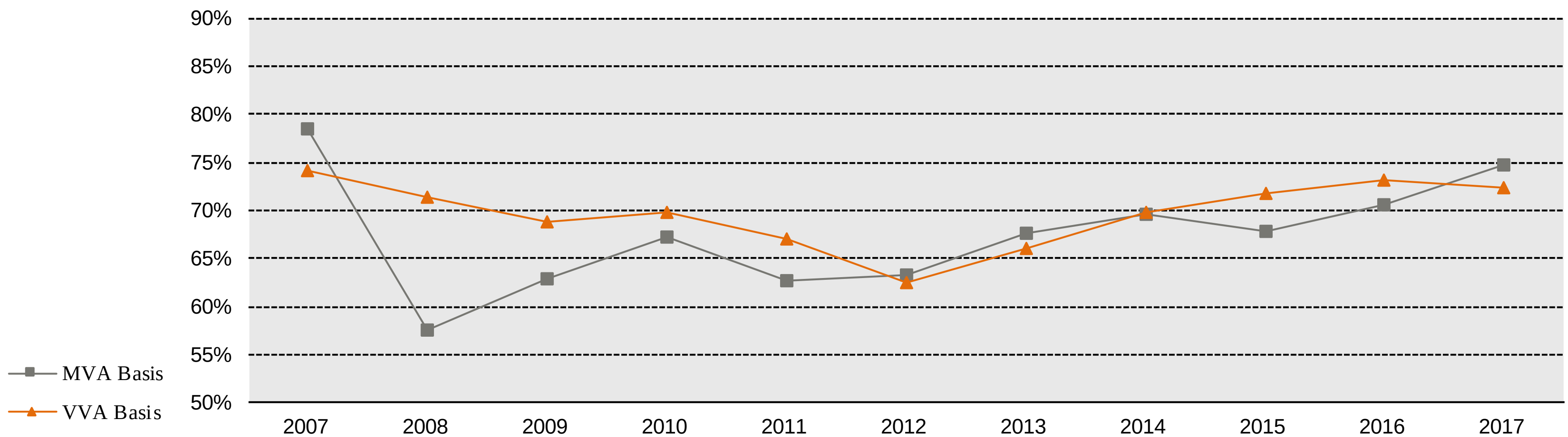


CHART 18

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)
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%
2017	14,197,125,000	19,635,427,000	5,438,302,000	72.30%	1,811,877,000	300.15%

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 (after transfer), unclaimed member reserve and Medicare Medical Insurance Reserve.

Actuarial Valuation Date December 31	Funded Ratio Based on Net Market Value of Assets
2008	57.51%
2009	62.94%
2010	67.25%
2011	62.60%
2012	63.17%

Actuarial Valuation Date December 31	Funded Ratio Based on Net Market Value of Assets
2013	67.65%
2014	69.63%
2015	67.73%
2016	70.58%
2017	74.62%

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 8.1. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 8.1% of one-year's payroll. Since OCERS amortizes actuarial gains and losses over a 20-year period, there would be a 0.6% 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 10.8. This is about 33% 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 - 2017

	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
2017	7.2	11.0	8.1	9.6	14.8	10.8

EXHIBIT A

Table of Plan Coverage

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

	Year Ended December 31		
Category	**2017**	**2016**	**Change From Prior Year**
Active members in valuation			
Number	1,555	1,640	-5.2%
Average age	43.1	42.0	1.1
Average service	9.8	8.9	0.9
Projected total compensation	$83,675,611	$83,218,758	0.5%
Projected average compensation	$53,811	$50,743	6.0%
Account balances	$55,414,963	$49,693,494	11.5%
Total active vested members	817	795	2.8%
Vested terminated members[1]			
Number	496	445	11.5%
Average age	41.6	41.7	-0.1
Retired members			
Number in pay status	627	617	1.6%
Average age	74.9	74.4	0.5
Average monthly benefit[2]	$2,645	$2,626	0.7%
Disabled members			
Number in pay status	37	38	-2.6%
Average age	67.6	67.2	0.4
Average monthly benefit[2]	$2,337	$2,290	2.1%
Beneficiaries			
Number in pay status	96	93	3.2%
Average age	76.7	76.3	0.4
Average monthly benefit[2]	$1,360	$1,324	2.7%

(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 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	14,097	14,075	0.2%
Average age	45.7	45.9	-0.2
Average service	12.9	13.0	-0.1
Projected total compensation	$1,093,044,342	$1,064,427,772	2.7%
Projected average compensation	$77,537	$75,625	2.5%
Account balances	$1,930,686,878	$1,833,455,161	5.3%
Total active vested members	10,337	10,700	-3.4%
Vested terminated members[1]			
Number	3,928	3,629	8.2%
Average age	44.9	44.8	0.1
Retired members			
Number in pay status	9,067	8,772	3.4%
Average age	70.9	70.8	0.1
Average monthly benefit[2]	$3,628	$3,513	3.3%
Disabled members			
Number in pay status	582	569	2.3%
Average age	66.8	66.7	0.1
Average monthly benefit[2]	$2,477	$2,438	1.6%
Beneficiaries			
Number in pay status	1,433	1,397	2.6%
Average age	75.0	75.2	-0.2
Average monthly benefit[2]	$1,829	$1,765	3.6%

(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

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

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	592	578	2.4%
Average age	48.0	48.0	0.0
Average service	12.7	13.2	-0.5
Projected total compensation	$69,138,987	$65,370,761	5.8%
Projected average compensation	$116,789	$113,098	3.3%
Account balances	$89,050,369	$87,379,694	1.9%
Total active vested members	438	440	-0.5%
Vested terminated members[1]			
Number	112	104	7.7%
Average age	46.8	47.6	-0.8
Retired members			
Number in pay status	372	355	4.8%
Average age	67.8	67.6	0.2
Average monthly benefit[2]	$5,321	$5,075	4.8%
Disabled members			
Number in pay status	15	13	15.4%
Average age	66.6	66.4	0.2
Average monthly benefit[2]	$3,633	$3,259	11.5%
Beneficiaries			
Number in pay status	72	71	1.4%
Average age	69.3	70.3	-1.0
Average monthly benefit[2]	$2,282	$2,154	5.9%

[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

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

Category	Year Ended December 31 2017	2016	Change From Prior Year
Active members in valuation			
Number	1,313	1,372	-4.3%
Average age	50.4	50.0	0.4
Average service	13.8	13.3	0.5
Projected total compensation	$102,731,350	$104,111,593	-1.3%
Projected average compensation	$78,242	$75,883	3.1%
Account balances	$128,751,586	$124,925,999	3.1%
Total active vested members	1,021	1,045	-2.3%
Vested terminated members[1]			
Number	584	568	2.8%
Average age	49.6	49.6	0.0
Retired members			
Number in pay status	903	863	4.6%
Average age	69.8	69.5	0.3
Average monthly benefit[2]	$2,463	$2,402	2.5%
Disabled members			
Number in pay status	258	256	0.8%
Average age	65.9	65.4	0.5
Average monthly benefit[2]	$2,304	$2,254	2.2%
Beneficiaries			
Number in pay status	167	166	0.6%
Average age	71.2	71.5	-0.3
Average monthly benefit[2]	$1,349	$1,294	4.3%

(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 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	64	68	-5.9%
Average age	49.2	49.3	-0.1
Average service	8.4	10.0	-1.6
Projected total compensation	$7,317,008	$6,835,138	7.0%
Projected average compensation	$114,328	$100,517	13.7%
Account balances	$5,438,441	$5,835,926	-6.8%
Total active vested members	34	45	-24.4%
Vested terminated members[1]			
Number	61	56	8.9%
Average age	44.5	45.1	-0.6
Retired members			
Number in pay status	44	40	10.0%
Average age	68.6	68.5	0.1
Average monthly benefit[2]	$2,944	$2,768	6.4%
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	3	33.3%
Average age	70.0	72.1	-2.1
Average monthly benefit[2]	$451	$427	5.6%

[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		Change From Prior Year
	2017	2016	
Active members in valuation			
Number	281	302	-7.0%
Average age	45.5	44.1	1.4
Average service[1]	10.8	10.0	0.8
Projected total compensation	$26,691,539	$26,836,736	-0.5%
Projected average compensation	$94,988	$88,863	6.9%
Account balances	$27,364,974	$26,401,200	3.7%
Total active vested members	176	176	0.0%
Vested terminated members[2]			
Number	154	131	17.6%
Average age	41.9	42.6	-0.7
Retired members			
Number in pay status	157	141	11.3%
Average age	65.3	65.4	-0.1
Average monthly benefit[3]	$4,424	$4,446	-0.5%
Disabled members			
Number in pay status	10	10	0.0%
Average age	61.4	60.4	1.0
Average monthly benefit[3]	$2,522	$2,473	2.0%
Beneficiaries			
Number in pay status	12	10	20.0%
Average age	64.7	62.2	2.5
Average monthly benefit[3]	$1,273	$1,419	-10.3%

[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 2017	2016	Change From Prior Year
Active members in valuation			
Number	25	22	13.6%
Average age	49.3	48.1	1.2
Average service	15.7	16.8	-1.1
Projected total compensation	$1,637,025	$1,397,215	17.2%
Projected average compensation	$65,481	$63,510	3.1%
Account balances	$2,227,789	$1,994,990	11.7%
Total active vested members	18	18	0.0%
Vested terminated members[1]			
Number	2	3	-33.3%
Average age	39.1	37.2	1.9
Retired members			
Number in pay status	5	5	0.0%
Average age	75.8	74.8	1.0
Average monthly benefit[2]	$2,455	$2,406	2.0%
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	79.0	78.0	1.0
Average monthly benefit[2]	$1,598	$1,567	2.0%

(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 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	14	15	-6.7%
Average age	57.5	57.1	0.4
Average service	17.5	16.5	1.0
Projected total compensation	$1,119,773	$1,164,792	-3.9%
Projected average compensation	$79,984	$77,653	3.0%
Account balances	$2,634,092	$2,505,275	5.1%
Total active vested members	13	14	-7.1%
Vested terminated members[1]			
Number	4	4	0.0%
Average age	48.6	47.6	1.0
Retired members			
Number in pay status	11	10	10.0%
Average age	71.8	71.3	0.5
Average monthly benefit[2]	$2,200	$2,165	1.6%
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	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)

	Year Ended December 31		
Category	**2017**	**2016**	**Change From Prior Year**
Active members in valuation			
Number	763	806	-5.3%
Average age	44.6	43.8	0.8
Average service	17.1	16.2	0.9
Projected total compensation	$64,062,602	$65,135,279	-1.6%
Projected average compensation	$83,961	$80,813	3.9%
Account balances	$137,781,996	$129,680,498	6.2%
Total active vested members	743	760	-2.2%
Vested terminated members[1]			
Number	220	211	4.3%
Average age	41.1	40.3	0.8
Retired members			
Number in pay status	306	283	8.1%
Average age	65.9	65.9	0.0
Average monthly benefit[2]	$5,444	$5,429	0.3%
Disabled members			
Number in pay status	29	28	3.6%
Average age	54.8	54.0	0.8
Average monthly benefit[2]	$2,872	$2,821	1.8%
Beneficiaries			
Number in pay status	25	26	-3.8%
Average age	64.6	61.9	2.7
Average monthly benefit[2]	$2,473	$2,387	3.6%

(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

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

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	2,010	1,907	5.4%
Average age	41.0	41.7	-0.7
Average service	13.4	14.1	-0.7
Projected total compensation	$236,373,080	$219,505,701	7.7%
Projected average compensation	$117,599	$115,105	2.2%
Account balances	$298,704,270	$270,051,750	10.6%
Total active vested members	1,607	1,502	7.0%
Vested terminated members[1]			
Number	175	170	2.9%
Average age	43.4	42.6	0.8
Retired members			
Number in pay status	1,333	1,283	3.9%
Average age	63.9	63.7	0.2
Average monthly benefit[2]	$6,876	$6,756	1.8%
Disabled members			
Number in pay status	351	350	0.3%
Average age	63.2	62.9	0.3
Average monthly benefit[2]	$4,977	$4,817	3.3%
Beneficiaries			
Number in pay status	351	320	9.7%
Average age	67.3	66.9	0.4
Average monthly benefit[2]	$3,011	$2,886	4.3%

(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

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

	Year Ended December 31		
Category	**2017**	**2016**	**Change From Prior Year**
Active members in valuation			
Number	1,007	961	4.8%
Average age	43.3	44.1	-0.8
Average service[1]	13.9	14.3	-0.4
Projected total compensation	$126,088,193	$121,829,553	3.5%
Projected average compensation	$125,212	$126,774	-1.2%
Account balances	$137,783,839	$122,675,043	12.3%
Total active vested members	836	732	14.2%
Vested terminated members[2]			
Number	67	49	36.7%
Average age	43.1	40.0	3.1
Retired members			
Number in pay status	414	397	4.3%
Average age	64.5	63.9	0.6
Average monthly benefit[3]	$7,976	$7,788	2.4%
Disabled members			
Number in pay status	164	155	5.8%
Average age	65.2	64.6	0.6
Average monthly benefit[3]	$6,628	$6,602	0.4%
Beneficiaries			
Number in pay status	97	93	4.3%
Average age	62.8	61.7	1.1
Average monthly benefit[3]	$3,206	$3,025	6.0%

(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

xii. Total

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	21,721	21,746	-0.1%
Average age	45.3	45.4	-0.1
Average service	12.9	12.9	0.0
Projected total compensation	$1,811,879,510	$1,759,833,297	3.0%
Projected average compensation	$83,416	$80,927	3.1%
Account balances	$2,815,839,196	$2,654,599,030	6.1%
Total active vested members	16,040	16,227	-1.2%
Vested terminated members[1]			
Number	5,803	5,370	8.1%
Average age	44.8	44.8	0.0
Retired members			
Number in pay status	13,240	12,767	3.7%
Average age	69.8	69.7	0.1
Average monthly benefit[2]	$4,060	$3,946	2.9%
Disabled members			
Number in pay status	1,446	1,419	1.9%
Average age	65.3	65.0	0.3
Average monthly benefit[2]	$3,540	$3,458	2.4%
Beneficiaries			
Number in pay status	2,261	2,183	3.6%
Average age	72.8	72.8	0.0
Average monthly benefit[2]	$2,032	$1,945	4.5%

(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, 2017
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	37	37	- -	- -	- -	- -	- -	- -	- -	- -
	$60,096	$60,096	- -	- -	- -	- -	- -	- -	- -	- -
25-29	216	213	3	- -	- -	- -	- -	- -	- -	- -
	51,228	51,215	$52,181	- -	- -	- -	- -	- -	- -	- -
30-34	233	178	29	26	- -	- -	- -	- -	- -	- -
	51,560	49,967	56,798	$56,625	- -	- -	- -	- -	- -	- -
35-39	220	104	35	52	29	- -	- -	- -	- -	- -
	53,607	49,915	56,727	57,100	$56,817	- -	- -	- -	- -	- -
40-44	197	59	12	61	55	9	1	- -	- -	- -
	54,815	49,138	57,469	57,597	57,058	$55,702	$56,812	- -	- -	- -
45-49	198	49	15	56	43	20	15	- -	- -	- -
	55,287	49,064	57,237	57,357	56,510	58,883	57,638	- -	- -	- -
50-54	138	39	13	28	24	9	22	3	- -	- -
	54,395	47,557	56,264	56,112	56,753	57,956	58,942	$56,260	- -	- -
55-59	133	35	16	20	20	8	30	4	- -	- -
	54,289	47,931	55,001	56,703	55,829	55,961	57,824	57,429	- -	- -
60-64	120	26	6	14	12	14	41	2	5	- -
	55,305	49,600	55,207	56,802	56,487	56,513	57,445	57,821	$56,140	- -
65-69	42	6	2	7	11	1	13	1	1	- -
	54,699	45,650	55,421	55,659	55,018	62,214	57,359	53,405	56,503	- -
70 & over	21	1	1	3	3	4	9	- -	- -	- -
	55,880	47,775	53,353	56,320	54,306	55,272	57,710	- -	- -	- -
Total	1,555	747	132	267	197	65	131	10	6	- -
	$53,811	$50,421	$56,396	$57,026	$56,550	$57,273	$57,810	$56,754	$56,200	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	213	213	- -	- -	- -	- -	- -	- -	- -	- -
	$49,359	$49,359	- -	- -	- -	- -	- -	- -	- -	- -
25-29	993	932	53	8	- -	- -	- -	- -	- -	- -
	56,867	56,352	$64,611	$65,539	- -	- -	- -	- -	- -	- -
30-34	1,609	966	324	313	6	- -	- -	- -	- -	- -
	66,464	64,975	72,962	64,208	$72,977	- -	- -	- -	- -	- -
35-39	1,892	576	373	726	213	4	- -	- -	- -	- -
	75,846	71,411	81,958	77,728	70,874	$67,671	- -	- -	- -	- -
40-44	2,011	434	228	618	612	117	2	- -	- -	- -
	79,278	72,034	81,707	81,198	81,280	81,121	$60,221	- -	- -	- -
45-49	2,160	265	198	498	643	348	207	1	- -	- -
	84,862	75,719	87,685	85,260	87,127	87,266	81,914	$68,620	- -	- -
50-54	2,076	228	154	353	488	318	434	95	6	- -
	84,780	80,338	82,121	82,031	83,734	91,752	86,979	80,787	$103,239	- -
55-59	1,600	156	117	282	342	217	320	128	36	2
	83,837	84,705	86,508	84,589	79,724	83,189	87,540	83,202	78,102	$78,287
60-64	960	92	60	164	256	143	139	73	28	5
	79,852	83,180	81,352	72,120	79,470	81,362	84,572	83,161	76,396	70,491
65-69	411	32	35	75	120	58	58	22	8	3
	82,121	95,709	95,872	79,667	77,815	82,921	84,197	70,187	65,848	85,666
70 & over	172	7	9	30	59	25	21	11	5	5
	71,743	47,718	58,912	84,316	74,223	71,584	58,711	80,697	56,157	75,184
Total	14,097	3,901	1,551	3,067	2,739	1,230	1,181	330	83	15
	$77,537	$66,865	$80,696	$79,177	$81,595	$85,848	$85,275	$81,502	$76,840	$76,130

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	- -	- -	- -	- -	- -	- -	- -	- -
	$69,418	$69,418	- -	- -	- -	- -	- -	- -	- -	- -
25-29	23	19	4	- -	- -	- -	- -	- -	- -	- -
	82,087	80,192	$91,089	- -	- -	- -	- -	- -	- -	- -
30-34	48	33	11	4	- -	- -	- -	- -	- -	- -
	98,210	91,913	112,833	$109,952	- -	- -	- -	- -	- -	- -
35-39	80	35	20	24	1	- -	- -	- -	- -	- -
	105,380	97,592	109,319	113,910	$94,412	- -	- -	- -	- -	- -
40-44	74	27	18	23	6	- -	- -	- -	- -	- -
	111,406	105,522	117,735	113,635	110,354	- -	- -	- -	- -	- -
45-49	92	20	13	20	17	9	13	- -	- -	- -
	120,999	110,284	125,034	118,230	126,181	$136,234	$120,386	- -	- -	- -
50-54	112	15	15	20	11	17	31	3	- -	- -
	128,229	98,854	120,395	130,528	115,162	156,074	134,733	$121,864	- -	- -
55-59	84	12	20	15	8	11	17	1	- -	- -
	124,527	105,869	112,459	113,310	149,274	146,878	134,918	137,564	- -	- -
60-64	56	8	6	10	10	10	10	2	- -	- -
	130,170	113,133	125,940	125,059	130,343	151,065	124,670	158,733	- -	- -
65-69	15	3	1	2	2	1	4	1	1	- -
	119,675	117,218	113,696	102,920	196,844	94,157	113,616	78,227	$103,404	- -
70 & over	7	- -	1	- -	1	2	2	1	- -	- -
	107,789	- -	78,874	- -	93,547	131,768	108,024	102,516	- -	- -
Total	592	173	109	118	56	50	77	8	1	- -
	$116,789	$98,882	$115,045	$117,953	$127,737	$147,267	$129,254	$125,171	$103,404	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	15	15	- -	- -	- -	- -	- -	- -	- -	- -
	$56,513	$56,513	- -	- -	- -	- -	- -	- -	- -	- -
25-29	52	48	3	1	- -	- -	- -	- -	- -	- -
	57,103	55,763	$74,674	$68,726	- -	- -	- -	- -	- -	- -
30-34	61	39	18	4	- -	- -	- -	- -	- -	- -
	66,789	61,797	76,151	73,338	- -	- -	- -	- -	- -	- -
35-39	117	41	13	52	11	- -	- -	- -	- -	- -
	77,524	69,989	88,329	77,641	$92,288	- -	- -	- -	- -	- -
40-44	138	31	22	49	34	2	- -	- -	- -	- -
	77,705	72,207	88,566	76,455	77,490	$77,754	- -	- -	- -	- -
45-49	190	45	32	52	44	10	7	- -	- -	- -
	78,297	65,337	93,639	81,467	75,413	81,291	$81,780	- -	- -	- -
50-54	231	37	18	67	61	18	24	5	1	- -
	78,865	73,994	118,631	68,859	73,384	82,409	92,576	$93,552	$81,680	- -
55-59	253	26	18	68	56	19	43	17	6	- -
	83,114	69,646	107,893	78,647	78,720	106,856	83,304	85,060	76,709	- -
60-64	187	15	19	34	34	17	32	19	14	3
	84,515	85,872	85,374	81,258	67,341	109,355	85,056	90,017	88,685	$103,040
65-69	55	3	8	10	18	4	5	3	2	2
	74,782	56,948	90,425	70,718	72,576	59,130	82,055	65,570	108,512	72,339
70 & over	14	3	- -	3	5	1	2	- -	- -	- -
	71,940	88,734	- -	59,867	74,289	58,617	65,643	- -	- -	- -
Total	1,313	303	151	340	263	71	113	44	23	5
	$78,242	$66,852	$93,450	$76,450	$75,362	$93,468	$85,307	$86,837	$86,980	$90,760

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25-29	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
30-34	6	5	- -	1	- -	- -	- -	- -	- -	- -
	$88,725	$84,839	- -	$108,150	- -	- -	- -	- -	- -	- -
35-39	7	6	- -	1	- -	- -	- -	- -	- -	- -
	83,089	88,674	- -	49,579	- -	- -	- -	- -	- -	- -
40-44	8	3	- -	4	1	- -	- -	- -	- -	- -
	96,937	108,737	- -	96,258	$64,254	- -	- -	- -	- -	- -
45-49	11	7	2	1	- -	1	- -	- -	- -	- -
	118,992	122,839	$151,001	56,286	- -	$90,749	- -	- -	- -	- -
50-54	14	6	1	3	3	- -	1	- -	- -	- -
	129,638	143,174	124,175	94,038	113,471	- -	$209,194	- -	- -	- -
55-59	10	2	2	2	4	- -	- -	- -	- -	- -
	121,371	95,556	85,303	159,744	133,127	- -	- -	- -	- -	- -
60-64	6	2	1	1	1	1	- -	- -	- -	- -
	161,876	145,666	283,154	184,465	80,824	131,480	- -	- -	- -	- -
65-69	1	- -	- -	- -	1	- -	- -	- -	- -	- -
	76,031	- -	- -	- -	76,031	- -	- -	- -	- -	- -
70 & over	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	42,691	- -	- -	42,691	- -	- -	- -	- -	- -	- -
Total	64	31	6	14	10	2	1	- -	- -	- -
	$114,328	$112,381	$146,656	$101,986	$109,403	$111,114	$209,194	- -	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	5	5	- -	- -	- -	- -	- -	- -	- -	- -
	$52,754	$52,754	- -	- -	- -	- -	- -	- -	- -	- -
25-29	15	15	- -	- -	- -	- -	- -	- -	- -	- -
	67,124	67,124	- -	- -	- -	- -	- -	- -	- -	- -
30-34	30	25	4	1	- -	- -	- -	- -	- -	- -
	77,066	76,246	$80,064	$85,558	- -	- -	- -	- -	- -	- -
35-39	39	21	7	8	3	- -	- -	- -	- -	- -
	88,391	86,517	92,327	89,647	$88,974	- -	- -	- -	- -	- -
40-44	41	14	8	11	8	- -	- -	- -	- -	- -
	89,913	85,414	71,008	109,485	89,781	- -	- -	- -	- -	- -
45-49	45	24	4	4	9	4	- -	- -	- -	- -
	115,703	111,643	133,664	115,505	108,903	$137,604	- -	- -	- -	- -
50-54	54	8	4	5	17	8	10	2	- -	- -
	99,646	108,331	109,423	116,495	88,329	104,503	$92,969	$113,377	- -	- -
55-59	31	7	5	3	8	6	2	- -	- -	- -
	107,496	86,555	158,991	123,594	83,759	118,610	89,517	- -	- -	- -
60-64	16	4	- -	2	9	1	- -	- -	- -	- -
	104,558	98,403	- -	91,314	105,732	145,105	- -	- -	- -	- -
65-69	4	- -	1	1	1	1	- -	- -	- -	- -
	81,683	- -	71,683	92,652	73,985	88,411	- -	- -	- -	- -
70 & over	1	- -	- -	1	- -	- -	- -	- -	- -	- -
	55,671	- -	- -	55,671	- -	- -	- -	- -	- -	- -
Total	281	123	33	36	55	20	12	2	- -	- -
	$94,988	$87,277	$102,230	$104,258	$93,864	$116,581	$92,394	$113,377	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	- -	- -	- -	- -	- -	- -	- -	- -
	$44,187	$44,187	- -	- -	- -	- -	- -	- -	- -	- -
30-34	2	2	- -	- -	- -	- -	- -	- -	- -	- -
	44,589	44,589	- -	- -	- -	- -	- -	- -	- -	- -
35-39	4	- -	2	1	1	- -	- -	- -	- -	- -
	60,879	- -	$54,024	$62,739	$72,731	- -	- -	- -	- -	- -
40-44	2	- -	- -	1	1	- -	- -	- -	- -	- -
	75,182	- -	- -	54,570	95,794	- -	- -	- -	- -	- -
45-49	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
50-54	8	2	- -	2	- -	2	2	- -	- -	- -
	69,113	52,866	- -	114,559	- -	$54,228	$54,798	- -	- -	- -
55-59	2	1	- -	- -	- -	1	- -	- -	- -	- -
	76,346	54,686	- -	- -	- -	98,006	- -	- -	- -	- -
60-64	6	1	- -	- -	- -	2	2	1	- -	- -
	67,364	50,791	- -	- -	- -	75,112	54,228	$94,712	- -	- -
65-69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	25	7	2	4	2	5	4	1	- -	- -
	$65,481	$49,225	$54,024	$86,607	$84,263	$71,337	$54,513	$94,712	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
35-39	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$48,479	$48,479	- -	- -	- -	- -	- -	- -	- -	- -
40-44	2	- -	- -	2	- -	- -	- -	- -	- -	- -
	88,199	- -	- -	$88,199	- -	- -	- -	- -	- -	- -
45-49	1	- -	- -	- -	1	- -	- -	- -	- -	- -
	63,472	- -	- -	- -	$63,472	- -	- -	- -	- -	- -
50-54	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
55-59	3	- -	- -	- -	2	- -	1	- -	- -	- -
	83,246	- -	- -	- -	88,023	- -	$73,693	- -	- -	- -
60-64	4	- -	1	- -	1	1	1	- -	- -	- -
	97,100	- -	$52,877	- -	63,777	$81,034	190,711	- -	- -	- -
65-69	1	- -	- -	- -	- -	1	- -	- -	- -	- -
	63,472	- -	- -	- -	- -	63,472	- -	- -	- -	- -
70 & over	2	- -	- -	1	- -	- -	- -	1	- -	- -
	64,907	- -	- -	48,779	- -	- -	- -	$81,034	- -	- -
Total	14	1	1	3	4	2	2	1	- -	- -
	$79,984	$48,479	$52,877	$75,059	$75,824	$72,253	$132,202	$81,034	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	1	1	- -	- -	- -	- -	- -	- -	- -	- -
	$58,971	$58,971	- -	- -	- -	- -	- -	- -	- -	- -
25-29	14	7	7	- -	- -	- -	- -	- -	- -	- -
	64,796	58,185	$71,406	- -	- -	- -	- -	- -	- -	- -
30-34	43	10	7	26	- -	- -	- -	- -	- -	- -
	68,153	59,174	60,538	$73,657	- -	- -	- -	- -	- -	- -
35-39	140	3	7	94	36	- -	- -	- -	- -	- -
	77,226	57,857	60,459	77,170	$82,248	- -	- -	- -	- -	- -
40-44	222	- -	9	56	139	17	1	- -	- -	- -
	82,352	- -	62,813	78,150	83,527	$97,554	$71,832	- -	- -	- -
45-49	177	1	- -	17	75	76	8	- -	- -	- -
	88,628	53,851	- -	73,760	83,346	96,113	102,971	- -	- -	- -
50-54	99	- -	- -	5	29	29	29	7	- -	- -
	93,102	- -	- -	74,199	80,565	93,446	101,755	$121,277	- -	- -
55-59	41	- -	2	1	8	10	13	7	- -	- -
	97,255	- -	79,204	71,473	83,487	87,801	97,574	134,746	- -	- -
60-64	21	- -	- -	1	7	5	6	2	- -	- -
	84,734	- -	- -	72,661	78,339	81,317	93,167	96,401	- -	- -
65-69	5	- -	- -	1	2	1	1	- -	- -	- -
	80,182	- -	- -	71,594	65,226	103,995	94,866	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	763	22	32	201	296	138	58	16	- -	- -
	$83,961	$58,429	$64,704	$76,548	$82,788	$94,649	$99,462	$124,060	- -	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	67	66	1	- -	- -	- -	- -	- -	- -	- -
	$78,557	$78,457	$85,168	- -	- -	- -	- -	- -	- -	- -
25-29	249	152	92	5	- -	- -	- -	- -	- -	- -
	90,141	82,575	101,272	$115,302	- -	- -	- -	- -	- -	- -
30-34	327	81	166	79	1	- -	- -	- -	- -	- -
	103,991	87,978	106,456	114,982	$123,557	- -	- -	- -	- -	- -
35-39	288	31	82	133	41	1	- -	- -	- -	- -
	113,937	99,360	106,281	118,328	125,922	$118,083	- -	- -	- -	- -
40-44	303	17	28	82	135	41	- -	- -	- -	- -
	123,235	106,387	114,694	117,568	126,710	135,950	- -	- -	- -	- -
45-49	374	7	12	56	102	158	37	2	- -	- -
	133,477	113,068	123,009	130,375	128,269	138,537	$136,054	$172,719	- -	- -
50-54	261	39	3	20	42	63	80	14	- -	- -
	135,275	130,386	133,452	127,565	124,743	133,142	140,908	169,300	- -	- -
55-59	103	24	14	3	7	20	18	17	- -	- -
	137,387	140,064	141,462	126,125	116,874	138,626	128,096	149,066	- -	- -
60-64	35	2	9	7	- -	3	2	11	1	- -
	135,263	125,482	150,331	143,002	- -	121,122	118,526	128,240	$118,173	- -
65-69	3	1	- -	1	1	- -	- -	- -	- -	- -
	131,143	141,287	- -	138,954	113,189	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	2,010	420	407	386	329	286	137	44	1	- -
	$117,599	$93,750	$108,625	$120,231	$126,584	$136,730	$137,587	$151,373	$118,173	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
By Age and Years of Service

xi. Rate Group #8 – Safety – Plans E, F, Q, R and V (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	15	15	- -	- -	- -	- -	- -	- -	- -	- -
	$78,607	$78,607	- -	- -	- -	- -	- -	- -	- -	- -
25-29	74	69	4	1	- -	- -	- -	- -	- -	- -
	94,476	93,827	$102,663	$106,530	- -	- -	- -	- -	- -	- -
30-34	139	85	37	17	- -	- -	- -	- -	- -	- -
	104,845	95,549	116,797	125,312	- -	- -	- -	- -	- -	- -
35-39	189	56	62	63	8	- -	- -	- -	- -	- -
	119,819	101,839	122,728	131,664	$129,861	- -	- -	- -	- -	- -
40-44	166	17	53	56	35	5	- -	- -	- -	- -
	131,082	103,896	129,932	137,577	132,775	$151,109	- -	- -	- -	- -
45-49	136	3	32	33	32	22	14	- -	- -	- -
	139,358	116,923	136,889	131,811	137,136	150,057	$155,861	- -	- -	- -
50-54	140	1	27	10	26	30	34	12	- -	- -
	145,541	133,466	146,135	123,771	143,608	142,736	155,269	$146,995	- -	- -
55-59	101	1	35	3	11	14	19	16	2	- -
	133,922	83,765	132,250	131,358	127,031	138,025	139,119	136,213	$133,619	- -
60-64	35	2	16	- -	1	2	6	2	6	- -
	129,912	98,696	128,164	- -	117,300	115,119	139,561	143,874	137,711	- -
65-69	11	- -	5	1	- -	- -	2	- -	3	- -
	130,256	- -	126,441	140,756	- -	- -	116,561	- -	142,244	- -
70 & over	1	- -	- -	- -	- -	- -	- -	- -	1	- -
	104,570	- -	- -	- -	- -	- -	- -	- -	104,570	- -
Total	1,007	249	271	184	113	73	75	30	12	- -
	$125,212	$96,424	$128,654	$132,382	$135,600	$143,856	$148,999	$141,036	$135,401	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
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	354	353	1	- -	- -	- -	- -	- -	- -	- -
	$57,682	$57,604	$85,168	- -	- -	- -	- -	- -	- -	- -
25-29	1,637	1,456	166	15	- -	- -	- -	- -	- -	- -
	63,400	60,517	86,728	$85,072	- -	- -	- -	- -	- -	- -
30-34	2,498	1,424	596	471	7	- -	- -	- -	- -	- -
	72,932	66,968	84,960	75,637	$80,203	- -	- -	- -	- -	- -
35-39	2,977	874	601	1,154	343	5	- -	- -	- -	- -
	81,756	73,184	88,839	85,171	79,754	$77,753	- -	- -	- -	- -
40-44	3,164	602	378	963	1,026	191	4	- -	- -	- -
	85,766	73,665	91,581	86,807	88,129	94,952	$62,271	- -	- -	- -
45-49	3,384	421	308	737	966	648	301	3	- -	- -
	92,020	76,843	95,894	89,139	91,803	102,965	93,017	$138,019	- -	- -
50-54	3,133	375	235	513	701	494	667	141	7	- -
	92,160	83,846	94,584	83,832	87,188	101,538	99,243	98,488	$100,159	- -
55-59	2,361	264	229	397	466	306	463	190	44	2
	88,717	84,356	100,113	84,559	82,074	93,262	90,915	95,368	80,435	$78,287
60-64	1,446	152	118	233	331	199	239	112	54	8
	83,600	81,049	96,015	77,584	79,689	86,953	83,732	91,072	85,293	82,697
65-69	548	45	52	98	156	67	83	27	15	5
	81,479	88,897	96,295	78,792	77,158	81,466	82,191	69,350	88,696	80,335
70 & over	219	11	11	39	68	32	34	13	6	5
	71,268	58,909	60,222	77,568	73,634	72,901	61,755	82,401	64,226	75,184
Total	21,721	5,977	2,695	4,620	4,064	1,942	1,791	486	126	20
	$83,416	$69,458	$90,841	$84,389	$86,074	$97,342	$92,389	$93,754	$83,824	$79,787

EXHIBIT C
Reconciliation of Member Data – December 31, 2016 to December 31, 2017

	Active Members	Vested Former Members[1]	Pensioners	Disableds	Beneficiaries	Total
Number as of December 31, 2016	21,746	5,370	12,767	1,419	2,183	43,485
New members	1,425	141	0	0	193	1,759
Terminations – with vested rights	-584	584	0	0	0	0
Contributions refunds	-161	-111	0	0	0	-272
Retirements	-678	-128	806	0	0	0
New disabilities	-31	-7	-27	65	0	0
Return to work	35	-34	-1	0	0	0
Deaths	-31	-12	-308	-37	-105	-493
Data adjustments	0	0	3	-1	-10	-8
Number as of December 31, 2017	21,721	5,803	13,240	1,446	2,261	44,471

[1] *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, 2017		Year Ended December 31, 2016	
Contribution income:				
Employer contributions	$596,146,000[1]		$533,667,000[2]	
Member contributions	262,294,000		258,297,000	
Discount for prepaid contributions	22,921,000		24,353,000	
Transfer from County Investment Account[3]	0		0	
Contribution income		$881,361,000		$816,317,000
Investment income:				
Interest, dividends and other income	$419,412,000		$220,524,000	
Recognition of capital appreciation	654,094,000		653,783,000	
Less investment and administrative fees	(96,378,000)		(97,680,000)	
Net investment income		$977,128,000		$776,627,000
Total income available for benefits		$1,858,489,000		$1,592,944,000
Less benefit payments		$(764,344,000)		$(717,976,000)
Change in reserve for future benefits		$1,094,145,000		$874,968,000

(1) *Includes asset transfer of $24,042,000 from O.C. Sanitation District UAAL Deferred Account to valuation assets.*

(2) *Excludes contributions towards O.C. Sanitation District UAAL Deferred Account.*

(3) *Funded by pension obligation bond proceeds held by OCERS.*

EXHIBIT E

Summary Statement of Assets

	Year Ended December 31, 2017		Year Ended December 31, 2016	
Cash equivalents		$486,846,000		$456,545,000
Accounts receivable:				
Contributions	$21,361,000		$19,206,000	
Investment income	13,727,000		15,880,000	
Securities settlements	150,619,000		85,263,000	
Other	199,651,000		56,019,000	
Total accounts receivable		$385,358,000		$176,368,000
Investments:				
Fixed income investments	$2,011,101,000		$2,051,276,000	
Equities	7,305,333,000		4,774,008,000	
Real estate	N/A		1,096,693,000	
Alternative investments and diversified credit	5,115,269,000		4,692,664,000	
Security lending collateral	189,948,000		165,455,000	
Fixed assets net of accumulated depreciation	20,670,000		22,620,000	
Total investments at market value		$14,642,321,000		$12,802,716,000
Total assets		$15,514,525,000		$13,435,629,000
Less accounts payable:				
Securities settlements	$(194,266,000)		$(157,867,000)	
Security lending liability	(189,948,000)		(165,455,000)	
All other	(83,864,000)		(80,575,000)	
Total accounts payable		$(468,078,000)		$(403,897,000)
Net assets at market value[(1)]		$14,652,607,000		$12,657,418,000
Net assets at actuarial value		$14,197,211,000		$13,103,066,000
Net assets at valuation value		$14,197,125,000		$13,102,978,000

(1) *The market value excludes $134,417,000 and $117,723,000 as of December 31, 2017 and December 31, 2016, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS), $244,552,000 and $222,524,000 as of December 31, 2017 and December 31,2016, respectively, in the prepaid employer contributions account, $14,871,000 and $34,067,000 as of December 31, 2017 and December 31, 2016, respectively in the O.C. Sanitation District UAAL Deferred Account (after transfer).*

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	$14,197,125,000
2.	Present value of future contributions by members	2,003,365,000
3.	Present value of future employer contributions for:	
	a. entry age normal cost	2,406,565,000
	b. unfunded actuarial accrued liability	5,438,302,000
4.	Total current and future assets	$24,045,357,000
Liabilities		
5.	Present value of retirement allowance for retirees and beneficiaries	$10,633,213,000
6.	Present value of retirement allowance for inactive members with vested rights[1]	488,752,000
7.	Present value of retirement allowances for active members	12,923,392,000
8.	Total liabilities	$24,045,357,000

[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, 2017

Reserves

Included in Valuation Value of Assets		
Active Members Reserve (Book Value)		$3,093,114,000
Retired Members Reserve (Book Value)		9,821,494,000
Employer Advanced Reserve (Book Value)		2,586,106,000
O.C. Sanitation District UAAL Deferred Account Transfer		24,042,000
ERI Contribution Reserve		10,660,000
STAR COLA Contribution Reserve		0
Unrealized Appreciation/(Depriciation) Included in Valuation Value of Assets		-1,338,291,000
Subtotal: Valuation Value of Assets		$14,197,125,000
Not Included in Valuation Value of Assets		
RMBR	$0	
Unclaimed Member Deposit	0	
Medicare Medical Insurance Reserve	86,000	
Total	$86,000	
Subtotal: Actuarial Value of Assets		$14,197,211,000
Unrecognized Investment Income		455,396,000
Subtotal: Market Value of Assets (Net of County Investment Account[1] and Prepaid Employer Contributions)		$14,652,607,000
County Investment Account[1]		134,417,000
Prepaid Employer Contributions		244,552,000
O.C. Sanitation District UAAL Deferred Account[2]		14,871,000
Total: Gross Market Value of Assets		$15,046,447,000

[1] *Funded by pension obligation bond proceeds held by OCERS.*

[2] *After asset transfer of $24,042,000 from O.C. Sanitation District UAAL Deferred Account to valuation assets.*

EXHIBIT H

Development of Unfunded/(Overfunded) Actuarial Accrued Liability for Year Ended December 31, 2017

1.	Unfunded actuarial accrued liability at beginning of year		$4,830,483,000
2.	Additional UAAL contributions from Children and Families and Law Library to pay-off UAAL		-3,800,000
3.	Unfunded actuarial accrued liability at beginning of year after reflecting additional UAAL contributions from Children and Families and Law Library to pay-off UAAL		$4,826,683,000
4.	Total normal cost at middle of year		468,525,000
5.	Expected employer and member contributions		-854,874,000
6.	Interest		336,342,000
7.	Expected unfunded actuarial accrued liability		$4,776,676,000
8.	Actuarial (gain)/loss and other changes:		
	(a) Gain from additional UAAL contributions	-$36,348,000	
	(b) Loss from actual contributions less than expected	37,726,000	
	(c) Gain from investment return	-24,401,000	
	(d) Gain from lower than expected COLA increases	-95,796,000	
	(e) Gain from higher than expected salary increases	-66,399,000	
	(f) Other experience loss	17,348,000	
	(g) Gain from asset transfer from O.C. Sanitation District UAAL Deferred Account	-24,042,000	
	(h) Changes in actuarial assumptions	853,538,000	
	Total changes		$661,626,000
9.	Unfunded actuarial accrued liability at end of year		$5,438,302,000

Note: The sum of 8(d) through 8(f) is equal to the “other experience” gain of $144,847,000 provided on page 7.

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 $220,000 for 2018. 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/(Overfunded) 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 2,261 beneficiaries in pay status)		16,947
2.	Members inactive during year ended December 31, 2017 with vested rights[(1)]		5,803
3.	Members active during the year ended December 31, 2017		21,721

The actuarial factors as of the valuation date are as follows (amounts in 000s):

1.	Normal cost		$508,328
2.	Present value of future benefits		24,045,357
3.	Present value of future normal costs		4,409,930
4.	Actuarial accrued liability[(2)]		19,635,427
	Retired members and beneficiaries	$10,633,213	
	Inactive members with vested rights[(1)]	488,752	
	Active members	8,513,462	
5.	Valuation value of assets[(3)] ($14,652,607 at market value as reported by Retirement System)		14,197,125
6.	Unfunded actuarial accrued liability		$5,438,302

(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	$508,328	28.05%
2.	Expected member contributions	-228,888	-12.63%
3.	Employer normal cost: (1) + (2)	$279,440	15.42%
4.	Amortization of unfunded actuarial accrued liability	408,555	22.55%
5.	Total recommended average employer contribution: (3) + (4)	$687,995	37.97%
6.	Projected compensation	$1,811,877	

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, 2014 through December 31, 2016 Actuarial Experience Study dated August 14, 2017 and PowerPoint presentation dated October 16, 2017. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers.
<u>Economic Assumptions</u>	
Net Investment Return:	7.00%; net of investment expenses and administrative expenses.
Member Contribution Crediting Rate:	5.00%, compounded semi-annually.
Consumer Price Index:	Increase of 2.75% per year, retiree COLA increases due to CPI subject to a 3.0% maximum change per year.
Payroll Growth:	Inflation of 2.75% per year plus “across the board” real salary increases of 0.50% per year.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% per year from the valuation date.

Individual Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 2.75% 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	9.00%	14.00%
1	7.25	10.00
2	6.00	7.75
3	5.00	6.00
4	4.00	5.50
5	3.50	4.50
6	2.50	3.75
7	2.25	3.25
8	1.75	2.50
9	1.50	2.25
10	1.50	1.75
11	1.50	1.75
12	1.50	1.75
13	1.50	1.75
14	1.50	1.75
15	1.50	1.75
16	1.00	1.50
17	1.00	1.50
18	1.00	1.50
19	1.00	1.50
20 & over	1.00	1.50

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

Demographic Assumptions

Post – Retirement Mortality Rates:

Healthy:	For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally with the two-dimensional MP-2016 projection scale. For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back four years, projected generationally with the two-dimensional MP-2016 projection scale.
Disabled:	For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward five years, projected generationally with the two-dimensional MP-2016 projection scale. For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally with the two-dimensional MP-2016 projection scale.
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 RP-2014 mortality tables and adjustments as shown above reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

Member Contribution Rates:	For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016, weighted 40% male and 60% female. For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016 set back four years, weighted 80% male and 20% female.
Optional Forms of Benefits:	For General Service Retirees: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016, weighted 40% male and 60% female. For Safety Service Retirees: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016 set back four years, weighted 80% male and 20% female. For General Disabled Retirees: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016 set forward five years, weighted 40% male and 60% female.

For Safety Disabled Retirees: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016, weighted 80% male and 20% female.

For General Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016, weighted 60% male and 40% female.

For Safety Beneficiaries: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table (separate tables for males and females), projected 20 years with the two-dimensional mortality improvement scale MP-2016, weighted 20% male and 80% female.

Pre-Retirement Mortality Rates: For General and Safety Members: Headcount-Weighted RP-2014 Employee Mortality Table times 80%, projected generationally with the two-dimensional MP-2016 projection scale.

Termination Rates Before Retirement:

	Rate (%)	
	Mortality (General and Safety)	
Age	Male	Female
25	0.05	0.02
30	0.05	0.02
35	0.05	0.03
40	0.06	0.04
45	0.10	0.07
50	0.17	0.11
55	0.27	0.17
60	0.45	0.24
65	0.78	0.36
70	1.27	0.59

Note that generational projections beyond the base year (2014) are not reflected in the above mortality rates.

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

Termination Rates Before Retirement (Continued):

	Rate (%)			
	Disability			
Age	General All Other[(1)]	General OCTA[(2)]	Safety - Law & Fire[(3)]	Safety - Probation[(4)]
20	0.00	0.00	0.00	0.00
25	0.00	0.00	0.01	0.03
30	0.01	0.03	0.04	0.08
35	0.03	0.20	0.14	0.10
40	0.08	0.36	0.23	0.13
45	0.13	0.43	0.40	0.21
50	0.18	0.48	1.10	0.28
55	0.23	0.65	2.40	0.42
60	0.31	1.26	4.80	0.20

(1) *60% of General All Other disabilities are assumed to be service connected disabilities. The other 40% 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 and Fire disabilities are assumed to be service connected disabilities.*

(4) *75% of Safety Probation disabilities are assumed to be service connected disabilities. The other 25% are assumed to be non-service connected.*

Termination Rates Before Retirement (Continued):

	Rate (%) Termination			
Years of Service	General All Other	General OCTA	Safety – Law & Fire	Safety - Probation
0	11.00	17.50	4.50	14.00
1	7.50	11.00	2.50	13.00
2	6.50	9.00	2.00	10.00
3	5.00	8.50	1.50	5.00
4	4.50	7.50	1.25	4.00
5	4.25	7.00	1.00	3.50
6	3.75	4.50	0.95	2.75
7	3.25	4.00	0.90	2.00
8	3.00	3.50	0.85	2.00
9	2.75	3.00	0.80	1.75
10	2.50	3.00	0.75	1.75
11	2.00	3.00	0.65	1.50
12	2.00	3.00	0.60	1.25
13	1.75	2.50	0.55	1.00
14	1.50	2.50	0.50	0.75
15	1.40	2.50	0.45	0.75
16	1.30	2.00	0.40	0.75
17	1.20	1.80	0.35	0.25
18	1.10	1.60	0.30	0.25
19	1.00	1.40	0.25	0.25
20 +	0.90	1.20	0.20	0.25

Termination Rates Before Retirement (Continued):

	Election for Withdrawal of Contributions (%)			
Years of Service	General All Other	General OCTA	Safety – Law & Fire	Safety - Probation
0 – 4	35.0	40.0	20.0	25.0
5 – 9	30.0	35.0	20.0	25.0
10 – 14	25.0	30.0	20.0	25.0
15 or more	20.0	20.0	20.0	25.0

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)	Safety - Fire (31664.2)	Safety - Probation(2)
48	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
49	30.0	25.0	0.0	12.0	0.0	2.0	0.0	0.0
50	2.5	2.0	3.0	18.0	11.5	5.0	8.0	3.3
51	2.0	2.0	3.0	18.0	12.0	7.0	10.0	3.3
52	2.5	2.0	3.0	17.0	12.7	9.5	11.0	4.3
53	2.5	2.8	3.0	17.0	17.9	10.5	12.0	4.3
54	5.5	2.8	3.0	22.0	18.8	15.0	14.0	7.0
55	15.0	3.3	4.0	22.0	30.7	18.0	24.0	12.0
56	10.0	3.5	5.0	20.0	20.0	20.0	23.0	12.0
57	10.0	5.5	6.0	20.0	20.0	21.0	27.0	18.0
58	11.0	5.5	7.0	20.0	25.0	28.0	27.0	18.0
59	11.0	6.5	9.0	26.0	30.0	28.0	36.0	18.0
60	12.0	9.3	11.0	35.0	40.0	30.0	40.0	20.0
61	12.0	12.0	13.0	35.0	40.0	30.0	40.0	20.0
62	14.0	16.0	15.0	40.0	40.0	35.0	40.0	25.0
63	16.0	16.0	15.0	40.0	40.0	35.0	40.0	40.0
64	16.0	18.0	20.0	40.0	40.0	35.0	40.0	40.0
65	22.0	22.0	20.0	100.0	100.0	100.0	100.0	100.0
66	22.0	28.0	24.0	100.0	100.0	100.0	100.0	100.0
67	23.0	24.0	24.0	100.0	100.0	100.0	100.0	100.0
68	23.0	24.0	24.0	100.0	100.0	100.0	100.0	100.0
69	23.0	20.0	24.0	100.0	100.0	100.0	100.0	100.0
70	25.0	20.0	50.0	100.0	100.0	100.0	100.0	100.0
71	25.0	25.0	50.0	100.0	100.0	100.0	100.0	100.0
72	25.0	25.0	50.0	100.0	100.0	100.0	100.0	100.0
73	25.0	25.0	50.0	100.0	100.0	100.0	100.0	100.0
74	25.0	25.0	50.0	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
50	0.0	2.5	11.0	6.0
51	0.0	2.5	11.5	7.0
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	11.5
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	30.0
60	7.5	40.0	40.0	40.0
61	7.5	40.0	40.0	40.0
62	14.0	40.0	40.0	40.0
63	14.0	40.0	40.0	40.0
64	14.0	40.0	40.0	40.0
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	25.0	100.0	100.0	100.0
71	25.0	100.0	100.0	100.0
72	25.0	100.0	100.0	100.0
73	25.0	100.0	100.0	100.0
74	25.0	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:	59
Safety Age:	53

We assume that 15% of future General and 25% of future Safety deferred vested members will continue to work for a reciprocal employer. For reciprocals, we assume 4.25% compensation increases for General and 4.75% for Safety per annum.

Liability Calculation for Current Deferred Vested Members:

Liability for a current deferred vested member is calculated based on salary (adjusted with the additional cashout assumptions for non-CalPEPRA members), service, and eligibility for reciprocal benefit as provided by the Retirement System. For those members without salary information that have 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 55% 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.

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	3.00%	2.80%
Safety - Probation	3.80%	3.40%
Safety - Law	5.20%	4.60%
Safety - Fire	2.00%	1.70%

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

CalPEPRA Formulas

None

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:	Based on the Actuarial Experience Study, the following assumptions were changed. Previously, these assumptions were as follows:

<u>Economic Assumptions</u>

Net Investment Return:	7.25%; net of investment and administrative expenses.
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.
Increase in Section 7522.10 Compensation Limit:	Increase of 3.00% per year from the valuation date.

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

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.

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

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.

<u>Changes in Actuarial Assumptions and Methods (previous assumptions continued):</u>

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.

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

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.*

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

Termination Rates Before Retirement (Continued):

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

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

(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.*

Changes in Actuarial Assumptions and Methods (previous assumptions continued):

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.*

<u>Changes in Actuarial Assumptions and Methods (previous assumptions continued):</u>

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.*

<u>Changes in Actuarial Assumptions and Methods (previous assumptions continued):</u>

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 reciprocals, we assume 4.25% compensation increases for General and 5.00% for Safety per annum.

Percent Married:

75% of male members and 50% of female members are assumed to be married at retirement or time of pre-retirement death.

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

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[(1)] and Law Library[(2)])

Plan G	General members hired before September 21, 1979.
Plan H	General members hired on or after September 21, 1979

(1) *Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010 are in Plan B.*
(2) *Improvement is prospective only for service after June 23, 2005.*

2.7% @ 55 Plans (City of San Juan Capistrano, Orange County 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 OCFA)

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[(1)] and General OCFA)

Plan M	General members hired before September 21, 1979 and General OCFA members hired on or after July 1, 2011.
Plan N	General members hired on or after September 21, 1979.

(1) *Improvement is prospective only for service after December 7, 2007.*

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, OCFA 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, OCFA)

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, 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 and not electing Plan U.

CalPEPRA Safety Plans

2.7% @ 57 Plan (Law Enforcement, OCFA 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)[(1)]
	65 or later	(2.62% x FAS1 x Yrs)[(1)]
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)

[(1)] *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):

2.0% @ 55	**Retirement Age**	**Benefit Formula**
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)(1)
	62	(2.62% x FAS1 x Yrs)(1)
	65 or later	(2.62% x FAS1 x Yrs)(1)
Plan N (§31676.16)	50	(1.43% x FAS3 x Yrs)
	55	(2.00% x FAS3 x Yrs)
	60	(2.26% x FAS3 x Yrs)
	62	(2.37% x FAS3 x Yrs)
	65 or later	(2.43% x FAS3 x Yrs)(2)

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

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

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)
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, 2017

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	$70,164,000	16	$68,689,000	$5,741,000
	12/31/2013	Actuarial (gain) or loss	(5,744,000)	16	(5,623,000)	(470,000)
	12/31/2014	Actuarial (gain) or loss	(2,744,000)	17	(2,710,000)	(217,000)
	12/31/2014	Assumption changes	(6,545,000)	17	(6,463,000)	(517,000)
	12/31/2015	Actuarial (gain) or loss	(1,650,000)	18	(1,641,000)	(126,000)
	12/31/2016	Actuarial (gain) or loss	(9,719,000)	19	(9,700,000)	(716,000)
	12/31/2017	Actuarial (gain) or loss	(5,386,000)	20	(5,386,000)	(384,000)
	12/31/2017	Assumption changes	21,899,000	20	21,899,000	1,561,000
Subtotal					$59,065,000	$4,872,000
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for O.C. Vector Control					$2,052,000 (1)	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Department of Education					$3,046,000 (1)	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for U.C.I.					$30,927,000 (1)	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Cypress Parks and Recreation					$853,000 (1)	
Rate Group #1 Subtotal					$95,943,000	

Note:

We have made an adjustment to the amortization bases to reflect the $653,000 in UAAL for Cypress Parks and Recreation as of December 31, 2016 (ref: our letter to OCERS dated October 23, 2017). With that adjustment, we have reduced the amortization layers established on or before December 31, 2016 for Orange County and IHSS by that amount on a pro-rata basis.

(1) *In determining the UAALs for the O.C. Vector Control District, Department of Education, U.C.I and Cypress Parks and Recreation, we first start by rolling forward the VVAs of these employers as of December 31, 2016 to December 31, 2017 to reflect the actual contributions, benefit payments and return on their VVAs during 2017. The AALs for these employers, calculated to reflect the assumption changes, are obtained from internal valuation results.*

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$3,366,250,000	$281,362,000
	12/31/2013	Actuarial (gain) or loss	(173,790,000)	16	(170,136,000)	(14,221,000)
	12/31/2014	Actuarial (gain) or loss	(78,001,000)	17	(77,027,000)	(6,158,000)
	12/31/2014	Assumption changes	(246,714,000)	17	(243,633,000)	(19,477,000)
	12/31/2015	Actuarial (gain) or loss	(65,063,000)	18	(64,689,000)	(4,963,000)
	12/31/2016	Actuarial (gain) or loss	39,445,000	19	39,368,000	2,907,000
Subtotal					$2,850,133,000	$239,450,000(1)
	12/31/2017	Actuarial (gain) or loss	(59,911,000)	20	(59,911,000)	(4,270,000)
	12/31/2017	Assumption changes	481,098,000	20	481,098,000	34,288,000
Subtotal					$421,187,000	$30,018,000(2)
Rate Group #2 Subtotal					$3,271,320,000	$269,468,000

Note:

We have made an adjustment to the amortization bases to reflect the $1.7 million additional contributions made by Children and Families Commission to pay off their UAAL as of December 31, 2016. With that adjustment, we have reduced the amortization layers established on or before December 31, 2016 for Rate Group #2 by that amount on a pro-rata basis. The UAAL contribution rate for Children and Families Commission is determined based on the amortization layers established on or after December 31, 2017.

(1) *This amount is spread over the payroll for all employers in Rate Group #2 excluding the payroll for Children and Families Commission.*

(2) *This amount is spread over the payroll for all employers in Rate Group #2 including the payroll for Children and Families Commission.*

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2017

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #3 – Plans B, G, H and U (OCSD)						
Rate Group #3 Subtotal					$0[1]	$0

[1] *After transfer of $24,042,000 from O.C. Sanitation District UAAL Deferred Account.*

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$227,811,000	$19,041,000
	12/31/2013	Actuarial (gain) or loss	(13,471,000)	16	(13,198,000)	(1,103,000)
	12/31/2014	Actuarial (gain) or loss	4,522,000	17	4,470,000	357,000
	12/31/2014	Assumption changes	(19,944,000)	17	(19,712,000)	(1,576,000)
	12/31/2015	Actuarial (gain) or loss	(933,000)	18	(928,000)	(71,000)
	12/31/2016	Actuarial (gain) or loss	(9,743,000)	19	(9,732,000)	(719,000)
	12/31/2017	Actuarial (gain) or loss	(9,948,000)	20	(9,948,000)	(709,000)
	12/31/2017	Assumption changes	43,481,000	20	43,481,000	3,099,000
Rate Group #5 Subtotal					$222,244,000	$18,319,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$11,665,000	$975,000
	12/31/2013	Actuarial (gain) or loss	(684,000)	16	(670,000)	(56,000)
	12/31/2014	Actuarial (gain) or loss	496,000	17	491,000	39,000
	12/31/2014	Assumption changes	(1,032,000)	17	(1,020,000)	(82,000)
	12/31/2015	Actuarial (gain) or loss	778,000	18	774,000	59,000
	12/31/2016	Actuarial (gain) or loss	(1,535,000)	19	(1,533,000)	(113,000)
	12/31/2017	Actuarial (gain) or loss	(257,000)	20	(257,000)	(18,000)
	12/31/2017	Assumption changes	1,665,000	20	1,665,000	119,000
Rate Group #9 Subtotal					$11,115,000	$923,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$71,278,000	$5,958,000
	12/31/2013	Actuarial (gain) or loss	(2,659,000)	16	(2,605,000)	(218,000)
	12/31/2014	Actuarial (gain) or loss	(3,755,000)	17	(3,711,000)	(297,000)
	12/31/2014	Assumption changes	(4,489,000)	17	(4,437,000)	(355,000)
	12/31/2015	Actuarial (gain) or loss	626,000	18	623,000	48,000
	12/31/2016	Actuarial (gain) or loss	134,000	19	134,000	10,000
	12/31/2017	Actuarial (gain) or loss	(15,281,000)	20	(15,281,000)	(1,089,000)
	12/31/2017	Assumption changes	9,159,000	20	9,159,000	653,000
Rate Group #10 Subtotal					$55,160,000	$4,710,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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)						
	12/31/2017	Restart amortization & Assumption changes	$281,000	20	$281,000	$20,000
Rate Group #11 Subtotal					$281,000	$20,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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)						
	12/31/2017	Restart amortization & Assumption changes	$13,000	20	$13,000	$1,000
Rate Group #12 Subtotal					$13,000	$1,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$189,010,000	$15,798,000
	12/31/2013	Actuarial (gain) or loss	(14,039,000)	16	(13,756,000)	(1,150,000)
	12/31/2014	Actuarial (gain) or loss	(2,596,000)	17	(2,566,000)	(205,000)
	12/31/2014	Assumption changes	36,260,000	17	35,837,000	2,865,000
	12/31/2015	Actuarial (gain) or loss	(10,703,000)	18	(10,650,000)	(817,000)
	12/31/2016	Actuarial (gain) or loss	13,799,000	19	13,783,000	1,018,000
	12/31/2017	Actuarial (gain) or loss	(6,566,000)	20	(6,566,000)	(468,000)
	12/31/2017	Assumption changes	50,030,000	20	50,030,000	3,566,000
Rate Group #6 Subtotal					$255,122,000	$20,607,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

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	16	$968,834,000	$80,978,000
	12/31/2013	Actuarial (gain) or loss	(51,652,000)	16	(50,607,000)	(4,230,000)
	12/31/2014	Actuarial (gain) or loss	(34,729,000)	17	(34,324,000)	(2,744,000)
	12/31/2014	Assumption changes	102,262,000	17	101,068,000	8,080,000
	12/31/2015	Actuarial (gain) or loss	23,666,000	18	23,549,000	1,807,000
	12/31/2016	Actuarial (gain) or loss	39,724,000	19	39,679,000	2,930,000
	12/31/2017	Actuarial (gain) or loss	(27,922,000)	20	(27,922,000)	(1,990,000)
	12/31/2017	Assumption changes	161,417,000	20	161,417,000	11,504,000
Rate Group #7 Subtotal					$1,181,694,000	$96,335,000

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2017

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #8 – Plans E, F, Q, R and V (OCFA)						
	12/31/2012	Restart amortization	$399,947,000	16	$391,858,000	$32,753,000
	12/31/2013	Actuarial (gain) or loss	(20,177,000)	16	(19,769,000)	(1,652,000)
	12/31/2014	Actuarial (gain) or loss	(35,400,000)	17	(34,986,000)	(2,797,000)
	12/31/2014	Assumption changes	35,957,000	17	35,538,000	2,841,000
	12/31/2015	Actuarial (gain) or loss	(22,228,000)	18	(22,119,000)	(1,697,000)
	12/31/2016	Actuarial (gain) or loss	(15,736,000)	19	(15,718,000)	(1,161,000)
	12/31/2017	Actuarial (gain) or loss	(43,031,000)	20	(43,031,000)	(3,067,000)
	12/31/2017	Assumption changes	53,637,000	20	53,637,000	3,823,000
Rate Group #8 Subtotal					$345,410,000	$29,043,000

Appendix A (Continued)
UAAL Amortization Schedule as of December 31, 2017

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
All Rate Groups Combined Excluding O.C. Vector Control, Department of Education, U.C.I., Cypress Parks and Recreation and O.C. Sanitation District						
	12/31/2012	Restart amortization	$5,407,593,000	16	$5,295,408,000	$442,606,000
	12/31/2013	Actuarial (gain) or loss	(282,229,000)	16	(276,377,000)	(23,100,000)
	12/31/2014	Actuarial (gain) or loss	(152,205,000)	17	(150,361,000)	(12,022,000)
	12/31/2014	Assumption changes	(104,247,000)	17	(102,824,000)	(8,221,000)
	12/31/2015	Actuarial (gain) or loss	(75,507,000)	18	(75,081,000)	(5,760,000)
	12/31/2016	Actuarial (gain) or loss	56,369,000	19	56,281,000	4,156,000
	12/31/2017	Actuarial (gain) or loss	(168,305,000)	20	(168,305,000)	(11,995,000)
	12/31/2017	Assumption changes	822,683,000	20	822,683,000	58,634,000
Subtotal					$5,401,424,000	$444,298,000
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for O.C. Vector Control					$2,052,000	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Department of Education					$3,046,000	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for U.C.I.					$30,927,000	
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD) for Cypress Parks and Recreation					$853,000	
Rate Group #3 – Plans B, G, H and U (OCSD)					$0	
Grand Total					$5,438,302,000	

Appendix B
Member Contribution Rates

General Tier 1 Members' Contribution Rates from the December 31, 2017 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	7.51%	10.51%	7.51%	10.31%	5.46%	7.92%	3.28%	5.46%
16	7.51%	10.51%	7.51%	10.31%	5.46%	7.92%	3.28%	5.46%
17	7.63%	10.68%	7.63%	10.47%	5.55%	8.05%	3.33%	5.55%
18	7.75%	10.85%	7.75%	10.64%	5.64%	8.18%	3.38%	5.64%
19	7.87%	11.03%	7.87%	10.81%	5.73%	8.31%	3.44%	5.73%
20	8.00%	11.21%	8.00%	10.99%	5.82%	8.44%	3.49%	5.83%
21	8.13%	11.39%	8.13%	11.16%	5.92%	8.58%	3.55%	5.92%
22	8.26%	11.57%	8.26%	11.34%	6.01%	8.72%	3.61%	6.01%
23	8.39%	11.75%	8.39%	11.53%	6.11%	8.86%	3.67%	6.11%
24	8.53%	11.94%	8.53%	11.71%	6.21%	9.00%	3.72%	6.21%
25	8.66%	12.14%	8.66%	11.90%	6.31%	9.14%	3.78%	6.31%
26	8.81%	12.33%	8.81%	12.09%	6.41%	9.29%	3.84%	6.41%
27	8.95%	12.53%	8.95%	12.29%	6.51%	9.44%	3.91%	6.51%
28	9.09%	12.74%	9.09%	12.49%	6.61%	9.59%	3.97%	6.62%
29	9.24%	12.94%	9.24%	12.69%	6.72%	9.74%	4.03%	6.72%
30	9.39%	13.16%	9.39%	12.90%	6.83%	9.90%	4.10%	6.83%
31	9.55%	13.38%	9.55%	13.11%	6.94%	10.06%	4.16%	6.94%
32	9.71%	13.60%	9.71%	13.33%	7.05%	10.22%	4.23%	7.06%
33	9.87%	13.83%	9.87%	13.56%	7.17%	10.39%	4.30%	7.17%
34	10.04%	14.06%	10.04%	13.79%	7.28%	10.56%	4.37%	7.29%
35	10.21%	14.31%	10.21%	14.03%	7.40%	10.73%	4.44%	7.41%
36	10.39%	14.56%	10.39%	14.27%	7.53%	10.91%	4.52%	7.53%
37	10.58%	14.82%	10.58%	14.53%	7.65%	11.09%	4.59%	7.66%
38	10.77%	15.09%	10.77%	14.80%	7.78%	11.28%	4.67%	7.78%
39	10.92%	15.30%	10.92%	15.00%	7.91%	11.47%	4.75%	7.92%

General Tier 1 Members' Contribution Rates from the December 31, 2017 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	11.08%	15.52%	11.08%	15.22%	8.05%	11.67%	4.83%	8.05%
41	11.24%	15.75%	11.24%	15.44%	8.19%	11.88%	4.92%	8.20%
42	11.41%	15.99%	11.41%	15.67%	8.34%	12.09%	5.00%	8.34%
43	11.59%	16.24%	11.59%	15.92%	8.49%	12.31%	5.10%	8.50%
44	11.79%	16.51%	11.79%	16.19%	8.61%	12.48%	5.17%	8.61%
45	12.00%	16.81%	12.00%	16.48%	8.73%	12.66%	5.24%	8.74%
46	12.20%	17.09%	12.20%	16.76%	8.86%	12.85%	5.32%	8.87%
47	12.37%	17.33%	12.37%	16.99%	9.00%	13.04%	5.40%	9.00%
48	12.54%	17.57%	12.54%	17.22%	9.14%	13.25%	5.48%	9.14%
49	12.63%	17.68%	12.63%	17.34%	9.29%	13.47%	5.58%	9.30%
50	12.68%	17.76%	12.68%	17.42%	9.46%	13.71%	5.67%	9.46%
51	12.66%	17.73%	12.66%	17.38%	9.62%	13.94%	5.77%	9.62%
52	12.55%	17.57%	12.55%	17.23%	9.75%	14.14%	5.85%	9.76%
53	12.32%	17.26%	12.32%	16.92%	9.88%	14.33%	5.93%	9.89%
54	11.86%	16.61%	11.86%	16.29%	9.95%	14.43%	5.97%	9.96%
55	11.86%	16.61%	11.86%	16.29%	10.00%	14.49%	6.00%	10.00%
56	11.86%	16.61%	11.86%	16.29%	9.98%	14.46%	5.99%	9.98%
57	11.86%	16.61%	11.86%	16.29%	9.89%	14.34%	5.93%	9.89%
58	11.86%	16.61%	11.86%	16.29%	9.71%	14.08%	5.83%	9.72%
59	11.86%	16.61%	11.86%	16.29%	9.35%	13.55%	5.61%	9.35%
60	11.86%	16.61%	11.86%	16.29%	9.35%	13.55%	5.61%	9.35%
COLA Loading:		*40.06%*		*37.33%*		*44.97%*		*66.73%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*
Additional Cashouts *See Exhibit II, page 83*

* Payable by members in Rate Group #9 and Rate Group #11.

General Tier 1 Members' Contribution Rates from the December 31, 2017 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	3.28%	5.37%	7.51%	10.51%
16	3.28%	5.37%	7.51%	10.51%
17	3.33%	5.46%	7.63%	10.68%
18	3.38%	5.55%	7.75%	10.85%
19	3.44%	5.64%	7.87%	11.03%
20	3.49%	5.73%	8.00%	11.20%
21	3.55%	5.82%	8.13%	11.38%
22	3.61%	5.91%	8.26%	11.57%
23	3.67%	6.01%	8.39%	11.75%
24	3.72%	6.10%	8.53%	11.94%
25	3.78%	6.20%	8.66%	12.13%
26	3.84%	6.30%	8.81%	12.33%
27	3.91%	6.40%	8.95%	12.53%
28	3.97%	6.51%	9.09%	12.73%
29	4.03%	6.61%	9.24%	12.94%
30	4.10%	6.72%	9.39%	13.15%
31	4.16%	6.83%	9.55%	13.37%
32	4.23%	6.94%	9.71%	13.60%
33	4.30%	7.05%	9.87%	13.82%
34	4.37%	7.17%	10.04%	14.06%
35	4.44%	7.28%	10.21%	14.30%
36	4.52%	7.40%	10.39%	14.55%
37	4.59%	7.53%	10.58%	14.81%
38	4.67%	7.65%	10.77%	15.09%
39	4.75%	7.78%	10.92%	15.30%
40	4.83%	7.92%	11.08%	15.51%
41	4.92%	8.06%	11.24%	15.74%
42	5.00%	8.20%	11.41%	15.98%

General Tier 1 Members' Contribution Rates from the December 31, 2017 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	5.10%	8.35%	11.59%	16.24%
44	5.17%	8.47%	11.79%	16.51%
45	5.24%	8.59%	12.00%	16.80%
46	5.32%	8.72%	12.20%	17.09%
47	5.40%	8.85%	12.37%	17.32%
48	5.48%	8.99%	12.54%	17.56%
49	5.58%	9.14%	12.63%	17.68%
50	5.67%	9.30%	12.68%	17.76%
51	5.77%	9.46%	12.66%	17.72%
52	5.85%	9.59%	12.55%	17.57%
53	5.93%	9.72%	12.32%	17.25%
54	5.97%	9.79%	11.86%	16.61%
55	6.00%	9.83%	11.86%	16.61%
56	5.99%	9.81%	11.86%	16.61%
57	5.93%	9.73%	11.86%	16.61%
58	5.83%	9.55%	11.86%	16.61%
59	5.61%	9.20%	11.86%	16.61%
60	5.61%	9.20%	11.86%	16.61%
COLA Loading:		*63.93%*		*40.02%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*
Additional Cashouts *See Exhibit II, page 83*

General Tier 2 Members' Contribution Rates from the December 31, 2017 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	7.18%	10.06%	7.18%	9.87%	5.23%	7.58%	5.23%	7.32%	5.23%	7.24%
16	7.18%	10.06%	7.18%	9.87%	5.23%	7.58%	5.23%	7.32%	5.23%	7.24%
17	7.30%	10.22%	7.30%	10.02%	5.31%	7.70%	5.31%	7.44%	5.31%	7.35%
18	7.42%	10.39%	7.42%	10.19%	5.40%	7.83%	5.40%	7.56%	5.40%	7.47%
19	7.54%	10.55%	7.54%	10.35%	5.49%	7.95%	5.49%	7.68%	5.49%	7.59%
20	7.66%	10.72%	7.66%	10.51%	5.57%	8.08%	5.57%	7.81%	5.57%	7.71%
21	7.78%	10.89%	7.78%	10.68%	5.66%	8.21%	5.66%	7.93%	5.66%	7.84%
22	7.90%	11.07%	7.90%	10.85%	5.75%	8.34%	5.75%	8.06%	5.75%	7.96%
23	8.03%	11.25%	8.03%	11.03%	5.85%	8.47%	5.85%	8.19%	5.85%	8.09%
24	8.16%	11.43%	8.16%	11.20%	5.94%	8.61%	5.94%	8.32%	5.94%	8.22%
25	8.29%	11.61%	8.29%	11.38%	6.03%	8.75%	6.03%	8.45%	6.03%	8.35%
26	8.42%	11.80%	8.42%	11.57%	6.13%	8.89%	6.13%	8.59%	6.13%	8.48%
27	8.56%	11.99%	8.56%	11.75%	6.23%	9.03%	6.23%	8.72%	6.23%	8.62%
28	8.70%	12.18%	8.70%	11.94%	6.33%	9.17%	6.33%	8.86%	6.33%	8.76%
29	8.84%	12.38%	8.84%	12.14%	6.43%	9.32%	6.43%	9.01%	6.43%	8.90%
30	8.98%	12.58%	8.98%	12.34%	6.53%	9.47%	6.53%	9.15%	6.53%	9.04%
31	9.13%	12.79%	9.13%	12.54%	6.64%	9.62%	6.64%	9.30%	6.64%	9.19%
32	9.28%	13.00%	9.28%	12.75%	6.75%	9.78%	6.75%	9.45%	6.75%	9.33%
33	9.44%	13.22%	9.44%	12.96%	6.86%	9.94%	6.86%	9.60%	6.86%	9.48%
34	9.60%	13.44%	9.60%	13.18%	6.97%	10.10%	6.97%	9.76%	6.97%	9.64%
35	9.76%	13.67%	9.76%	13.41%	7.08%	10.26%	7.08%	9.92%	7.08%	9.80%
36	9.93%	13.91%	9.93%	13.64%	7.20%	10.43%	7.20%	10.08%	7.20%	9.96%
37	10.09%	14.14%	10.09%	13.86%	7.32%	10.61%	7.32%	10.25%	7.32%	10.12%
38	10.24%	14.35%	10.24%	14.07%	7.44%	10.78%	7.44%	10.42%	7.44%	10.29%
39	10.38%	14.54%	10.38%	14.26%	7.56%	10.97%	7.56%	10.59%	7.56%	10.47%
40	10.53%	14.75%	10.53%	14.46%	7.69%	11.15%	7.69%	10.78%	7.69%	10.65%
41	10.68%	14.96%	10.68%	14.67%	7.83%	11.35%	7.83%	10.96%	7.83%	10.83%
42	10.84%	15.18%	10.84%	14.89%	7.95%	11.53%	7.95%	11.14%	7.95%	11.01%

General Tier 2 Members' Contribution Rates from the December 31, 2017 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	11.01%	15.42%	11.01%	15.12%	8.07%	11.70%	8.07%	11.31%	8.07%	11.17%
44	11.18%	15.65%	11.18%	15.35%	8.18%	11.87%	8.18%	11.46%	8.18%	11.32%
45	11.34%	15.88%	11.34%	15.57%	8.30%	12.03%	8.30%	11.62%	8.30%	11.48%
46	11.48%	16.07%	11.48%	15.76%	8.42%	12.20%	8.42%	11.79%	8.42%	11.65%
47	11.58%	16.21%	11.58%	15.90%	8.54%	12.39%	8.54%	11.96%	8.54%	11.82%
48	11.63%	16.29%	11.63%	15.98%	8.68%	12.58%	8.68%	12.15%	8.68%	12.00%
49	11.63%	16.29%	11.63%	15.97%	8.81%	12.77%	8.81%	12.34%	8.81%	12.19%
50	11.56%	16.19%	11.56%	15.87%	8.93%	12.95%	8.93%	12.51%	8.93%	12.36%
51	11.40%	15.96%	11.40%	15.65%	9.05%	13.11%	9.05%	12.67%	9.05%	12.51%
52	11.12%	15.58%	11.12%	15.28%	9.12%	13.23%	9.12%	12.78%	9.12%	12.62%
53	11.48%	16.08%	11.48%	15.77%	9.17%	13.29%	9.17%	12.84%	9.17%	12.69%
54	11.86%	16.61%	11.86%	16.29%	9.17%	13.29%	9.17%	12.83%	9.17%	12.68%
55	11.86%	16.61%	11.86%	16.29%	9.11%	13.21%	9.11%	12.76%	9.11%	12.60%
56	11.86%	16.61%	11.86%	16.29%	8.98%	13.02%	8.98%	12.58%	8.98%	12.43%
57	11.86%	16.61%	11.86%	16.29%	8.77%	12.71%	8.77%	12.28%	8.77%	12.13%
58	11.86%	16.61%	11.86%	16.29%	9.05%	13.12%	9.05%	12.68%	9.05%	12.52%
59	11.86%	16.61%	11.86%	16.29%	9.35%	13.55%	9.35%	13.09%	9.35%	12.94%
60	11.86%	16.61%	11.86%	16.29%	9.35%	13.55%	9.35%	13.09%	9.35%	12.94%
COLA Loading:		*40.06%*		*37.33%*		*44.97%*		*40.04%*		*38.36%*

Interest:	*7.00%*
Salary Increases:	*See Exhibit II, page 74*
Mortality:	*See Exhibit II, page 75*
Additional Cashouts	*See Exhibit II, page 83*

* Payable by members in Rate Group #9 and Rate Group #11.

General Tier 2 Members' Contribution Rates from the December 31, 2017 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	7.18%	10.06%	5.23%	6.63%	5.23%	7.28%	5.23%	7.67%	6.28%	8.64%
16	7.18%	10.06%	5.23%	6.63%	5.23%	7.28%	5.23%	7.67%	6.28%	8.64%
17	7.30%	10.22%	5.31%	6.74%	5.31%	7.40%	5.31%	7.80%	6.38%	8.78%
18	7.42%	10.38%	5.40%	6.85%	5.40%	7.52%	5.40%	7.92%	6.48%	8.92%
19	7.54%	10.55%	5.49%	6.96%	5.49%	7.64%	5.49%	8.05%	6.58%	9.07%
20	7.66%	10.72%	5.57%	7.07%	5.57%	7.76%	5.57%	8.18%	6.69%	9.21%
21	7.78%	10.89%	5.66%	7.18%	5.66%	7.89%	5.66%	8.31%	6.80%	9.36%
22	7.90%	11.07%	5.75%	7.30%	5.75%	8.01%	5.75%	8.44%	6.90%	9.51%
23	8.03%	11.24%	5.85%	7.41%	5.85%	8.14%	5.85%	8.58%	7.02%	9.66%
24	8.16%	11.42%	5.94%	7.53%	5.94%	8.27%	5.94%	8.72%	7.13%	9.82%
25	8.29%	11.61%	6.03%	7.65%	6.03%	8.40%	6.03%	8.86%	7.24%	9.97%
26	8.42%	11.79%	6.13%	7.77%	6.13%	8.54%	6.13%	9.00%	7.36%	10.13%
27	8.56%	11.98%	6.23%	7.90%	6.23%	8.68%	6.23%	9.14%	7.47%	10.29%
28	8.70%	12.18%	6.33%	8.03%	6.33%	8.81%	6.33%	9.29%	7.59%	10.46%
29	8.84%	12.38%	6.43%	8.15%	6.43%	8.96%	6.43%	9.44%	7.72%	10.63%
30	8.98%	12.58%	6.53%	8.29%	6.53%	9.10%	6.53%	9.59%	7.84%	10.80%
31	9.13%	12.79%	6.64%	8.42%	6.64%	9.25%	6.64%	9.74%	7.97%	10.97%
32	9.28%	13.00%	6.75%	8.55%	6.75%	9.40%	6.75%	9.90%	8.10%	11.15%
33	9.44%	13.22%	6.86%	8.69%	6.86%	9.55%	6.86%	10.06%	8.23%	11.33%
34	9.60%	13.44%	6.97%	8.83%	6.97%	9.70%	6.97%	10.22%	8.36%	11.51%
35	9.76%	13.67%	7.08%	8.98%	7.08%	9.86%	7.08%	10.39%	8.50%	11.70%
36	9.93%	13.91%	7.20%	9.13%	7.20%	10.02%	7.20%	10.56%	8.64%	11.89%
37	10.09%	14.13%	7.32%	9.28%	7.32%	10.19%	7.32%	10.74%	8.78%	12.09%
38	10.24%	14.34%	7.44%	9.43%	7.44%	10.36%	7.44%	10.92%	8.93%	12.29%
39	10.38%	14.54%	7.56%	9.59%	7.56%	10.54%	7.56%	11.10%	9.08%	12.50%
40	10.53%	14.74%	7.69%	9.76%	7.69%	10.72%	7.69%	11.29%	9.23%	12.72%
41	10.68%	14.96%	7.83%	9.93%	7.83%	10.90%	7.83%	11.49%	9.39%	12.94%
42	10.84%	15.18%	7.95%	10.09%	7.95%	11.08%	7.95%	11.67%	9.55%	13.15%

General Tier 2 Members' Contribution Rates from the December 31, 2017 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**
43	11.01%	15.41%	8.07%	10.24%	8.07%	11.24%	8.07%	11.85%	9.69%	13.34%
44	11.18%	15.65%	8.18%	10.38%	8.18%	11.40%	8.18%	12.01%	9.82%	13.53%
45	11.34%	15.87%	8.30%	10.52%	8.30%	11.56%	8.30%	12.18%	9.96%	13.72%
46	11.48%	16.07%	8.42%	10.68%	8.42%	11.72%	8.42%	12.36%	10.10%	13.91%
47	11.58%	16.21%	8.54%	10.83%	8.54%	11.90%	8.54%	12.54%	10.25%	14.12%
48	11.63%	16.29%	8.68%	11.00%	8.68%	12.08%	8.68%	12.73%	10.41%	14.34%
49	11.63%	16.28%	8.81%	11.17%	8.81%	12.27%	8.81%	12.93%	10.57%	14.56%
50	11.56%	16.18%	8.93%	11.33%	8.93%	12.44%	8.93%	13.11%	10.72%	14.77%
51	11.40%	15.96%	9.05%	11.47%	9.05%	12.60%	9.05%	13.27%	10.85%	14.95%
52	11.12%	15.58%	9.12%	11.57%	9.12%	12.71%	9.12%	13.39%	10.95%	15.08%
53	11.48%	16.08%	9.17%	11.63%	9.17%	12.77%	9.17%	13.46%	11.00%	15.15%
54	11.86%	16.61%	9.17%	11.62%	9.17%	12.76%	9.17%	13.45%	11.00%	15.15%
55	11.86%	16.61%	9.11%	11.55%	9.11%	12.69%	9.11%	13.37%	10.93%	15.05%
56	11.86%	16.61%	8.98%	11.39%	8.98%	12.51%	8.98%	13.19%	10.78%	14.85%
57	11.86%	16.61%	8.77%	11.12%	8.77%	12.21%	8.77%	12.87%	10.52%	14.49%
58	11.86%	16.61%	9.05%	11.48%	9.05%	12.61%	9.05%	13.28%	10.86%	14.96%
59	11.86%	16.61%	9.35%	11.86%	9.35%	13.02%	9.35%	13.72%	11.22%	15.45%
60	11.86%	16.61%	9.35%	11.86%	9.35%	13.02%	9.35%	13.72%	11.22%	15.45%
COLA Loading:		*40.02%*		*26.81%*		*39.27%*		*46.76%*		*37.72%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*
Additional Cashouts *See Exhibit II, page 83*

General Tier 2 Members' Contribution Rates from the December 31, 2017 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	7.18%	9.87%
16	7.18%	9.87%
17	7.30%	10.03%
18	7.42%	10.19%
19	7.54%	10.35%
20	7.66%	10.52%
21	7.78%	10.69%
22	7.90%	10.86%
23	8.03%	11.03%
24	8.16%	11.21%
25	8.29%	11.39%
26	8.42%	11.57%
27	8.56%	11.76%
28	8.70%	11.95%
29	8.84%	12.14%
30	8.98%	12.34%
31	9.13%	12.55%
32	9.28%	12.75%
33	9.44%	12.97%
34	9.60%	13.19%
35	9.76%	13.41%
36	9.93%	13.65%
37	10.09%	13.87%
38	10.24%	14.07%
39	10.38%	14.27%
40	10.53%	14.47%
41	10.68%	14.68%
42	10.84%	14.89%

General Tier 2 Members' Contribution Rates from the December 31, 2017 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	11.01%	15.12%
44	11.18%	15.36%
45	11.34%	15.57%
46	11.48%	15.77%
47	11.58%	15.90%
48	11.63%	15.98%
49	11.63%	15.98%
50	11.56%	15.88%
51	11.40%	15.66%
52	11.12%	15.28%
53	11.48%	15.78%
54	11.86%	16.30%
55	11.86%	16.30%
56	11.86%	16.30%
57	11.86%	16.30%
58	11.86%	16.30%
59	11.86%	16.30%
60	11.86%	16.30%
COLA Loading:		*37.40%*

Interest:	*7.00%*
Salary Increases:	*See Exhibit II, page 74*
Mortality:	*See Exhibit II, page 75*
Additional Cashouts	*See Exhibit II, page 83*

General CalPEPRA Members' Contribution Rates from the December 31, 2017 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	6.28%	8.50%	3.88%	5.20%	5.60%	7.59%	3.89%	4.90%	5.95%	8.04%
16	6.28%	8.50%	3.88%	5.20%	5.60%	7.59%	3.89%	4.90%	5.95%	8.04%
17	5.99%	8.11%	3.94%	5.28%	5.34%	7.24%	3.96%	4.97%	5.68%	7.67%
18	5.69%	7.70%	4.00%	5.37%	5.07%	6.88%	4.02%	5.05%	5.40%	7.28%
19	5.79%	7.83%	4.07%	5.46%	5.15%	6.99%	4.09%	5.14%	5.48%	7.40%
20	5.88%	7.95%	4.13%	5.54%	5.24%	7.10%	4.15%	5.22%	5.57%	7.52%
21	5.98%	8.08%	4.20%	5.63%	5.32%	7.22%	4.22%	5.30%	5.66%	7.64%
22	6.07%	8.21%	4.27%	5.72%	5.41%	7.34%	4.29%	5.39%	5.75%	7.77%
23	6.17%	8.35%	4.33%	5.81%	5.50%	7.45%	4.36%	5.47%	5.85%	7.89%
24	6.27%	8.48%	4.40%	5.91%	5.58%	7.57%	4.43%	5.56%	5.94%	8.02%
25	6.37%	8.62%	4.47%	6.00%	5.68%	7.70%	4.50%	5.65%	6.04%	8.15%
26	6.47%	8.76%	4.55%	6.10%	5.77%	7.82%	4.57%	5.74%	6.14%	8.28%
27	6.58%	8.90%	4.62%	6.20%	5.86%	7.95%	4.64%	5.84%	6.23%	8.42%
28	6.68%	9.04%	4.69%	6.30%	5.95%	8.07%	4.72%	5.93%	6.33%	8.55%
29	6.79%	9.19%	4.77%	6.40%	6.05%	8.20%	4.79%	6.03%	6.44%	8.69%
30	6.90%	9.34%	4.85%	6.50%	6.15%	8.34%	4.87%	6.12%	6.54%	8.83%
31	7.01%	9.49%	4.93%	6.61%	6.25%	8.47%	4.95%	6.22%	6.64%	8.97%
32	7.12%	9.64%	5.01%	6.72%	6.35%	8.61%	5.03%	6.32%	6.75%	9.11%
33	7.24%	9.79%	5.09%	6.82%	6.45%	8.74%	5.11%	6.43%	6.86%	9.26%
34	7.36%	9.95%	5.17%	6.94%	6.55%	8.89%	5.20%	6.53%	6.97%	9.41%
35	7.47%	10.11%	5.26%	7.05%	6.66%	9.03%	5.28%	6.64%	7.08%	9.56%
36	7.59%	10.27%	5.34%	7.17%	6.76%	9.17%	5.37%	6.75%	7.20%	9.72%
37	7.72%	10.44%	5.43%	7.29%	6.87%	9.32%	5.46%	6.86%	7.31%	9.87%
38	7.84%	10.61%	5.53%	7.41%	6.98%	9.47%	5.55%	6.98%	7.43%	10.03%
39	7.97%	10.78%	5.62%	7.54%	7.10%	9.63%	5.65%	7.10%	7.55%	10.20%
40	8.10%	10.96%	5.72%	7.67%	7.21%	9.78%	5.75%	7.22%	7.68%	10.36%
41	8.23%	11.14%	5.82%	7.81%	7.33%	9.95%	5.85%	7.35%	7.80%	10.53%
42	8.37%	11.32%	5.91%	7.93%	7.45%	10.11%	5.94%	7.47%	7.93%	10.71%
43	8.51%	11.51%	6.00%	8.05%	7.58%	10.28%	6.03%	7.58%	8.06%	10.88%
44	8.65%	11.70%	6.09%	8.17%	7.70%	10.45%	6.12%	7.69%	8.20%	11.07%

General CalPEPRA Members' Contribution Rates from the December 31, 2017 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	8.80%	11.90%	6.18%	8.29%	7.83%	10.63%	6.21%	7.80%	8.34%	11.25%
46	8.95%	12.10%	6.27%	8.41%	7.97%	10.81%	6.30%	7.92%	8.48%	11.45%
47	9.10%	12.31%	6.36%	8.54%	8.11%	11.00%	6.40%	8.04%	8.63%	11.64%
48	9.26%	12.53%	6.47%	8.68%	8.25%	11.19%	6.50%	8.17%	8.78%	11.85%
49	9.42%	12.74%	6.57%	8.82%	8.39%	11.37%	6.60%	8.30%	8.92%	12.04%
50	9.56%	12.93%	6.67%	8.95%	8.51%	11.55%	6.70%	8.43%	9.06%	12.23%
51	9.69%	13.11%	6.76%	9.07%	8.63%	11.71%	6.79%	8.54%	9.19%	12.40%
52	9.83%	13.30%	6.83%	9.16%	8.76%	11.88%	6.86%	8.62%	9.32%	12.58%
53	9.98%	13.50%	6.87%	9.22%	8.89%	12.06%	6.91%	8.68%	9.46%	12.77%
54	10.13%	13.71%	6.88%	9.23%	9.03%	12.24%	6.92%	8.69%	9.60%	12.96%
55	10.30%	13.93%	6.86%	9.20%	9.17%	12.44%	6.89%	8.67%	9.76%	13.17%
56	10.46%	14.15%	6.79%	9.11%	9.32%	12.64%	6.83%	8.58%	9.91%	13.38%
57	10.62%	14.37%	6.67%	8.95%	9.46%	12.83%	6.71%	8.43%	10.06%	13.59%
58	10.76%	14.56%	6.89%	9.24%	9.59%	13.00%	6.92%	8.70%	10.20%	13.77%
59	10.87%	14.70%	7.12%	9.55%	9.68%	13.13%	7.15%	8.99%	10.30%	13.91%
60	10.94%	14.80%	7.12%	9.55%	9.75%	13.22%	7.15%	8.99%	10.37%	14.00%
61	10.96%	14.83%	7.12%	9.55%	9.76%	13.24%	7.15%	8.99%	10.39%	14.02%
62	10.92%	14.78%	7.12%	9.55%	9.73%	13.20%	7.15%	8.99%	10.35%	13.97%
63	10.82%	14.63%	7.12%	9.55%	9.63%	13.07%	7.15%	8.99%	10.25%	13.84%
64	10.62%	14.37%	7.12%	9.55%	9.46%	12.83%	7.15%	8.99%	10.07%	13.59%
65	10.97%	14.84%	7.12%	9.55%	9.77%	13.25%	7.15%	8.99%	10.39%	14.03%
66 and thereafter	11.33%	15.33%	7.12%	9.55%	10.09%	13.69%	7.15%	8.99%	10.74%	14.49%
COLA Loading:		*35.27%*		*34.15%*		*35.63%*		*25.70%*		*34.99%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*

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 2018 is equal to $145,666 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018 (reference: Section 7522.10(d)).

General CalPEPRA Members' Contribution Rates from the December 31, 2017 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	6.56%	8.89%	5.92%	7.97%	6.13%	8.30%	6.65%	8.58%	5.19%	7.99%
16	6.56%	8.89%	5.92%	7.97%	6.13%	8.30%	6.65%	8.58%	5.19%	7.99%
17	6.26%	8.48%	5.65%	7.60%	5.85%	7.92%	6.35%	8.19%	4.95%	7.62%
18	5.94%	8.06%	5.37%	7.22%	5.55%	7.52%	6.03%	7.78%	4.71%	7.24%
19	6.04%	8.19%	5.45%	7.34%	5.64%	7.64%	6.12%	7.90%	4.78%	7.36%
20	6.14%	8.32%	5.54%	7.46%	5.74%	7.77%	6.22%	8.03%	4.86%	7.48%
21	6.24%	8.45%	5.63%	7.58%	5.83%	7.89%	6.33%	8.16%	4.94%	7.60%
22	6.34%	8.59%	5.72%	7.70%	5.92%	8.02%	6.43%	8.29%	5.02%	7.72%
23	6.44%	8.73%	5.82%	7.83%	6.02%	8.15%	6.53%	8.43%	5.10%	7.85%
24	6.55%	8.87%	5.91%	7.95%	6.12%	8.28%	6.64%	8.56%	5.18%	7.97%
25	6.65%	9.02%	6.01%	8.08%	6.22%	8.42%	6.74%	8.70%	5.27%	8.10%
26	6.76%	9.16%	6.10%	8.21%	6.32%	8.55%	6.85%	8.84%	5.35%	8.23%
27	6.87%	9.31%	6.20%	8.34%	6.42%	8.69%	6.96%	8.99%	5.44%	8.36%
28	6.98%	9.46%	6.30%	8.48%	6.52%	8.83%	7.08%	9.13%	5.52%	8.50%
29	7.09%	9.61%	6.40%	8.61%	6.63%	8.97%	7.19%	9.28%	5.61%	8.64%
30	7.20%	9.76%	6.51%	8.75%	6.73%	9.11%	7.31%	9.43%	5.70%	8.77%
31	7.32%	9.92%	6.61%	8.89%	6.84%	9.26%	7.42%	9.58%	5.79%	8.92%
32	7.44%	10.08%	6.72%	9.04%	6.95%	9.41%	7.54%	9.73%	5.89%	9.06%
33	7.56%	10.24%	6.82%	9.18%	7.06%	9.56%	7.66%	9.89%	5.98%	9.20%
34	7.68%	10.41%	6.93%	9.33%	7.18%	9.72%	7.79%	10.05%	6.08%	9.35%
35	7.80%	10.57%	7.05%	9.48%	7.29%	9.87%	7.91%	10.21%	6.18%	9.50%
36	7.93%	10.75%	7.16%	9.63%	7.41%	10.03%	8.04%	10.37%	6.28%	9.66%
37	8.06%	10.92%	7.27%	9.79%	7.53%	10.19%	8.17%	10.54%	6.38%	9.81%
38	8.19%	11.10%	7.39%	9.95%	7.65%	10.36%	8.30%	10.71%	6.48%	9.97%
39	8.32%	11.28%	7.51%	10.11%	7.77%	10.53%	8.44%	10.89%	6.59%	10.13%
40	8.45%	11.46%	7.64%	10.27%	7.90%	10.70%	8.57%	11.06%	6.69%	10.30%
41	8.59%	11.65%	7.76%	10.44%	8.03%	10.87%	8.71%	11.24%	6.80%	10.47%
42	8.74%	11.84%	7.89%	10.61%	8.16%	11.05%	8.86%	11.43%	6.92%	10.64%
43	8.88%	12.04%	8.02%	10.79%	8.30%	11.24%	9.01%	11.62%	7.03%	10.82%
44	9.03%	12.24%	8.15%	10.97%	8.44%	11.43%	9.16%	11.81%	7.15%	11.00%

General CalPEPRA Members' Contribution Rates from the December 31, 2017 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	9.18%	12.45%	8.29%	11.16%	8.58%	11.62%	9.31%	12.01%	7.27%	11.19%
46	9.34%	12.66%	8.43%	11.35%	8.73%	11.82%	9.47%	12.22%	7.39%	11.38%
47	9.50%	12.88%	8.58%	11.55%	8.88%	12.02%	9.64%	12.43%	7.52%	11.57%
48	9.67%	13.11%	8.73%	11.75%	9.04%	12.23%	9.81%	12.65%	7.66%	11.78%
49	9.83%	13.32%	8.88%	11.94%	9.19%	12.44%	9.97%	12.86%	7.78%	11.97%
50	9.98%	13.53%	9.01%	12.12%	9.33%	12.63%	10.12%	13.06%	7.90%	12.15%
51	10.12%	13.72%	9.14%	12.30%	9.46%	12.80%	10.26%	13.24%	8.01%	12.33%
52	10.26%	13.91%	9.27%	12.47%	9.59%	12.99%	10.41%	13.43%	8.13%	12.50%
53	10.42%	14.12%	9.41%	12.66%	9.74%	13.18%	10.56%	13.63%	8.25%	12.69%
54	10.58%	14.34%	9.55%	12.85%	9.89%	13.38%	10.73%	13.84%	8.37%	12.88%
55	10.75%	14.57%	9.71%	13.06%	10.04%	13.60%	10.90%	14.06%	8.51%	13.09%
56	10.92%	14.80%	9.86%	13.27%	10.21%	13.82%	11.08%	14.29%	8.65%	13.30%
57	11.09%	15.03%	10.01%	13.47%	10.36%	14.03%	11.24%	14.51%	8.78%	13.50%
58	11.23%	15.23%	10.15%	13.65%	10.50%	14.22%	11.39%	14.70%	8.90%	13.69%
59	11.35%	15.38%	10.25%	13.79%	10.60%	14.36%	11.51%	14.85%	8.98%	13.82%
60	11.42%	15.48%	10.31%	13.88%	10.67%	14.45%	11.58%	14.94%	9.04%	13.91%
61	11.44%	15.51%	10.33%	13.90%	10.69%	14.48%	11.60%	14.97%	9.06%	13.94%
62	11.40%	15.45%	10.30%	13.85%	10.66%	14.43%	11.56%	14.92%	9.03%	13.89%
63	11.29%	15.30%	10.20%	13.72%	10.55%	14.29%	11.45%	14.77%	8.94%	13.75%
64	11.09%	15.03%	10.02%	13.48%	10.36%	14.03%	11.25%	14.51%	8.78%	13.51%
65	11.45%	15.52%	10.34%	13.91%	10.70%	14.49%	11.61%	14.98%	9.06%	13.95%
66 and thereafter	11.83%	16.03%	10.68%	14.37%	11.05%	14.96%	11.99%	15.47%	9.36%	14.41%
COLA Loading:		*35.55%*		*34.55%*		*35.39%*		*29.03%*		*53.85%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*

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 2018 is equal to $145,666 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018 (reference: Section 7522.10(d)).

Safety Tier 1 Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan E (OCFA)		Plan E (Law Enforcement)		Plan E (Probation)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
15	4.66%	11.11%	4.80%	11.58%	4.74%	10.97%
16	4.66%	11.11%	4.80%	11.58%	4.74%	10.97%
17	4.72%	11.26%	4.86%	11.74%	4.80%	11.12%
18	4.78%	11.41%	4.93%	11.89%	4.86%	11.26%
19	4.85%	11.56%	4.99%	12.05%	4.93%	11.41%
20	4.91%	11.71%	5.06%	12.21%	4.99%	11.57%
21	4.98%	11.87%	5.13%	12.37%	5.06%	11.72%
22	5.04%	12.03%	5.20%	12.54%	5.13%	11.88%
23	5.11%	12.19%	5.27%	12.71%	5.20%	12.04%
24	5.18%	12.36%	5.34%	12.88%	5.27%	12.20%
25	5.25%	12.53%	5.41%	13.06%	5.34%	12.37%
26	5.33%	12.70%	5.49%	13.24%	5.42%	12.54%
27	5.40%	12.88%	5.56%	13.42%	5.49%	12.72%
28	5.48%	13.07%	5.64%	13.61%	5.57%	12.90%
29	5.56%	13.26%	5.72%	13.81%	5.65%	13.09%
30	5.64%	13.45%	5.81%	14.01%	5.73%	13.28%
31	5.73%	13.66%	5.90%	14.22%	5.82%	13.48%
32	5.81%	13.87%	5.99%	14.44%	5.91%	13.69%
33	5.91%	14.09%	6.08%	14.67%	6.01%	13.91%
34	5.99%	14.29%	6.17%	14.88%	6.09%	14.10%
35	6.08%	14.50%	6.26%	15.10%	6.18%	14.31%
36	6.17%	14.73%	6.35%	15.33%	6.28%	14.53%
37	6.28%	14.97%	6.46%	15.58%	6.38%	14.77%
38	6.38%	15.23%	6.57%	15.84%	6.49%	15.02%
39	6.51%	15.52%	6.69%	16.14%	6.61%	15.30%
40	6.61%	15.77%	6.79%	16.39%	6.71%	15.55%
41	6.71%	16.01%	6.90%	16.64%	6.82%	15.78%
42	6.79%	16.19%	6.97%	16.81%	6.89%	15.95%

Safety Tier 1 Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan E (OCFA)		Plan E (Law Enforcement)		Plan E (Probation)	
Entry Age	**Normal**	**Total**	**Normal**	**Total**	**Normal**	**Total**
43	6.85%	16.33%	7.03%	16.95%	6.95%	16.09%
44	6.88%	16.41%	7.06%	17.02%	6.98%	16.16%
45	6.87%	16.40%	7.04%	16.99%	6.97%	16.14%
46	6.86%	16.37%	7.02%	16.93%	6.95%	16.10%
47	6.78%	16.18%	6.92%	16.69%	6.86%	15.89%
48	6.62%	15.78%	6.71%	16.19%	6.67%	15.45%
49	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
50	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
51	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
52	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
53	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
54	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
55	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
56	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
57	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
58	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
59	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
60	6.27%	14.95%	6.27%	15.12%	6.27%	14.51%
COLA Loading:		*138.56%*		*141.26%*		*131.56%*

Interest:	*7.00%*
Salary Increases:	*See Exhibit II, page 74*
Mortality:	*See Exhibit II, page 75*
Additional Cashouts	*See Exhibit II, page 83*

Safety Tier 2 Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan F (OCFA)		Plan F (Law Enforcement)		Plan F (Probation)		Plan R (OCFA)		Plan R (Law Enforcement)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
15	8.87%	15.01%	9.11%	15.54%	9.01%	14.93%	8.87%	14.21%	9.11%	14.56%
16	8.87%	15.01%	9.11%	15.54%	9.01%	14.93%	8.87%	14.21%	9.11%	14.56%
17	8.99%	15.21%	9.22%	15.74%	9.13%	15.13%	8.99%	14.39%	9.22%	14.75%
18	9.10%	15.41%	9.34%	15.94%	9.24%	15.33%	9.10%	14.58%	9.34%	14.94%
19	9.22%	15.61%	9.47%	16.15%	9.37%	15.53%	9.22%	14.77%	9.47%	15.14%
20	9.35%	15.82%	9.59%	16.37%	9.49%	15.73%	9.35%	14.97%	9.59%	15.34%
21	9.47%	16.03%	9.72%	16.58%	9.62%	15.94%	9.47%	15.17%	9.72%	15.54%
22	9.60%	16.25%	9.85%	16.80%	9.74%	16.15%	9.60%	15.37%	9.85%	15.74%
23	9.73%	16.47%	9.98%	17.03%	9.87%	16.37%	9.73%	15.58%	9.98%	15.95%
24	9.86%	16.69%	10.11%	17.26%	10.01%	16.59%	9.86%	15.79%	10.11%	16.17%
25	10.00%	16.92%	10.25%	17.49%	10.14%	16.82%	10.00%	16.01%	10.25%	16.39%
26	10.13%	17.15%	10.39%	17.73%	10.28%	17.05%	10.13%	16.23%	10.39%	16.61%
27	10.28%	17.39%	10.53%	17.98%	10.43%	17.29%	10.28%	16.46%	10.53%	16.84%
28	10.42%	17.64%	10.68%	18.23%	10.57%	17.53%	10.42%	16.69%	10.68%	17.08%
29	10.57%	17.90%	10.83%	18.49%	10.73%	17.78%	10.57%	16.93%	10.83%	17.32%
30	10.73%	18.16%	10.99%	18.75%	10.88%	18.04%	10.73%	17.18%	10.99%	17.57%
31	10.89%	18.44%	11.15%	19.03%	11.05%	18.31%	10.89%	17.44%	11.15%	17.83%
32	11.05%	18.71%	11.31%	19.31%	11.21%	18.58%	11.05%	17.70%	11.31%	18.09%
33	11.21%	18.97%	11.47%	19.58%	11.36%	18.84%	11.21%	17.95%	11.47%	18.34%
34	11.37%	19.24%	11.63%	19.85%	11.52%	19.10%	11.37%	18.20%	11.63%	18.60%
35	11.53%	19.52%	11.80%	20.13%	11.69%	19.38%	11.53%	18.47%	11.80%	18.86%
36	11.71%	19.82%	11.97%	20.42%	11.86%	19.67%	11.71%	18.75%	11.97%	19.14%
37	11.90%	20.14%	12.16%	20.74%	12.05%	19.98%	11.90%	19.06%	12.16%	19.44%
38	12.08%	20.46%	12.34%	21.05%	12.23%	20.28%	12.08%	19.35%	12.34%	19.73%
39	12.26%	20.76%	12.51%	21.35%	12.41%	20.57%	12.26%	19.64%	12.51%	20.00%
40	12.41%	21.00%	12.65%	21.58%	12.55%	20.80%	12.41%	19.87%	12.65%	20.22%
41	12.52%	21.20%	12.75%	21.75%	12.65%	20.98%	12.52%	20.05%	12.75%	20.38%
42	12.59%	21.31%	12.80%	21.84%	12.71%	21.07%	12.59%	20.16%	12.80%	20.47%
43	12.60%	21.33%	12.79%	21.82%	12.71%	21.07%	12.60%	20.18%	12.79%	20.45%
44	12.56%	21.26%	12.72%	21.71%	12.66%	20.98%	12.56%	20.12%	12.72%	20.34%

Safety Tier 2 Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)
Calculated Under Recommended Assumptions

	Plan F (OCFA)		Plan F (Law Enforcement)		Plan F (Probation)		Plan R (OCFA)		Plan R (Law Enforcement)	
Entry Age	Normal	Total	Normal	Total	Normal	Total	Normal	Total	Normal	Total
45	12.44%	21.06%	12.57%	21.45%	12.52%	20.75%	12.44%	19.93%	12.57%	20.10%
46	12.21%	20.66%	12.28%	20.96%	12.25%	20.31%	12.21%	19.55%	12.28%	19.64%
47	11.77%	19.93%	11.77%	20.09%	11.77%	19.52%	11.77%	18.85%	11.77%	18.82%
48	12.14%	20.56%	12.14%	20.72%	12.14%	20.13%	12.14%	19.45%	12.14%	19.42%
49	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
50	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
51	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
52	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
53	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
54	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
55	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
56	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
57	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
58	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
59	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
60	12.54%	21.22%	12.54%	21.39%	12.54%	20.78%	12.54%	20.08%	12.54%	20.04%
COLA Loading:		*69.28%*		*70.63%*		*65.78%*		*60.16%*		*59.89%*

Interest:	*7.00%*
Salary Increases:	*See Exhibit II, page 74*
Mortality:	*See Exhibit II, page 75*
Additional Cashouts	*See Exhibit II, page 83*

Safety CalPEPRA Members' Contribution Rates from the December 31, 2017 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	9.82%	14.02%	10.87%	15.53%	9.11%	13.13%
16	9.82%	14.02%	10.87%	15.53%	9.11%	13.13%
17	9.94%	14.21%	11.01%	15.73%	9.23%	13.30%
18	10.07%	14.39%	11.15%	15.93%	9.35%	13.47%
19	10.21%	14.58%	11.30%	16.14%	9.47%	13.65%
20	10.34%	14.77%	11.44%	16.35%	9.60%	13.83%
21	10.47%	14.96%	11.59%	16.57%	9.72%	14.01%
22	10.61%	15.16%	11.75%	16.78%	9.85%	14.19%
23	10.75%	15.36%	11.90%	17.00%	9.98%	14.38%
24	10.89%	15.56%	12.06%	17.23%	10.11%	14.56%
25	11.04%	15.76%	12.22%	17.45%	10.24%	14.76%
26	11.18%	15.97%	12.38%	17.69%	10.38%	14.95%
27	11.33%	16.19%	12.54%	17.92%	10.52%	15.15%
28	11.48%	16.40%	12.71%	18.16%	10.66%	15.35%
29	11.64%	16.62%	12.88%	18.41%	10.80%	15.56%
30	11.80%	16.85%	13.06%	18.66%	10.95%	15.77%
31	11.96%	17.08%	13.24%	18.91%	11.10%	15.99%
32	12.12%	17.32%	13.42%	19.17%	11.25%	16.21%
33	12.29%	17.56%	13.61%	19.44%	11.41%	16.44%
34	12.47%	17.81%	13.80%	19.72%	11.57%	16.67%
35	12.64%	18.06%	14.00%	20.00%	11.74%	16.91%
36	12.83%	18.33%	14.20%	20.29%	11.91%	17.15%
37	13.02%	18.60%	14.41%	20.59%	12.09%	17.41%
38	13.22%	18.88%	14.63%	20.91%	12.27%	17.67%
39	13.41%	19.16%	14.85%	21.22%	12.45%	17.94%
40	13.61%	19.44%	15.06%	21.53%	12.63%	18.20%
41	13.80%	19.72%	15.28%	21.83%	12.81%	18.46%
42	14.01%	20.01%	15.51%	22.16%	13.00%	18.73%
43	14.23%	20.32%	15.75%	22.50%	13.21%	19.03%
44	14.46%	20.66%	16.01%	22.87%	13.43%	19.34%

Safety CalPEPRA Members' Contribution Rates from the December 31, 2017 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	14.69%	20.99%	16.27%	23.24%	13.64%	19.65%
46	14.92%	21.31%	16.51%	23.59%	13.85%	19.95%
47	15.10%	21.57%	16.72%	23.89%	14.02%	20.20%
48	15.25%	21.78%	16.88%	24.12%	14.16%	20.39%
49	15.34%	21.92%	16.98%	24.27%	14.24%	20.52%
50	15.37%	21.96%	17.02%	24.31%	14.27%	20.56%
51	15.34%	21.92%	16.98%	24.27%	14.24%	20.52%
52	15.22%	21.75%	16.85%	24.08%	14.13%	20.36%
53	14.97%	21.39%	16.57%	23.68%	13.90%	20.02%
54	14.49%	20.71%	16.04%	22.93%	13.46%	19.38%
55	14.95%	21.36%	16.55%	23.65%	13.88%	19.99%
56 and thereafter	15.43%	22.05%	17.09%	24.41%	14.33%	20.64%
COLA Loading:		*42.85%*		*42.88%*		*44.05%*

Interest: *7.00%*
Salary Increases: *See Exhibit II, page 74*
Mortality: *See Exhibit II, page 75*

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 2018 is equal to $145,666 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018 (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, 2017 Valuation	**December 31, 2016 Valuation**
General Members		
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	80.19%	82.57%
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	70.12%	71.23%
Rate Group #3 – Plans B, G, H and U (OCSD)	100.00%[1]	100.42%
Rate Group #5 – Plans A, B and U (OCTA)	75.74%	77.31%
Rate Group #9 – Plans M, N and U (TCA)	74.76%	75.29%
Rate Group #10 – Plans I, J, M, N and U (OCFA)	76.08%	70.16%
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	97.16%	103.37%
Rate Group #12 – Plans G, H, future service, and U (Law Library)	99.87%	84.42%
Safety Members		
Rate Group #6 – Plans E, F and V (Probation)	69.20%	70.84%
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	69.30%	69.89%
Rate Group #8 – Plans E, F, Q, R and V (OCFA)	79.03%	77.65%

(1) *After transfer of $24,042,000 from O.C. Sanitation District UAAL Deferred Account.*

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			
		RG #1[1]	RG #2	RG #3	RG #5
1.	Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	16.37%[2]	33.36%	11.42%	25.47%
2.	Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	0.00%	-0.02%	0.00%	0.00%
3.	Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	16.37%[2]	33.34%	11.42%	25.47%
4.	Actuarial (gain)/loss items:				
(a)	Effect of investment gain (after smoothing)	-0.06%	-0.09%	N/A[3]	-0.08%
(b)	Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	-0.31%	0.00%	N/A[3]	0.00%
(c)	Effect of actual contributions less/(more) than expected	-0.10%	0.16%	N/A[3]	0.22%
(d)	Effect of difference in actual versus expected COLA increases	-0.18%	-0.33%	N/A[3]	-0.24%
(e)	Effect of difference in actual versus expected salary increases	0.24%	-0.28%	N/A[3]	-0.38%
(f)	Effect of growth in total payroll (greater)/less than expected	0.21%	0.15%	N/A[3]	0.71%
(g)	Effect of other experience (gain)/loss[4]	0.06%	0.11%	0.06%	-0.30%
(h)	Effect of changes in actuarial assumptions[5]	3.73%	4.65%	0.98%[6]	4.88%
(i)	Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-1.69%	-2.38%	0.00%	-2.32%
(j)	Subtotal	1.90%	1.99%	1.04%	2.49%
5.	Aggregate Recommended Contribution Rate as of December 31, 2017	18.27%[7]	35.33%	12.46%	27.96%

(1) *Liability associated with O.C. Vector Control has been excluded in determining rates for RG #1.*

(2) *As of December 31, 2016, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for U.C.I. and DOE is 13.30%.*

(3) *N/A because RG #3 has paid off their UAAL after reflecting asset transfer from O.C. Sanitation District UAAL Deferred Account 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.*

(4) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

(5) *Actual effect of changes in actuarial assumptions on December 31, 2017 valuation is somewhat higher than the effect that we estimated in the experience study which was based on the December 31, 2016 valuation. This is primarily due to the effect of lower mortality rates based on the generational tables applied at two different measurement dates.*

(6) *Includes the effect of $24,042,000 asset transfer from O.C. Sanitation District UAAL Deferred Account to eliminate entire UAAL rate impact.*

(7) *As of December 31, 2017, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for Cypress Parks and Recreation, U.C.I. and DOE is 14.99% after adjustment for phase-in.*

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			
		RG #9	RG #10	RG #11	RG #12
1.	Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	23.53%	30.40%	10.81%	22.88%
2.	Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	0.00%	0.00%	0.00%	-9.74%
3.	Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	23.53%	30.40%	10.81%	13.14%
4.	Actuarial (gain)/loss items:				
(a)	Effect of investment gain (after smoothing)	-0.06%	-0.08%	N/A[1]	N/A[1]
(b)	Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	0.00%	-3.92%	N/A[1]	N/A[1]
(c)	Effect of actual contributions less/(more) than expected	-0.11%	-0.01%	N/A[1]	N/A[1]
(d)	Effect of difference in actual versus expected COLA increases	-0.17%	-0.28%	N/A[1]	N/A[1]
(e)	Effect of difference in actual versus expected salary increases	0.27%	-0.21%	N/A[1]	N/A[1]
(f)	Effect of growth in total payroll (greater)/less than expected	-0.40%	0.73%	N/A[1]	N/A[1]
(g)	Effect of other experience (gain)/loss[2]	-0.03%	0.28%	0.11%	-0.10%
(h)	Effect of changes in actuarial assumptions[3]	2.73%	3.93%	2.52%	0.81%
(i)	Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-1.25%	-1.88%	-0.96%	0.00%
(j)	Subtotal	0.98%	-1.44%	1.67%	0.71%
5.	Aggregate Recommended Contribution Rate as of December 31, 2017	24.51%	28.96%	12.48%	13.85%

(1) *N/A because RG #11 and RG #12 have become overfunded and, under CalPEPRA and before reflecting the effect of changes in actuarial assumptions, 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.*

(2) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

(3) *Actual effect of changes in actuarial assumptions on December 31, 2017 valuation is somewhat higher than the effect that we estimated in the experience study which was based on the December 31, 2016 valuation. This is primarily due to the effect of lower mortality rates based on the generational tables applied at two different measurement dates.*

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		
		RG #6	RG #7	RG #8
1.	Aggregate Recommended Contribution Rate as of December 31, 2016 (before adjustments to FY18-19 rates)	47.81%	62.39%	47.31%
2.	Adjustment to FY18-19 rates for additional UAAL contributions from Children and Families and Law Library	0.00%	0.00%	0.00%
3.	Aggregate Recommended Contribution Rate as of December 31, 2016 (after adjustments to FY18-19 rates)	47.81%	62.39%	47.31%
4.	Actuarial (gain)/loss items:			
(a)	Effect of investment gain (after smoothing)	-0.11%	-0.14%	-0.13%
(b)	Effect of additional UAAL contributions from OCFA and anticipated payments from DOE and UCI	0.00%	0.00%	-1.02%
(c)	Effect of actual contributions less/(more) than expected	0.53%	0.18%	0.04%
(d)	Effect of difference in actual versus expected COLA increases	-0.31%	-0.73%	-0.49%
(e)	Effect of difference in actual versus expected salary increases	-0.71%	0.02%	-0.90%
(f)	Effect of growth in total payroll (greater)/less than expected	1.29%	-1.58%	-0.06%
(g)	Effect of other experience (gain)/loss[(1),(2)]	-0.26%	-0.76%	-0.24%
(h)	Effect of changes in actuarial assumptions[(3),(4)]	8.34%	6.71%	4.02%
(i)	Effect of three-year phase-in of UAAL cost impact due to changes in actuarial assumptions	-4.26%	-3.71%	-2.29%
(j)	Subtotal	4.51%	-0.01%	-1.07%
5.	Aggregate Recommended Contribution Rate as of December 31, 2017	52.32%	62.38%	46.24%

(1) *Net of an adjustment to reflect 18-month delay between date of valuation and date of rate implementation for all actuarial experience.*

(2) *Effect of other experience (gain)/loss for RG #7 includes: -0.33% due to changes in demographics and -0.31% adjustment due to 18-month delay.*

(3) *Actual effect of changes in actuarial assumptions on December 31, 2017 valuation is somewhat higher than the effect that we estimated in the experience study which was based on the December 31, 2016 valuation. This is primarily due to the effect of lower mortality rates based on the generational tables applied at two different measurement dates.*

(4) *Effect of changes in actuarial assumptions for RG #6 is greater than RGs #7 and #8 primarily due to the higher cashout assumption adopted for Rate Group #6 and lower cashout assumptions adopted for RGs #7 and #8. Also, for RG #8, we are no longer assuming 100% retirement after a member's benefit reaches 100% of Final Average Compensation.*

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, 2016	$76,266	$2,880,380[1]	$(2,522)	$190,783	$9,816	$61,930	$(289)	$0[2]
2. Total normal cost at middle of year	14,763	245,192	15,119	20,896	1,534	6,232	276	304
3. Expected employer and member contributions	(20,796)	(476,386)	(15,119)	(36,263)	(2,318)	(11,157)	(276)	(416)
4. Interest	5,080	200,947	(183)	13,295	675	4,277	(21)	(4)
5. Expected UAAL as of December 31, 2017	$75,313	$2,850,133	$(2,705)	$188,711	$9,707	$61,282	$(310)	$(116)
6. Actuarial (gain)/loss and other changes:								
(a) (Gain) from additional UAAL contributions	$(3,602)	$0	$0	$0	$0	$(14,705)	$0	$0
(b) (Gain)/loss from actual contributions (more)/less than expected	(1,176)	24,567	(2)	3,137	(117)	(36)	(26)	(10)
(c) (Gain) from investment return	(669)	(13,215)	(1,107)	(1,195)	(57)	(302)	(17)	(17)
(d) (Gain) on lower than expected COLA increases	(2,168)	(50,225)	(2,859)	(3,465)	(170)	(1,043)	(23)	(29)
(e) (Gain)/loss from lower/higher than expected salary increases	2,805	(43,129)	1,667	(5,421)	274	(793)	134	(169)
(f) Other experience (gain)/loss	(1,137)	22,091	3,531	(3,004)	(187)	1,598	6	(84)
(g) (Gain) from asset transfer from O.C. Sanitation District UAAL Deferred Account	0	0	(24,042)	0	0	0	0	0
(h) Changes in actuarial assumptions	26,577	481,098	25,517	43,481	1,665	9,159	517	438
Total Changes	$20,630	$421,187	$2,705	$33,533	$1,408	$(6,122)	$591	$129
7. UAAL as of December 31, 2017	$95,943	$3,271,320	$0	$222,244	$11,115	$55,160	$281	$13

(1) *After adjustment for additional UAAL contributions made by Children and Families Commission (i.e., Rate Group #2) of $1.7 million to pay off their UAAL as of December 31, 2016 and adjustment of $0.7 million for future service only benefit improvement for Children and Families Commission.*

(2) *After adjustment for additional UAAL contributions made by Law Library (i.e., Rate Group #12) of $1.5 million to pay off their UAAL as of December 31, 2016.*

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, 2016	$213,650	$1,058,165	$338,504
2. Total normal cost at middle of year	24,266	90,016	49,927
3. Expected employer and member contributions	(41,240)	(173,845)	(77,058)
4. Interest	14,982	73,863	23,431
5. Expected UAAL as of December 31, 2017	$211,658	$1,048,199	$334,804
6. Actuarial (gain)/loss and other changes:			
(a) (Gain) from additional UAAL contributions	$0	$0	$(18,041)
(b) (Gain)/loss from actual contributions (more)/less than expected	4,735	5,864	790
(c) (Gain) from investment return	(987)	(4,593)	(2,242)
(d) (Gain) on lower than expected COLA increases	(2,771)	(24,422)	(8,621)
(e) (Gain)/loss from lower/higher than expected salary increases	(6,385)	560	(15,942)
(f) Other experience (gain)/loss	(1,158)	(5,331)	1,025
(g) (Gain) from asset transfer from O.C. Sanitation District UAAL Deferred Account	0	0	0
(h) Changes in actuarial assumptions	50,030	161,417	53,637
Total Changes	$43,464	$133,495	$10,606
7. UAAL as of December 31, 2017	$255,122	$1,181,694	$345,410

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Orange County Fire Authority

AGENDA STAFF REPORT

Budget and Finance Committee
July 11, 2018

Agenda Item No. 3B
Consent Calendar

2017 Urban Areas Security Initiative Grant Program Agreement to Transfer Property or Funds

Contact(s) for Further Information

Mark Sanchez, Assistant Chief Operations Department	marksanchez@ocfa.org	714.573.6014
Jeff Hoey, Battalion Chief Emergency Planning and Coordination	jeffhoey@ocfa.org	714.573.6056

Summary

This annual item is submitted for approval of FY 2017 Urban Areas Security Initiative (UASI) Grant Program award and for authorization for the Fire Chief to execute the necessary Agreement(s). The Grant resources will be utilized to enhance the OCFA's ability to prevent, prepare for, respond to, and recover from, domestic and international terrorism incidents.

Prior Board/Committee Action

Not Applicable.

RECOMMENDED ACTION(S)

Review the proposed agenda item and direct staff to place the item on the agenda for the Board of Directors meeting of July 26, 2018, with Budget and Finance Committee's recommendations that the Board of Directors:

1. Approve the FY 2017 Urban Areas Security Initiative Grant Program Agreement and authorize the Fire Chief to execute it and any necessary attachments and agreement(s) to accept and administer the UASI Grant.
2. Approve a budget adjustment to the FY 2018/19 General Fund (121) budget increasing revenues and expenditures by $100,000.

Impact to Cities/County

Not Applicable.

Fiscal Impact

The FY 2018/19 General Fund revenues and expenditures will be increased by an amount not to exceed $100,000 for the Tactical Medic Program Training. Other UASI training, education and equipment will be reimbursed as needed.

Background

On November 13, 2003, the United States Department of Homeland Security established the UASI Grant Program through the Federal Office of Domestic Preparedness. The grant only allowed two cities in Orange County, Anaheim and Santa Ana, to apply for funds through the UASI.

To ensure these funding sources did not undermine the process already in place, all principal parties involved formed a collaborative regional effort to facilitate the needs for the entire operational area. This ensured the funds were utilized to provide for the region and not one particular jurisdiction. Beginning in FY 2006, the two UASI cities combined to form a single entity, and have divided the County into two geographic regions. The City of Santa Ana is responsible for the southwest portion of the County and the City of Anaheim is responsible for the northeast portion. Utilizing the Strategic Initiatives developed by the Urban Area Working Group, priorities were established for equipment, training, and planning.

On May 9, 2018, OCFA was notified it would be eligible for specific reimbursements/transfer of property as part of the FY 2017 UASI Grant Program. Grant funds are designated for use to reimburse costs related to training, including participant tuition, instructor participation, course delivery, and hosting. This grant agreement also allows the UASI administrator to transfer equipment to the OCFA. The UASI Grant Program has approved the OCFA Tactical Medic Training Program and will reimburse the OCFA for the training costs not to exceed $100,000. This training program will enhance the Joint Hazards Assessment Team responses, and will assist our law enforcement partners by providing embedded tactical medics with its special operations programs.

Recommendation

This grant is very valuable to the OCFA and its member agencies; therefore, approval of the grant award is recommended. Staff may return later in the fiscal year for additional revenue and expenditure budget adjustments if additional programs are approved for reimbursement by the Grant Administrator/UASI.

Attachment(s)

FY 2017 Urban Areas Security Initiative Grant Program Agreement

AGREEMENT

SUB-RECIPIENT: ORANGE COUNTY FIRE AUTHORITY

City Contract Number ________________

TABLE OF CONTENTS

TABLE OF CONTENTS

Agreement Number:__________

AGREEMENT FOR TRANSFER OR PURCHASE OF EQUIPMENT/SERVICES OR FOR REIMBURSEMENT OF TRAINING COSTS

FOR FY2017 URBAN AREAS SECURITY INITIATIVE (UASI)

BETWEEN THE CITY OF SANTA ANA AND ORANGE COUNTY FIRE AUTHORITY

THIS AGREEMENT is made and entered into this 28th day of March, 2018, by and between the CITY OF SANTA ANA, a municipal corporation (the "CITY"), and ORANGE COUNTY FIRE AUTHORITY (the "SUB-RECIPIENT" or "Contractor").

WITNESSETH

WHEREAS, CITY, acting through the Santa Ana Police Department in its capacity as a Core City for the Anaheim/Santa Ana Urban Area under the FY17 Urban Areas Security Initiative, has applied for, received and accepted a grant entitled "FY 2017 Urban Areas Security Initiative" from the federal Department Of Homeland Security(DHS) Federal Emergency Management Agency (FEMA), through the State of California Governor's Office of Emergency Services (CalOES), to enhance countywide emergency preparedness (the "grant"), as set forth in the grant guidelines and assurances that are incorporated to this Agreement by reference and located at:

"U.S. Department of Homeland Security "Fiscal Year 2017 Homeland Security Grant Program (HSGP) Notice of Funding Opportunity (NOFO)"
https://www.fema.gov/media-library-data/1496691855715-4d78d65ebb300900ce6c945931eff2c6/FY_2017_HSGP_NOFO_20170601v2014_605.pdf

California Governor's Office of Emergency Services "FY2017 Homeland Security Grant Program: California Supplement to Federal Program Guidance and Application Kit"
http://www.sacoes.org/Documents/FY%202017%20HSGP%20State%20Guidances.pdf?ID=76

Copies of the grant guidelines shall be retained in the Anaheim/Santa Ana Grant Office.

WHEREAS, this financial assistance is administered by the CITY OF SANTA ANA ("CITY") and is overseen by the California Governor's Office of Emergency Services ("Cal-OES"); and

WHEREAS, this financial assistance is being provided to address the unique equipment, training, planning, and exercise needs of large urban areas, and to assist them in building an enhanced and sustainable capacity to prevent, respond to, and recover from threats or acts of terrorism; and

WHEREAS, the Anaheim/Santa Ana Urban Area ("ASAUA") consists of 34 cities in Orange County, including the City of Santa Ana and the City of Anaheim, the County of Orange, including the unincorporated area of the County of Orange, Santa Ana Unified School District Police, California State University, Fullerton, University of California, Irvine, Municipal Water District of Orange County, and the Orange County Fire Authority; and

WHEREAS, the Office of Grants Management ("OGM") awarded a FY17 UASI Grant of $4,344,000 ("Grant Funds") to the CITY OF SANTA ANA, as a Core City, for use in the ASAUA; and

WHEREAS, the CITY has designated the Chief of Police, or his designee and the Santa Ana Police Department, Homeland Security Division ("UASI Grant Office") to provide for terrorism prevention and emergency preparedness; and

WHEREAS, the UASI Grant Office now wishes to distribute FY17 UASI Grant Funds throughout the ASAUA, as further detailed in this Agreement ("Agreement") to ORANGE COUNTY FIRE AUTHORITY ("SUB-RECIPIENT") and others;

WHEREAS, the CITY and SUB-RECIPIENT are desirous of executing this Agreement as authorized by the City Council and the City Manager which authorizes the CITY to prepare and execute the Agreement.

NOW, THEREFORE, IT IS MUTUALLY AGREED AS FOLLOWS:

I
INTRODUCTION

§101. Parties to the Agreement

The parties to this Agreement are:

A. The CITY, a municipal corporation, having its principal office at 20 Civic Center Plaza, Santa Ana, CA 92702; and

B. ORANGE COUNTY FIRE AUTHORITY, a municipal corporation, One Fire Authority Road, Irvine, CA 92602

§102. Representatives of the Parties and Service of Notices

A. The representatives of the respective parties who are authorized to administer this Agreement and to whom formal notices, demands and communications shall be given are as follows:

1. The representative of the CITY OF SANTA ANA shall be, unless otherwise stated in the Agreement:

   Kenneth Gominsky, Jr., Commander
   Santa Ana Police Department
   Homeland Security Division
   60 Civic Center Plaza
   Santa Ana, CA 92702
   Phone: (714) 245-8040
   Fax: (714) 245-8098
   kgominsky@santa-ana.org

2. The representative of ORANGE COUNTY FIRE AUTHORITY shall be:

   Jeff Hoey, Battalion Chief
   ORANGE COUNTY FIRE AUTHORITY
   One Fire Authority Road, Irvine, CA 92602
   Phone: (714) 573-6056
   E-mail: JeffHoey@ocfa.org

B. Formal notices, demands and communications to be given hereunder by either party shall be made in writing and may be effected by personal delivery or by registered or certified mail, postage prepaid, return receipt requested and shall be deemed communicated as of the date of mailing.

C. If the name of the person designated to receive the notices, demands or communications or the address of such person is changed, written notice shall be given, in accord with this section, within five (5) business days of said change.

§103. Independent Party

SUB-RECIPIENT is acting hereunder as an independent party, and not as an agent or employee of the CITY OF SANTA ANA. No employee of SUB-RECIPIENT is, or shall be an employee of the CITY OF SANTA ANA by virtue of this Agreement, and SUB-RECIPIENT shall so inform each employee organization and each employee who is hired or retained under this Agreement. SUB-RECIPIENT shall not represent or otherwise hold out itself or any of its directors, officers, partners, employees, or agents to be an agent or employee of the CITY OF SANTA ANA.

§104. Conditions Precedent to Execution of This Agreement

SUB-RECIPIENT shall provide copies of the following documents to the CITY OF SANTA ANA, unless otherwise exempted.

A. Grant Assurances in accordance with section 415C of this Agreement attached hereto as Exhibit C and made part hereof.

B. Certifications Regarding Ineligibility, Suspension and Debarment as required by Executive Order 12549 in accordance with Section 415A12 of this Agreement and attached hereto as Exhibit A and made a part hereof.

C. Certifications and Disclosures Regarding Lobbying in accordance with Section 415C of this Agreement and attached hereto as Exhibit B and made a part hereof. SUB-RECIPIENT shall also file a Disclosure Form at the end of each calendar quarter in which there occurs any event requiring disclosure or which materially affects the accuracy of the information contained in any Disclosure Form previously filed by SUB-RECIPIENT.

II
TERM AND SERVICES TO BE PROVIDED

§201. Time of Performance

The term of this Agreement shall commence on March 28, 2018 and end on March 31, 2020 or upon the final disbursement of all of the Grant Amount (as defined in Section 301) and any additional period of time as is required to complete any necessary close out activities. Said term is subject to the provisions herein.

§202. Use of Grant Funds

A. CITY may, a) transfer to SUB-RECIPIENT, equipment or services purchased with grant funds and in accordance with grant guidelines set forth above; or, b) reimburse SUB-RECIPIENT for purchase of authorized equipment, exercises, services or training upon receiving prior written approval from CITY or its designee and in accordance with grant guidelines and in full compliance with all of the SUB-RECIPIENT'S purchasing and bidding procedures. SUB-RECIPIENT shall specify the equipment, services, exercises and training to be purchased using the Application for Project Funding. A paper copy of this document will be provided to SUB-RECIPIENT by CITY. In addition, copies of the document will be provided electronically to SUB-RECIPIENT by CITY. If additional copies of the document are needed, SUB-RECIPIENT may contact the Santa Ana Grant Coordinator and it will be provided.

B. SUB-RECIPIENT shall provide any reports requested by the CITY regarding the performance of the Agreement. Reports shall be in the form requested by the CITY, and shall be provided in a timely manner.

C. The Authorized Equipment List (AEL) is a list of the allowable equipment which may be purchased pursuant to this Agreement and is located at http://www.fema.gov/media-library-data/20130726-1825-25045-7138/fema_preparedness_grants_authorized_equipment_list.pdf, and incorporated to this Agreement by reference. A copy of the AEL shall be retained in the Anaheim/Santa Ana Grant Office. Unless otherwise stated in program guidance any equipment acquired pursuant to this Agreement shall meet all mandatory regulations and/or DHS-adopted standards to be eligible for purchase using grant funds. SUB-RECIPIENT shall provide the CITY a copy of its most current procurement guidelines and follow its own procurement requirements as long as they meet the minimum federal requirements. Federal procurement requirements for the FY 17 UASI Grant can be found at 2 Code of Federal Regulations (CFR) Part 200 "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards."

Any equipment acquired or obtained with Grant Funds:

1. Shall be made available under the California Disaster and Civil Defense Master Mutual Aid Agreement in consultation with representatives of the various fire, emergency medical, hazardous materials response services, and law enforcement agencies within the jurisdiction of the applicant;

2. Shall be consistent with needs as identified in the National Priorities and Core Capabilities, the State Homeland Security Strategy and the Anaheim/Santa Ana Urban Area and Orange County Operational Area Homeland Security Grants Strategy; and deployed in conformance with those plans;

3. Shall be made available pursuant to applicable terms of the California Disaster and Civil Defense Master Mutual Aid Agreement and deployed with personnel trained in the use of such equipment in a manner consistent with the California Law Enforcement Mutual Aid Plan or the California Fire Services and Rescue Mutual Aid Plan;

4. Shall be subject to the requirements of Title 2 CFR Part 200.313 and 200.314. For the purposes of this subsection, "Equipment" is defined as nonexpendable property that is not consumed or does not lose its identity by being incorporated into another item of equipment, which costs $5,000 or more per unit, or is expected to have a useful life of one (1) year or more.

5. Shall be used by SUB-RECIPIENT in the program or project for which it was acquired as long as needed, whether or not the project or program continues to be supported by Federal funds. When no longer useful for the original program or project, the Equipment may be used in other activities currently or previously supported by a Federal agency.

6. Shall be made available for use on other projects or programs currently or previously supported by the Federal Government, providing such use will not interfere with the work on the projects or program for which it was originally acquired. First preference for other use shall be given to other programs or projects supported by the awarding agency.

7. Shall be recorded on a ledger. The record shall include: (a) description of the item of Equipment, (b) a serial number or other identification number, (c) the source of funding for the property (including the FAIN), (d) who holds the title, (e) the acquisition date, (f) the cost of the property, (g) percentage of Federal participation in the project costs for the Federal award under which the property was acquired, (h) location, (i) use and condition of Equipment, and (j) ultimate disposition data including the date of disposal and sale price

of the property. Records must be retained pursuant to 2 CFR Part 200.313.

8. All equipment obtained under this Agreement shall have an ASAUA identification decal affixed to it, and, when practical, shall be affixed where it is readily visible.

9. A physical inventory of the Equipment shall be taken and the results reconciled with the Equipment records at least once every two years. Inventory shall also be taken prior to any UASI, State or Federal monitor visits.

10. SUB-RECIPIENT shall exercise due care to preserve and safeguard equipment acquired with grant funds from damage or destruction and shall provide regular maintenance and such repairs for said equipment as necessary, in order to keep said equipment continually in good working order. Such maintenance and servicing shall be the sole responsibility of SUB-RECIPIENT, who shall assume full responsibility for maintenance and repair of the equipment throughout the life of said equipment.

11. SUB-RECIPIENT shall identify a Point-of-Contact (POC) to be responsible for all Equipment prior to the receipt of the item(s). POC will serve as the custodian of the Equipment. SUB-RECIPIENT shall notify the CITY of any change in the POC and assume the responsibility of advising the new custodian of all UASI grant program guidelines and requirements.

D. Any training paid pursuant to this Agreement shall conform to the guidelines as listed in FY 2017 Homeland Security Grant Program, as set forth above. All training expenses must be pre-authorized by Cal-OES at http://www.firstrespondertraining.gov/admin. A catalogue of Grantor approved and sponsored training courses is available at http://www.firstrespondertraining.gov/odp_webforms.

E. Any exercise paid pursuant to this Agreement shall conform to the guidelines as listed in FY 2017 Homeland Security Grant Program, as set forth above. Detailed Homeland Security Exercise and Evaluation Program Guidance is available at http://hseep.dhs.gov.

F. Any planning paid pursuant to this Agreement shall conform to the guidelines as listed in FY 2017 Homeland Security Grant Program, as set forth above.

G. Any organizational activities paid pursuant to this Agreement shall conform to the guidelines as listed in FY 2017 Homeland Security Grant Program, as set forth above.

III
PAYMENT

§301. Payment of Grant Funds and Method of Payment

A. CITY may, a) transfer to SUB-RECIPIENT, equipment or services purchased with grant funds; or, b) reimburse SUB-RECIPIENT for the purchase of authorized equipment, exercises, services or training upon receiving prior written approval from CITY or its designee and in accordance with grant guidelines and in full compliance with all of the SUB-RECIPIENT'S purchasing and bidding procedures. SUB-RECIPIENT shall specify the equipment, exercises, services or training to be purchased using the Application for Project Funding. A paper copy of this document will be provided to SUB-RECIPIENT by CITY. If additional copies of the document are needed, SUB-RECIPIENT may contact the Santa Ana Grant Coordinator and it will be provided. Funds may be used for planning, exercises, organizational and training activities, and the purchase of equipment as described in Section 202 above.

B. SUB-RECIPIENT shall provide invoices to the CITY requesting payment and all supporting documentation. Each reimbursement request shall be accompanied by the Reimbursement Request for Grant Expenditures detailing the expenditures made by SUB-RECIPIENT as authorized by Section 202 above. Each reimbursement request shall be submitted to the Santa Ana UASI Grant Office. For equipment for which SUB-RECIPIENT is requesting reimbursement, all appropriate back-up documentation must be attached to the reimbursement form, including invoices, proof of payment, packing slips, and Equipment Reimbursement Worksheet. For training reimbursements, SUB-RECIPIENT must include a copy of any certificates issued or a copy of the class roster verifying training attendees, proof that a CalOES tracking number has been assigned to the course, timesheets and payroll registers for all training attendees, receipts for travel expenses related to the training, and Training Reimbursement Worksheet. For regional project reimbursements, SUB-RECIPIENT must include approval from the lead agency for all submitted invoices.

C. Payment of final invoice shall be withheld by the CITY until the SUB-RECIPIENT has turned in all supporting documentation and completed the requirements of this Agreement.

D. It is understood that the CITY makes no commitment to fund this Agreement beyond the terms set forth herein.

E. Funding for all periods of this Agreement is subject to the continuing availability to the CITY of federal funds for this program. The Agreement may be terminated immediately upon written notice to SUB-RECIPIENT of a loss or reduction of federal grant funds.

IV
STANDARD PROVISIONS

§401. Construction of Provisions and Titles Herein

All titles or subtitles appearing herein have been inserted for convenience and shall not be deemed to affect the meaning or construction of any of the terms or provisions hereof. The language of this Agreement shall be construed according to its fair meaning and not strictly for or against either party. The word "Sub-recipient" herein and in any amendments hereto includes the party or parties identified in this Agreement. The singular shall include the plural. If there is more than one Sub-recipient as identified herein, unless expressly stated otherwise, their obligations and liabilities hereunder shall be joint and several. Use of the feminine, masculine, or neuter genders shall be deemed to include the genders not used.

§402. Applicable Law, Interpretation and Enforcement

Each party's performance hereunder shall comply with all applicable laws of the United States of America, the State of California, and the CITY. This Agreement shall be enforced and interpreted under the laws of the State of California and the CITY.

If any part, term or provision of this Agreement shall be held void, illegal, unenforceable, or in conflict with any law of a federal, state or local government having jurisdiction over this Agreement, the validity of the remaining portions of provisions shall not be affected thereby.

§403. Integrated Agreement

This Agreement sets forth all of the rights and duties of the parties with respect to the subject matter hereof, and replaces any and all previous agreements or understandings, whether written or oral, relating thereto. This Agreement may be amended only by a written instrument executed by both parties hereto.

§404. Excusable Delays

In the event that performance on the part of any party hereto shall be delayed or suspended as a result of circumstances beyond the reasonable control and without the fault and negligence of said party, none of the parties shall incur any liability to the other parties as a result of such delay or suspension. Circumstances deemed to be beyond the control of the parties hereunder shall include, but not be limited to, acts of God or of the public enemy; insurrection; acts of the Federal Government or any unit of State or Local Government in either sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes, freight embargoes or delays in transportation; to the extent that they are not caused by the party's willful or negligent acts or omissions and to the extent that they are beyond the party's reasonable control.

§405. Breach

Except for excusable delays, if any party fails to perform, in whole or in part, any promise, covenant, or agreement set forth herein, or should any representation made by it be untrue, any aggrieved party may avail itself of all rights and remedies, at law or equity, in the courts of law. Said rights and remedies are cumulative of those provided for herein except that in no event shall any party recover more than once, suffer a penalty or forfeiture, or be unjustly compensated.

§406. Prohibition Against Assignment or Delegation

SUB-RECIPIENT may not, unless it has first obtained the written permission of the CITY:

A. Assign or otherwise alienate any of its rights hereunder, including the right to payment; or

B. Delegate, subcontract, or otherwise transfer any of its duties hereunder.

§407. Permits

SUB-RECIPIENT and its officers, agents and employees shall obtain and maintain all permits and licenses necessary for SUB-RECIPIENT performance hereunder and shall pay any fees required therefore. SUB-RECIPIENT further certifies to immediately notify the CITY of any suspension, termination, lapses, non renewals or restrictions of licenses, certificates, or other documents.

§408. Nondiscrimination and Affirmative Action

SUB-RECIPIENT shall comply with the applicable nondiscrimination and affirmative action provisions of the laws of the United States of America, the State of California, and the CITY. In performing this Agreement, SUB-RECIPIENT shall not discriminate in its employment practices against any employee or applicant for employment because of such person's ancestry, familial status, race, color, religious creed (including religious dress and grooming practices), sex (which includes pregnancy, childbirth, breastfeeding, and medical conditions related to pregnancy, childbirth, or breastfeeding), gender, gender identity, gender expression, sexual orientation, marital status, national origin, ancestry, mental or physical disability, genetic information, medical condition, age, pregnancy, denial of medical and family care leave, or pregnancy disability (California Government Code §§ 12490, 12945, 12945.2), military or veteran status, and/or retaliation for protesting illegal discrimination related to one of these categories, or for reporting patient abuse in tax supported institutions.. SUB-RECIPIENT shall comply with Executive Order 11246, entitled "Equal

Employment Opportunity," as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CRF Part 60).

If required, SUB-RECIPIENT shall submit an Equal Employment Opportunity Plan ("EEOP") to the DOJ Office of Civil Rights ("OCR") in accordance with guidelines listed at http://www.ojp.usdoj.gov/ocr/eeop.htm,

Any subcontract entered into by the SUB-RECIPIENT relating to this Agreement, to the extent allowed hereunder, shall be subject to the provisions of this § 408.

§409. Bonds

SUB-RECIPIENT must purchase a performance bond for any equipment item over $250,000 or any vehicle (including aircraft or watercraft) financed with homeland security funds. SUB-RECIPIENT must provide a copy of performance bond to CITY no later than the time of reimbursement.

§410. Indemnification

Each of the parties to this Agreement is a public entity. In contemplation of the provisions of Section 895.2 of the Government Code of the State of California imposing certain tort liability jointly upon public entities, solely by reason of such entities being parties to an Agreement as defined by Section 895 of said Code, the parties hereto, as between themselves, pursuant to the authorization contained in Section 895.4 and 895.6 of said Code, will each assume the full liability imposed upon it or upon any of its officers, agents, or employees by law, for injury caused by a negligent or wrongful act or omission occurring in the performance of this Agreement, to the same extent that such liability would be imposed in the absence of Section 895.2 of said Code. To achieve the above-stated purpose, each party indemnifies and holds harmless the other party solely by virtue of said Section 895.2. The provision of Section 2778 of the California Civil Code is made a part hereto as if fully set forth herein. SUB-RECIPIENT certifies that it has adequate self insured retention of funds to meet any obligation arising from this Agreement.

§411. Conflict of Interest

A. SUB-RECIPIENT covenants that none of its directors, officers, employees, or agents shall participate in selecting, or administrating any subcontract supported (in whole or in part) by Federal funds where such person is a director, officer, employee or agent of the subcontractor; or where the selection of subcontractors is or has the appearance of being motivated by a desire for personal gain for themselves or others such as family business, etc.; or where such person knows or should have known that:

   1. A member of such person's immediate family, or domestic partner or organization has a financial interest in the subcontract;

   2. The subcontractor is someone with whom such person has or is negotiating any prospective employment; or

3. The participation of such person would be prohibited by the California Political Reform Act, California Government Code §87100 et seq. if such person were a public officer, because such person would have a "financial or other interest" in the subcontract.

B. Definitions:

1. The term "immediate family" includes but is not limited to domestic partner and/or those persons related by blood or marriage, such as husband, wife, father, mother, brother, sister, son, daughter, father in law, mother in law, brother in law, sister in law, son in law, daughter in law.

2. The term "financial or other interest" includes but is not limited to:

a. Any direct or indirect financial interest in the specific contract, including a commission or fee, a share of the proceeds, prospect of a promotion or of future employment, a profit, or any other form of financial reward.

b. Any of the following interests in the subcontractor ownership: partnership interest or other beneficial interest of five percent or more; ownership of five percent or more of the stock; employment in a managerial capacity; or membership on the board of directors or governing body.

C. The SUB-RECIPIENT further covenants that no officer, director, employee, or agent shall solicit or accept gratuities, favors, anything of monetary value from any actual or potential subcontractor, supplier, a party to a sub agreement, (or persons who are otherwise in a position to benefit from the actions of any officer, employee, or agent).

D. The SUB-RECIPIENT shall not subcontract with a former director, officer, or employee within a one year period following the termination of the relationship between said person and the Contractor.

E. Prior to obtaining the CITY'S approval of any subcontract, the SUB-RECIPIENT shall disclose to the CITY any relationship, financial or otherwise, direct or indirect, of the SUB-RECIPIENT or any of its officers, directors or employees or their immediate family with the proposed subcontractor and its officers, directors or employees.

F. For further clarification of the meaning of any of the terms used herein, the parties agree that references shall be made to the guidelines, rules, and laws of the SUB-RECIPIENT, State of California, and Federal regulations regarding conflict of interest.

G. The SUB-RECIPIENT warrants that it has not paid or given and will not pay or give to any third person any money or other consideration for obtaining this Agreement.

H. The SUB-RECIPIENT covenants that no member, officer or employee of SUB-RECIPIENT shall have interest, direct or indirect, in any contract or subcontract or the proceeds thereof for work to be performed in connection with this project during his/her tenure as such employee, member or officer or for one year thereafter.

I. The SUB-RECIPIENT shall incorporate the foregoing subsections of this Section into every agreement that it enters into in connection with this project and shall substitute the term "subcontractor" for the term "SUB-RECIPIENT" and "sub subcontractor" for "Subcontractor".

§412. Restriction on Disclosures

Any reports, analysis, studies, drawings, information, or data generated as a result of this Agreement are to be governed by the California Public Records Act (California Government Code Sec. 6250, et seq.).

§413. Statutes and Regulations Applicable To All Grant Contracts

A. SUB-RECIPIENT shall comply with all applicable requirements of state, federal, county and SUB-RECIPIENT laws, executive orders, regulations, program and administrative requirements, policies and any other requirements governing this Agreement. SUB-RECIPIENT shall comply with state and federal laws and regulations pertaining to labor, wages, hours, and other conditions of employment. SUB-RECIPIENT shall comply with new, amended, or revised laws, regulations, and/or procedures that apply to the performance of this Agreement. These requirements include, but are not limited to:

1. Office of Management and Budget (OMB)

SUB-RECIPIENT shall comply with 2 Code of Federal Regulation (CFR) Part 200 (Uniform Administrative, Cost Principles, and Audit Requirements for Federal Awards).

2. Single Audit Act

If Federal funds are used in the performance of this Agreement, SUB-RECIPIENT shall adhere to the rules and regulations of the Single Audit Act, 31 USC Sec. 7501 et seq.; Title 2 Code of Federal Regulations, Part 200, Subpart F Audit Requirements; and any administrative regulation or field memos implementing the Act. When reporting under on the FY17 UASI Grant Program under the Single Audit Act, SUB-RECIPIENT shall use Catalog of Federal Domestic Assistance (CFDA) Program Number 97.067 “Homeland Security Grant Program”; Grant Identification Number 2017-0083; and identify the CITY OF SANTA ANA as the Pass-Through.

3. Americans with Disabilities Act

SUB-RECIPIENT hereby certifies that it will comply with the Americans with Disabilities Act, 42 USC §§ 12101, et seq., and its implementing regulations. SUB-RECIPIENT will provide reasonable accommodations to allow qualified individuals with disabilities to have access to and to participate in its programs, services and activities in accordance with the provisions of the Americans with Disabilities Act. SUB-RECIPIENT will not discriminate against persons with disabilities or against persons due to their relationship to or association with a person with a disability. Any subcontract entered into by the SUB-RECIPIENT, relating to this Agreement, to the extent allowed hereunder, shall be subject to the provisions of this paragraph.

4. Political and Sectarian Activity Prohibited

None of the funds, materials, property or services provided directly or indirectly under this Agreement shall be used for any partisan political activity, or to further the election or defeat of any candidate for public office. Neither shall any funds provided under this Agreement be used for any purpose designed to support or defeat any pending legislation or administrative regulation. None of the funds provided pursuant to this Agreement shall be used for any sectarian purpose or to support or benefit any sectarian activity.

If this Agreement provides for more than $100,000 in grant funds or more than $150,000 in loan funds, SUB-RECIPIENT shall submit to the CITY a Certification Regarding Lobbying and a Disclosure Form, if required, in accordance with 31 USC §1352. A copy of the Certificate is attached hereto as Exhibit B. No funds will be released to SUB-RECIPIENT until the Certification is filed.

SUB-RECIPIENT shall file a Disclosure Form at the end of each calendar quarter in which there occurs any event requiring disclosure or which materially affects the accuracy of any of the information contained in any Disclosure Form previously filed by SUB-RECIPIENT. SUB-RECIPIENT shall require that the language of this Certification be included in the award documents for all sub-awards at all tiers and that all subcontractors shall certify and disclose accordingly.

5. Records Inspection

In accordance with 2 CFR §200.336,at any time during normal business hours and as often as the CITY, the U.S. Comptroller General, and/or the Auditor General of the State of California may deem necessary, SUB-RECIPIENT shall make available for examination all of its records with respect to all matters covered by this Agreement. The CITY, the U.S. Comptroller General and/or the Auditor General of the State of California shall have the authority to audit, examine and make excerpts or transcripts from records, including SUB-RECIPIENT'S invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement.

SUB-RECIPIENT agrees to provide any reports requested by the CITY regarding performance of the Agreement.

6. Records Maintenance

Records, in their original form, shall be maintained in accordance with requirements prescribed by the CITY with respect to all matters covered on file for all documents specified in this Agreement. Original forms are to be maintained on file for all documents specified in this Agreement. Such records shall be retained for a period of three (3) years after the CITY receives notification of grant closeout from CalOES and after final disposition of all pending matters. "Pending matters" include, but are not limited to, an audit, litigation or other actions involving records. The CITY may, at its discretion, take possession of, retain and audit said records. Records, in their original form pertaining to matters covered by this Agreement, shall at all times be retained within the County of Orange unless authorization to remove them is granted in writing by the CITY.

7. Subcontracts and Procurement

SUB-RECIPIENT shall comply with the federal and SUB-RECIPIENT standards in the award of any subcontracts. For purposes of this Agreement, subcontracts shall include but not be limited to purchase agreements, rental or lease agreements, third party agreements, consultant service contracts and construction subcontracts.

SUB-RECIPIENT shall ensure that the terms of this Agreement with the CITY are incorporated into all Subcontractor Agreements. The SUB-RECIPIENT shall submit all Subcontractor Agreements to the CITY for review prior to the release of any funds to the subcontractor. The SUB-RECIPIENT shall withhold funds to any subcontractor agency that fails to comply with the terms and conditions of this Agreement and their respective Subcontractor Agreement.

8. Labor

SUB-RECIPIENT shall comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements, and the Hatch Act (5 USC §§1501-1508 and 7324-7328).

SUB-RECIPIENT shall comply with the Federal Fair Labor Standards Act (29 USC §201) regarding wages and hours of employment. None of the funds shall be used to promote or deter Union/labor organizing activities. CA Gov't Code Sec. 16645, et seq.

SUB-RECIPIENT shall comply with provisions which require every employer to be insured to protect workers who may be injured on the job at all times during the performance of the work of this Agreement, as per the workers compensation laws set forth in California Labor Code §§ 3700 et seq.

9. <u>Civil Rights</u>

SUB-RECIPIENT shall comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681- 1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination against those with disabilities or access and functional needs; (d) The Age Discrimination act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) Public Health Service Act of 1912 (42 U.S.C. §§ 290), relating to confidentiality of patient records regarding substance abuse treatment; (f) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601, et seq.), as amended, relating to non-discrimination in the sale, rental or financing of housing as implemented by the Department of Housing and Urban Development at 24 C.F.R. Part 100. The prohibition on disability discrimination includes the requirement that new multifamily housing with four or more dwelling units-i.e., the public and common use areas and individual apartment units (all units in buildings with elevators and ground floor units in buildings without elevators)-be designed and constructed with certain accessible features (See 24 C.F.R. § 100.201); (g) Executive Order 11246, which prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over $10,000 in Government business in one year from discriminating in employment decisions on the basis of race, color, religion, sex, sexual orientation, gender identification, or national origin; (h) Executive Order 11375, which bans discrimination on the basis of race, color, religion, sex, sexual orientation, gender identification, or national origin in hiring and employment in both the United States federal workforce and on the part of government contractors; (i) California Public Contract Code §10295.3, which prohibits discrimination based on domestic partnerships and those in same sex marriages; (j) DHS policy to ensure the equal treatment of faith-based organizations, under which all applicants and recipients must comply with equal treatment policies and requirements contained in 6 C.F.R. Part 19; (k) Any other nondiscrimination provisions in the specific statute(s) under which application for federal assistance is being made; and (l) The requirements of any other nondiscrimination statute(s) which may apply to the application. (

10. Environmental

SUB-RECIPIENT shall comply, or has already complied, with the requirements of Titles II and III of the Uniform relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.

SUB-RECIPIENT shall comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190); the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA; and Executive Order 12898 which focuses on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities; (b) Executive Order (EO) 11514; (c) notification of violating facilities pursuant to EO 11738; (d) protection of wetlands pursuant to EO 11990; (e) evaluation of flood hazards in floodplains in accordance with EO 11988; (f) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451, et seq.); (g) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401, et seq.); (h) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); (i) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93205); and (i) Flood Disaster Protection Act of 1973 §102(a) (P.L. 93-234).

SUB-RECIPIENT shall comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271, et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

SUB-RECIPIENT shall comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801, et seq.) which prohibits the use of lead- based paint in construction or rehabilitation of residence structures.

SUB-RECIPIENT shall comply with the Federal Water Pollution Control Act (33 U.S.C. 1251-1387) which restores and maintains the chemical, physical and biological integrity of the Nation's waters.

SUB-RECIPIENT shall comply with the Federal Clean Water Act (CWA) (33 U.S.C §1251 et seq.), which establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.

SUB-RECIPIENT shall comply with Federal Clean Air Act of 1955 (42 U.S.C. § 7401) which regulates air emissions from stationary and mobile sources.

SUB-RECIPIENT shall ensure that the facilities under its ownership, lease or supervision which shall be utilized in the accomplishment of this project are not listed in the Environmental Protection Agency's (EPA) list of Violating Facilities and that it will notify the Federal Grantor agency of the receipt of any communication from the Director of the EPA Office of Federal Activities indicating that a facility to be used in the project is under consideration for listing by the EPA.

SUB-RECIPIENT shall comply with the Energy Policy and Conservation Act (P.L. 94-163, 89 Stat. 871).

SUB-RECIPIENT shall not be: (1) in violation of any order or resolution promulgated by the State Air Resources Board or an air pollution district; (2) subject to a cease and desist order pursuant to § 13301 of the California Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) determined to be in violation of federal law relating to air or water pollution.

By signing this Agreement, SUB-RECIPIENT ensures that it is in compliance with the California Environmental Quality Act (CEQA), Public Resources Code §21000, et seq., CEQA Guidelines (California Code of Regulations, Title 14 Division 6, Chapter 3, §§ 15000-15387), and is not impacting the environment negatively.

11. Preservation

SUB-RECIPIENT shall comply with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a-1, et seq.).

12. Suspension and Debarment

SUB-RECIPIENT shall comply with Federal Register, Volume 68, Number 228, regarding Suspension and Debarment, and SUB-

RECIPIENT shall submit a Certification Regarding Debarment required by Executive Order 12549 and any amendment thereto. Said Certification shall be submitted to the CITY concurrent with the execution of this Agreement and shall certify that neither SUB-RECIPIENT nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from participation in this transaction by any federal department head or agency. SUB-RECIPIENT shall require that the language of this Certification be included in the award documents for all sub-award at all tiers and that all subcontractors shall certify accordingly.

As required by Executive Orders (EO) 12549 and 12689, and 2 CFR §200.212 and codified in 2 CFR Part 180, Debarment and Suspension, SUB-RECIPIENT will provide protection against waste, fraud and abuse by debarring or suspending those persons deemed irresponsible in their dealings with the Federal government.

13. Drug-Free Workplace

SUB-RECIPIENT shall comply with the federal Drug-Free Workplace Act of 1988, 41 USC §701, 44 CFR Part 67; the California Drug-Free Workplace Act of 1990, CA Gov't Code §§ 8350-8357.

14. Financial Management

SUB-RECIPIENT will comply with 31 U.S.C §3729 which sets forth that no subgrantee, recipient or subrecipient shall submit a false claim for payment, reimbursement or advance.

15. Reporting – Accountability

SUB-RECIPIENT agrees to comply with applicable provisions of the Federal Funding Accountability and Transparency Act (FFATA) (2 CFR Chapter 1, Part 170), specifically (a) the reporting ofsubawards obligating $25,000 or more in federal funds and (b) executive compensation data for first-tier subawards. This includes the provisions of FFATA, which includes requirements on executive compensation, and also requirements implementing the Act for the non-Federal entity at 2 CFR part 25 Financial Assistance Use of Universal Identifier and Central Contractor Registration and 2 CFR part 170 Reporting Subaward and Executive Compensation Information.

SUB-RECIPIENT must also comply with statutory requirements for whistleblower protections at 10 U.S.C. §2409, 41 U.S.C. §4712, and 10 U.S.C. §2324, 41 U.S.C. §4304 and §4310 and 31 U.S.C. §6101 et seq.

16. Human Trafficking

SUB-RECIPIENT will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. §7104) which prohibits grant award recipients or a subrecipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

17. Freedom of Information Act

SUB-RECIPIENT acknowledges that all information submitted in the course of applying for funding under this program or provided in the course of an entity's grant management activities which is under Federal control is subject to the Freedom of Information Act (FOIA), 5 U.S.C. §552. SUB-RECIPIENT should also consult State and local laws and regulations regarding the release of information, which should be considered when reporting sensitive matters in the grant application, needs assessment and strategic planning process.

18. California Public Records Act

SUB-RECIPIENT acknowledges that all information submitted in the course of applying for funding under this program or provided in the course fo an entity's grant management activities may be subject to the California Public Records Act (California Government Code §§6250-6276.48), which requires inspection and/or disclosure of governmental records to the public upon request, unless exempted by law.

B. Statutes and Regulations Applicable To This Particular Grant

SUB-RECIPIENT shall comply with all applicable requirements of state and federal laws, executive orders, regulations, program and administrative requirements, policies and any other requirements governing this particular grant program. SUB-RECIPIENT shall comply with new, amended, or revised laws, regulations, and/or procedures that apply to the performance of this Agreement. These requirements include, but are not limited to:

1. Title 2 Code of Federal Regulations (CFR) Part 200; EO 12372; Department of Justice (DOJ) Office of Judicial Programs (OJP) Office of the Comptroller, U.S. Department of Homeland Security, Preparedness Directorate Financial Management Guide; U.S. Department of Homeland Security, Office of Grants and Training, FY 2017 Homeland Security Grant Program –Notice of Funding Opportunity; ODP WMD Training Course Catalogue; and DOJ Office for Civil Rights.

Standardized Emergency Management System (SEMS) requirements as stated in the California Emergency Services Act, Government Code Chapter 7 of Division 1 of Title 2, § 8607.1(e) and CCR Title 19, §§ 2445-2448.

Provisions of 44 CFR applicable to grants and cooperative agreements, including Part 18, Administrative Review Procedures; Part 20, Criminal Justice Information Systems; Part 22, Confidentiality of Identifiable Research and Statistical Information; Part 23, Criminal Intelligence Systems Operating Policies; Part 30, Intergovernmental Review of Department of Justice Programs and Activities; Part 35, Nondiscrimination on the Basis of Disability in State and Local Government Services; Part 38, Equal Treatment of Faith-based Organizations; Part 42, Nondiscrimination/Equal employment Opportunities Policies and Procedures; Part 61, Procedures for Implementing the National Environmental Policy Act; Part 63, Floodplain Management and Wetland Protection Procedures; Part 64, Floodplain Management and Wetland Protection Procedures; Federal laws or regulations applicable to federal Assistance Programs; Part 69, New Restrictions on Lobbying; Part 70, Uniform Administrative Requirements for Grants and Cooperative Agreements (including sub-awards) with Institutions of Higher Learning, Hospitals and other Non-Profit Organizations; and Part 83, Government- Wide Requirements for a Drug Free Workplace (grants).

2. Travel Expenses

SUB-RECIPIENT as provided herein may be compensated for SUB-RECIPIENT'S reasonable travel expenses incurred in the performance of this Agreement, to include travel and per diem, unless otherwise expressed. Travel including in-State and out-of-State travel shall not be reimbursed without prior written authorization from the UASI Grant Office.

SUB-RECIPIENT'S travel and per diem reimbursement costs shall be reimbursed based on the SUB-RECIPIENT'S travel policies and procedures. If SUB-RECIPIENT does not have established travel policies and procedures, SUB-RECIPIENT'S reimbursement rates shall not exceed the amounts established under 5 U.S.C 5701-11, ("Travel and Subsistence Expenses; Mileage Allowances"), or by the Administrator of General Services, or by the President (or his or her designee) pursuant to any provisions of such subchapter must apply to travel under federal awards (48 CFR 31.205-46(a)).

3. Personally Identifiable Information

SUB-RECIPIENT collecting Personally Identifiable Information (PII) must have a publically-available policy that describes what PII they collect, how they plan to use the PII, whether they share PII with third parties, and how individuals may have their PII corrected where appropriate. DHS defines personally identifiable information (PII) as any information that permits the identity of an individual to be directly or indirectly inferred, including any information that is linked or linkable to that individual.

4. Hotel and Motel Fire Safety Act of 1990

SUB-RECIPIENT must ensure that all conference, meeting, convention, or training space funded in whole or in part with Federal funds complies with Section 6 of the fire prevention and control guidelines of the Federal Fire Prevention and Control Act of 1974, 15 U.S.C. §2225a.

5. Terrorist Financing E.O. 13224

SUB-RECIPIENT must comply with U.S. Executive Order 13224 and U.S. law that prohibit transactions with, and the provisions of resources and support to, individuals and organizations associated with terrorism.

6. USA Patriot Act of 2001

SUB-RECIPIENT must comply with the requirements of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act (USA Patriot Act), which amends 18 U.S.C. §§175-175c.

7. Acknowledgement of Federal Funding from DHS

SUB-RECIPIENT must acknowledge their use of federal funding when issuing statements, press releases, requests for proposals, bid invitations, and other documents describing projects or programs funded in whole or in part with federal funds.

8. Federal Debt Status

SUB-RECIPIENT is required to be non-delinquent in their repayment of any federal debt. Examples of relevant debt include delinquent payroll and other taxes, audit disallowances, and benefit overpayments. See OMB Circular A-129.

9. Fly America Act of 1974

SUB-RECIPIENT must comply with Preference for U.S. Flag Air Carriers: (air carriers holding certificates under 49 U.S.C. § 41102) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. § 40118) and the interpretative guidelines issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision B-138942

10. Noncompliance

SUB-RECIPIENT understands that failure to comply with any of the above assurances may result in suspension, termination or reduction of grant funds, and repayment by SUB-RECIPIENT to CITY of any unlawful expenditures.

C. Compliance With Grant Assurances

To obtain the Grant Funds, the Grantor required an authorized representative of the CITY to sign certain promises regarding the way the Grant Funds would be spent ("Grant Assurances"), attached hereto as Exhibit C. By signing these Grant Assurances, the CITY became liable to the Grantor for any funds that are used in violation of the grant requirements. SUB-RECIPIENT shall be liable to the Grantor for any funds the Grantor determines SUB-RECIPIENT used in violation of these Grant Assurances. SUB-RECIPIENT shall indemnify and hold harmless the CITY for any sums the Grantor determines SUB-RECIPIENT used in violation of the Grant Assurances.

§414. Federal, State and Local Taxes

Federal, State and local taxes shall be the responsibility of SUB-RECIPIENT as an independent party and not as a CITY employee.

§415. Inventions, Patents and Copyrights

A. Reporting Procedure for Inventions

If any project produces any invention or discovery (Invention) patentable or otherwise under title 35 of the U.S. Code, including, without limitation, processes and business methods made in the course of work under this Agreement, the SUB-RECIPIENT shall report the fact and disclose the Invention promptly and fully to the CITY. The CITY shall report the fact and disclose the Invention to the Grantor. Unless there is a prior agreement between the CITY and the Grantor, the Grantor shall determine whether to seek protection on the Invention. The Grantor shall determine how the rights in the Invention, including rights under any patent issued thereon, will be allocated and administered in order to protect the public interest consistent with the policy ("Policy") embodied in the Federal Acquisition Regulations

System, which is based on Ch. 18 of title 35 U.S.C. Sections 200, et seq. (Pub. L. 95-517, Pub. L. 98-620, 37 CFR part 401); Presidential Memorandum on Government Patent Policy to the Heads of the Executive Departments and Agencies, dated 2/18/1983); and Executive Order 12591, 4/10/87, 52 FR 13414, 3 CFR, 1987 Comp., p. 220 (as amended by Executive Order 12618, 12/22/87, 52 FR 48661, 3 CFR, 1987 Comp., p. 262). SUB-RECIPIENT hereby agrees to be bound by the Policy, and will contractually require its personnel to be bound by the Policy.

B. Rights to Use Inventions

CITY shall have an unencumbered right, and a non-exclusive, irrevocable, royalty- free license, to use, manufacture, improve upon, and allow others to do so for all government purposes, any Invention developed under this Agreement.

C. Copyright Policy

1. Unless otherwise provided by the terms of the Grantor or of this Agreement, when copyrightable material ("Material") is developed under this Agreement, the author or the CITY, at the CITY'S discretion, may copyright the Material. If the CITY declines to copyright the Material, the CITY shall have an unencumbered right, and a non-exclusive, irrevocable, royalty- free license, to use, manufacture, improve upon, and allow others to do so for all government purposes, any Material developed under this Agreement.

2. The Grantor shall have an unencumbered right, and a non-exclusive, irrevocable, royalty-free license, to use, manufacture, improve upon, and allow others to do so for all government purposes, any Material developed under this Agreement or any Copyright purchased under this Agreement.

3. SUB-RECIPIENT shall comply with all applicable requirements in the Code of Federal Regulations related to copyrights and copyright policy.

D. Rights to Data

The Grantor and the CITY shall have unlimited rights or copyright license to any data first produced or delivered under this Agreement. "Unlimited rights" means the right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform and display publicly, or permit others to do so; as required by 48 CFR 27.401. Where the data are not first produced under this Agreement or are published copyrighted data with the notice of 17 U.S.C. Section 401 or 402, the Grantor acquires the data under a copyright license as set forth in 48 CFR 27.404(f)(2) instead of unlimited rights. (48 CFR 27.404(a)).

E. Obligations Binding on Subcontractors

SUB-RECIPIENT shall require all subcontractors to comply with the obligations of this section by incorporating the terms of this section into all subcontracts.

F. Patents and Intellectual Property Rights

Unless otherwise provided by law, SUB-RECIPIENT is subject to the Bayh-Dole Act, Pub. L. No. 96-517, as amended, and codified in 35 U.S.C. § 200 et seq. SUB-RECIPIENT is subject to the specific requirements governing the development, reporting, and disposition of rights to inventions and patents resulting from financial assistance awards located at 37 C.F.R. Part 401 and the standard patent rights clause located at 37 C.F.R. § 401.14.

§416. Minority, Women, And Other Business Enterprise Outreach Program

It is the policy of the CITY to provide minority business enterprises (MBEs), women business enterprises (WBEs) and all other business enterprises an equal opportunity to participate in the performance of all SUB-RECIPIENT contracts, including procurement, construction and personal services. This policy applies to all Contractors and Sub-Contractors.

V
DEFAULTS, SUSPENSION, TERMINATION, AND AMENDMENTS

§501. Defaults

Should SUB-RECIPIENT fail for any reason to comply with the contractual obligations of this Agreement within the time specified by this Agreement, the CITY reserves the right to terminate the Agreement, reserving all rights under state and federal law.

§502. Amendments

Any change in the terms of this Agreement, including changes in the services to be performed by SUB-RECIPIENT and any increase or decrease in the amount of compensation which are agreed to by the CITY and SUB-RECIPIENT shall be incorporated into this Agreement by a written amendment properly executed and signed by the person authorized to bind the parties thereto.

SUB-RECIPIENT agrees to comply with all future CITY Directives, or any rules, amendments or requirements promulgated by the CITY affecting this Agreement.

VI
ENTIRE AGREEMENT

§601. Complete Agreement

This Agreement contains the full and complete Agreement between the two parties. Neither verbal agreement nor conversation with any officer or employee of either party shall affect or modify any of the terms and conditions of this Agreement.

§602. Number of Pages and Attachments

This Agreement is executed in two (2) duplicate originals, each of which is deemed to be an original. This Agreement includes twenty-seven (28) pages and three (3) Exhibits which constitute the entire understanding and agreement of the parties.

IN WITNESS WHEREOF, the City and ORANGE COUNTY FIRE AUTHORITY have caused this Agreement to be executed by their duly authorized representatives on the date first set forth above.

ATTEST:

By:____________________________
Maria D. Huizar
Clerk of the Council

CITY OF SANTA ANA, a municipal Corporation of the State of California

By:____________________________
Raul Godinez II
City Manager

RECOMMENDED FOR APPROVAL:

By:____________________________
David Valentin
Acting Chief of Police

APPROVED AS TO FORM:

By:____________________________
Tamara Bogosian
Assistant City Attorney

Si
He

SUB-RECIPIENT
ORANGE COUNTY FIRE AUTHORITY
DUNS # 07-2527005

By: ____________________________

Printed Name ________________________

Title ____________________________

APPROVED AS TO FORM

By:____________________________

Printed Name ________________________

Title ____________________________

EXHIBIT A

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

Applicants should refer to the regulations cited below to determine the certification to which they are required to attest. Applicants should also review the instructions for certification included in the regulations before completing this form. Signature of this form provides for compliance with certification requirements under the applicable CFR covering New Restrictions on Government-wide Debarment and Suspension (Nonprocurement). The certification shall be treated as a material representation of fact upon which reliance will be placed when the Agency determines to award the covered transaction or cooperative agreement.

As required by Executive Order 12549, Debarment and Suspension, and implemented under the applicable CFR, for prospective participants in covered transactions, as defined in the applicable CFR

A. The applicant certifies that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, sentenced to a denial of Federal benefits by a State or Federal court, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal State or local) with commission of any of these offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application had one or more public transactions (Federal, State or local) terminated for cause or default; and

B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

______________________________ Address: ______________________________

Authorized Agent Signature

Sign Here

______________________________ ______________________________

Printed or Typed Name

______________________________ ______________________________

Title

INSTRUCTIONS FOR CERTIFICATION

1. By signing and submitting this document, the prospective recipient of Federal assistance funds is providing the certification as set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective recipient of Federal assistance funds knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective recipient of Federal assistance funds shall provide immediate written notice to the person to whom this agreement is entered, if at any time the prospective recipient of Federal assistance funds learns that its certification was erroneous, when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549.

5. The prospective recipient of Federal assistance funds agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective recipient of Federal assistance funds further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the List of Parties Excluded from Procurement or Non Procurement Programs.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntary excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

EXHIBIT B
CERTIFICATION REGARDING LOBBYING
Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL "Disclosure Form to Report Lobbying" in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

4. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352 Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

____
AGREEMENT NUMBER

____
CONTRACTOR/BORROWER/AGENCY

____
NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

____
SIGNATURE DATE

EXHIBIT B
CERTIFICATION REGARDING LOBBYING
<u>Certification for Contracts, Grants, Loans and Cooperative Agreements</u>

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL "Disclosure Form to Report Lobbying" in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

4. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352 Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

____
AGREEMENT NUMBER

____
CONTRACTOR/BORROWER/AGENCY

____
NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

____
SIGNATURE DATE

INSTRUCTIONS FOR CERTIFICATION

1. By signing and submitting this document, the prospective recipient of Federal assistance funds is providing the certification as set out below.

2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective recipient of Federal assistance funds knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective recipient of Federal assistance funds shall provide immediate written notice to the person to whom this agreement is entered, if at any time the prospective recipient of Federal assistance funds learns that its certification was erroneous, when submitted or has become erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549.

5. The prospective recipient of Federal assistance funds agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective recipient of Federal assistance funds further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion Lower Tier Covered Transactions," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the <u>List of Parties Excluded from Procurement or Non Procurement Programs</u>.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under Paragraph 5 of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntary excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

EXHIBIT C
California Governor's Office of Emergency Services
Standard Assurances
(For All Cal OES Federal Grant Programs)

Name of Applicant: ______________________________
Address: ______________________________
City: ____________________ State: ____________ Zip Code: ________
Telephone Number: ____________ Fax Number: ______________
E-Mail Address: ______________________________

As the duly authorized representative of the Applicant, I hereby certify that the Applicant has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay any non-Federal share of project cost) to ensure proper planning, management and completion of the project described in this application, within prescribed timelines.

I further acknowledge that the Applicant is responsible for reviewing and adhering to all requirements within the:

(a) Applicable Federal Regulations (see below);
(b) Federal Program Notice of Funding Opportunity (NOFO);
(c) California Supplement to the NOFO; and
(d) Federal and State Grant Program Guidelines.

Federal Regulations
Government cost principles, uniform administrative requirements and audit requirements for federal grant programs are housed in Title 2, Part 200 of the Code of Federal Regulations (CFR) and in updates issued by the Office of Management and Budget (OMB) on http://www.whitehouse.gov/omb/.

Significant state and federal grant award requirements (some of which appear in the documents listed above) are called out below. The Applicant hereby agrees to comply with the following:

1. Proof of Authority
The Applicant will obtain written authorization from the city council, governing board or authorized body in support of this project. This written authorization must specify that the Applicant and the city council, governing board or authorized body agree:

(a) To provide all matching funds required for said project and that any cash match will be appropriated as required.
(b) Any liability arising out of the performance of this agreement shall be the responsibility of the Applicant and the city council, governing board or authorized body.
(c) Grant funds shall not be used to supplant expenditures controlled by the city council, governing board or authorized body.
(d) The official executing this agreement is, in fact, authorized to do so.

This Proof of Authority must be maintained on file and readily available upon request.

2. Period of Performance
The Applicant will initiate work after approval of the award and complete all work within the period of performance specified in the grant.

Initials _____

3. Lobbying and Political Activities

As required by Section 1352, Title 31 of the United States Code (U.S.C.), for persons entering into a contract, grant, loan or cooperative agreement from an agency or requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan, the Applicant certifies that:

(a) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

The Applicant will also comply with provisions of the Hatch Act (5 U.S.C. §§1501-1508 and §§7324- 7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with federal funds.

Finally, the Applicant agrees that federal funds will not be used, directly or indirectly, to support the enactment, repeal, modification or adoption of any law, regulation or policy without the express written approval from the California Governor's Office of Emergency Services (Cal OES) or the federal awarding agency.

4. Debarment and Suspension

As required by Executive Orders 12549 and 12689, and 2 C.F.R. §200.212 and codified in 2 C.F.R. Part 180, Debarment and Suspension, the Applicant will provide protection against waste, fraud, and abuse by debarring or suspending those persons deemed irresponsible in their dealings with the federal government. The Applicant certifies that it and its principal, subgantees, recipients or subrecipients:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;

(b) Have not within a three-year period preceding this application been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state, or local) with commission of any of the offenses enumerated in paragraph (2)(b) of this certification; and

(d) Have not within a three-year period preceding this application had one or more public transaction (federal, state, or local) terminated for cause or default.

Where the Applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.

5. Non-Discrimination and Equal Employment Opportunity

The Applicant will comply with all federal statutes relating to non-discrimination. These include, but are not limited to, the following:

(a) Title VI of the Civil Rights Act of 1964 (Public Law (P.L.) 88-352 and 42 U.S.C. §2000d et. seq.) which prohibits discrimination on the basis of race, color, or national origin and requires that recipients of federal financial assistance take reasonable steps to provide meaningful access to persons with limited English proficiency (LEP) to their programs and services;

(b) Title IX of the Education Amendments of 1972, (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex in any federally funded educational program or activity;

(c) Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. §794), which prohibits discrimination against those with disabilities or access and functional needs;

(d) Americans with Disabilities Act (ADA) of 1990, which prohibits discrimination on the basis of disability and requires buildings and structures be accessible to those with disabilities and access and functional needs (42 U.S.C. §§ 12101-12213.);

(e) Age Discrimination Act of 1975, (42 U.S.C. §§ 6101-6107), which prohibits discrimination on the basis of age;

(f) Public Health Service Act of 1912 (42 U.S.C. §§ 290), relating to confidentiality of patient records regarding substance abuse treatment;

(g) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §3601 et seq.), relating to nondiscrimination in the sale, rental or financing of housing as implemented by the Department of Housing and Urban Development at 24 C.F.R. Part 100. The prohibition on disability discrimination includes the requirement that new multifamily housing with four or more dwelling units—i.e., the public and common use areas and individual apartment units (all units in buildings with elevators and ground-floor units in buildings without elevators)— be designed and constructed with certain accessible features (See 24 C.F.R. § 100.201);

(h) Executive Order 11246, which prohibits federal contractors and federally assisted construction contractors and subcontractors, who do over $10,000 in Government business in one year from discriminating in employment decisions on the basis of race, color, religion, sex, sexual orientation, gender identification, or national origin;

(i) Executive Order 11375, which bans discrimination on the basis of race, color, religion, sex, sexual orientation, gender identification, or national origin in hiring and employment in both the United States federal workforce and on the part of government contractors;

(j) California Public Contract Code §10295.3, which prohibits discrimination based on domestic partnerships and those in same sex marriages;

(k) DHS policy to ensure the equal treatment of faith-based organizations, under which all applicants and recipients must comply with equal treatment policies and requirements contained in 6 C.F.R. Part 19;

(l) Any other nondiscrimination provisions in the specific statute(s) under which application for federal assistance is being made; and

(m) The requirements of any other nondiscrimination statute(s) which may apply to the application.

In addition to the items listed in (a) through (m), the Applicant will comply with California's Fair Employment and Housing Act (FEHA). FEHA prohibits harassment and discrimination in employment because of ancestry, familial status, race, color, religious creed (including religious dress and grooming practices), sex (which includes pregnancy, childbirth, breastfeeding and medical conditions related to pregnancy, childbirth, or breastfeeding), gender, gender identity, gender expression, sexual orientation, marital status, national origin, ancestry, mental and physical disability, genetic information, medical condition, age, pregnancy, denial of medical and family care leave, or pregnancy disability leave (California Government Code §§ 12940, 12945, 12945.2), military and veteran status, and/or retaliation for protesting illegal discrimination related to one of these categories, or for reporting patient abuse in tax supported institutions.

6. Drug-Free Workplace

As required by the Drug-Free Workplace Act of 1988 (41 U.S.C. §701 et seq.), the Applicant certifies that it will maintain a drug-free workplace and a drug-free awareness program as outlined in the Act.

7. Environmental Standards

The Applicant will comply with state and federal environmental standards, which may be prescribed pursuant to the following, as applicable:

(a) California Environmental Quality Act (CEQA) (California Public Resources Code §§ 21000- 21177), to include coordination with the city or county planning agency;

(b) CEQA Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, §§ 15000- 15387);

(c) Federal Clean Water Act (CWA) (33 U.S.C. § 1251 et seq.), which establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters;

(d) Federal Clean Air Act of 1955 (42 U.S.C. § 7401) which regulates air emissions from stationary and mobile sources;

(e) Institution of environmental quality control measures under the National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190); the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA; and Executive Order 12898 which focuses on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities;

(f) Evaluation of flood hazards in floodplains in accordance with Executive Order 11988;

(g) Executive Order 11514 which sets forth national environmental standards;

(h) Executive Order 11738 instituted to assure that each federal agency empowered to enter into contracts for the procurement of goods, materials, or services and each federal agency empowered to extend federal assistance by way of grant, loan, or contract shall undertake such procurement and assistance activities in a manner that will result in effective enforcement of the Clean Air Act and the Federal Water Pollution Control Act Executive Order 11990 which requires preservation of wetlands;

(i) The Safe Drinking Water Act of 1974, (P.L. 93-523);

(j) The Endangered Species Act of 1973, (P.L. 93-205);

(k) Assurance of project consistency with the approved state management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.);

(l) Conformity of Federal Actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.);

(m) Wild and Scenic Rivers Act of 1968 (16 U.S.C. § 1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.

The Applicant shall not be: 1) in violation of any order or resolution promulgated by the State Air Resources Board or an air pollution district; 2) subject to a cease and desist order pursuant to § 13301 of the California Water Code for violation of waste discharge requirements or discharge prohibitions; or 3) determined to be in violation of federal law relating to air or water pollution.

8. Audits

For subrecipients expending $750,000 or more in federal grant funds annually, the Applicant will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and Title 2 of the Code of Federal Regulations, Part 200, Subpart F Audit Requirements.

9. Access to Records

In accordance with 2 C.F.R. §200.336, the Applicant will give the awarding agency, the Comptroller General of the United States and, if appropriate, the state, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award.

The Applicant will require any subrecipients, contractors, successors, transferees and assignees to acknowledge and agree to comply with this provision.

10. Conflict of Interest

The Applicant will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

11. Financial Management

False Claims for Payment The Applicant will comply with 31 U.S.C §§ 3729-3733 which sets forth that no recipient shall submit a false claim for payment, reimbursement or advance.

12. Reporting - Accountability

The Applicant agrees to comply with applicable provisions of the Federal Funding Accountability and Transparency Act (FFATA) (P.L. 109-282), specifically (a) the reporting of subawards obligating $25,000 or more in federal funds and (b) executive compensation data for first-tier subawards. This includes the provisions of FFATA, which includes requirements for executive compensation, and also requirements implementing the Act for the non-federal entity at 2 C.F.R. Part 25 Financial Assistance Use of Universal Identifier and Central Contractor Registration and 2 C.F.R. Part 170 Reporting Subaward and Executive Compensation Information.

13. Whistleblower Protections

The Applicant also must comply with statutory requirements for whistleblower protections at 10 U.S.C. § 2409, 41 U.S.C. § 4712, and 10 U.S.C. § 2324, 41 U.S.C. § 4304 and § 4310.

14. Human Trafficking

The Applicant will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act of 2000, as amended (22 U.S.C. § 7104) which prohibits grant award recipients or a subrecipient from: (1) engaging in trafficking in persons during the period of time that the award is in effect: (2) procuring a commercial sex act during the period of time that the award is in effect: or (3) using forced labor in the performance of the award or subawards under the award.

15. Labor Standards

The Applicant will comply with the following federal labor standards:

(a) The Davis-Bacon Act (40 U.S.C. §§ 276a to 276a-7), as applicable, and the Copeland Act (40 U.S.C. § 3145 and 18 U.S.C. § 874) and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 327-333), regarding labor standards for federally-assisted construction contracts or subcontracts; and

(b) The Federal Fair Labor Standards Act (29 U.S.C. § 201 et al.) as they apply to employees of institutes of higher learning (IHE), hospitals and other non-profit organizations.

16. Worker's Compensation

The Applicant must comply with provisions which require every employer to be insured to protect workers who may be injured on the job at all times during the

Initials ______

performance of the work of this Agreement, as per the workers compensation laws set forth in California Labor Code §§ 3700 et seq.

17. Property-Related

If applicable to the type of project funded by this federal award, the Applicant will:

(a) Comply with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of federal participation in purchase;

(b) Comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires subrecipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is $10,000 or more;

(c) Assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. § 470), Executive Order 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. § 469a-1 et seq.); and

(d) Comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. § 4831 and 24 CFR Part 35) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.

18. Certifications Applicable Only to Federally-Funded Construction Projects

For all construction projects, the Applicant will:

(a) Not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with federal assistance funds to assure nondiscrimination during the useful life of the project;

(b) Comply with the requirements of the awarding agency with regard to the drafting, review and approval of construction plans and specifications; and

(c) Provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.

19. Use of Cellular Device While Driving is Prohibited

Applicants are required to comply with California Vehicle Code sections 23123 and 23123.5. These laws prohibit driving a motor vehicle while using an electronic wireless communications device to write, send, or read a text-based communication. Drivers are also prohibited from the use of a wireless telephone without hands-free listening and talking, unless to make an emergency call to 911, law enforcement, or similar services.

Initials ______

20. **California Public Records Act and Freedom of Information Act**
The Applicant acknowledges that all information submitted in the course of applying for funding under this program, or provided in the course of an entity's grant management activities that are under Federal control, is subject to the Freedom of Information Act (FOIA), 5 U.S.C. § 552, and the California Public Records Act, California Government Code section 6250 et seq. The Applicant should consider these laws and consult its own State and local laws and regulations regarding the release of information when reporting sensitive matters in the grant application, needs assessment, and strategic planning process.

HOMELAND SECURITY GRANT PROGRAM - PROGRAM SPECIFIC ASSURANCES / CERTIFICATIONS

21. **Reporting Accusations and Findings of Discrimination**
If during the past three years the recipient has been accused of discrimination on any basis the recipient must provide a list of all such proceedings, pending or completed, including outcome and copies of settlement agreements to the DHS Financial Assistance Office and the DHS Office for Civil Rights and Civil Liberties (CRCL) by e-mail at crcl@hq.dhs.gov or by mail at U.S. Department of Homeland Security Office for Civil Rights and Civil Liberties, Building 410, Mail Stop #0190, Washington, D.C. 20528.

If the courts or administrative agencies make a finding of discrimination on grounds of race, color, national origin (including LEP), sex, age, disability, religion, or familial status against the recipient, or the recipients settle a case or matter alleging such discrimination, recipients must forward a copy of the complaint and findings to the DHS Financial Assistance Office and the CRCL by e-mail or mail at the addresses listed above.

The United States has the right to seek judicial enforcement of these obligations.

22. **Acknowledgment of Federal Funding from DHS**
All recipients must acknowledge their use of federal funding when issuing statements, press releases, requests for proposals, bid invitations, and other documents describing projects or programs funded in whole or in part with federal funds.

23. **Activities Conducted Abroad**
All recipients must ensure that project activities carried on outside the United States are coordinated as necessary with appropriate government authorities and that appropriate licenses, permits, or approvals are obtained.

24. **Best Practices for Collection and Use of Personally Identifiable Information (PII)**
DHS defines personally identifiable information (PII) as any information that permits the identity of an individual to be directly or indirectly inferred, including any information that is linked or linkable to that individual. All recipients who collect PII

are required to have a publically-available privacy policy that describes standards on the usage and maintenance of PII they collect. Recipients may also find the DHS Privacy Impact Assessments: Privacy Guidance and Privacy template a useful resource respectively.

25. Copyright

All recipients must affix the applicable copyright notices of 17 U.S.C. §§ 401 or 402 and an acknowledgement of U.S. Government sponsorship (including the award number) to any work first produced under federal financial assistance awards.

26. Duplication of Benefits

Any cost allocable to a particular federal financial assistance award provided for in 2 C.F.R. Part 200, Subpart E may not be charged to other federal financial assistance awards to overcome fund deficiencies, to avoid restrictions imposed by federal statutes, regulations, or federal financial assistance award terms and conditions, or for other reasons. However, these prohibitions would not preclude recipients from shifting costs that are allowable under two or more awards in accordance with existing federal statutes, regulations, or the federal financial assistance award terms and conditions.

27. Energy Policy and Conservation Act

All recipients must comply with the requirements of 42 U.S.C. § 6201 which contain policies relating to energy efficiency that are defined in the state energy conservation plan issued in compliance with this Act.

28. Federal Debt Status

All recipients are required to be non-delinquent in their repayment of any federal debt. Examples of relevant debt include delinquent payroll and other taxes, audit disallowances, and benefit overpayments. See OMB Circular A-129.

29. Fly America Act of 1974

All recipients must comply with Preference for U.S. Flag Air Carriers: (air carriers holding certificates under 49 U.S.C. § 41102) for international air transportation of people and property to the extent that such service is available, in accordance with the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. § 40118) and the interpretative guidelines issued by the Comptroller General of the United States in the March 31, 1981, amendment to Comptroller General Decision B-138942

30. Hotel and Motel Fire Safety Act of 1990

In accordance with Section 6 of the Hotel and Motel Fire Safety Act of 1990, all recipients must ensure that all conference, meeting, convention, or training space funded in whole or in part with federal funds complies with the fire prevention and control guidelines of the Federal Fire Prevention and Control Act of 1974, as amended, 15 U.S.C. § 2225a.

31. Non-supplanting Requirements

All recipients who receive federal financial assistance awards made under programs that prohibit supplanting by law must ensure that federal funds do not replace (supplant) funds that have been budgeted for the same purpose through non-federal sources.

32. Patents and Intellectual Property Rights

Unless otherwise provided by law, recipients are subject to the Bayh-Dole Act, Pub. L. No. 96-517, as amended, and codified in 35 U.S.C. § 200 et seq. All recipients are subject to the specific requirements governing the development, reporting, and disposition of rights to inventions and patents resulting from financial assistance awards located at 37 C.F.R. Part 401 and the standard patent rights clause located at 37 C.F.R. § 401.14.

33. SAFECOM

All recipients who receive federal financial assistance awards made under programs that provide emergency communication equipment and its related activities must comply with the SAFECOM Guidance for Emergency Communication Grants, including provisions on technical standards that ensure and enhance interoperable communications.

34. Terrorist Financing

All recipients must comply with Executive Order 13224 and U.S. law that prohibit transactions with, and the provisions of resources and support to, individuals and organizations associated with terrorism. Recipients are legally responsible to ensure compliance with the Order and laws.

35. Reporting of Matters Related to Recipient Integrity and Performance

If the total value of the recipient's currently active grants, cooperative agreements, and procurement contracts from all federal assistance offices exceeds $10,000,000 for any period of time during the period of performance of this federal financial assistance award, you must comply with the requirements set forth in the government-wide Award Term and Condition for Recipient Integrity and Performance Matters located at 2 C.F.R. Part 200, Appendix XII, the full text of which is incorporated here by reference in the award terms and conditions.

36. USA Patriot Act of 2001

All recipients must comply with requirements of the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism Act (USA PATRIOT Act), which amends 18 U.S.C. §§ 175–175c.

37. Use of DHS Seal, Logo, and Flags

All recipients must obtain permission from their DHS Financial Assistance Office, prior to using the DHS seal(s), logos, crests or reproductions of flags or likenesses of DHS agency officials, including use of the United States Coast Guard seal, logo, crests or reproductions of flags or likenesses of Coast Guard officials.

IMPORTANT

The purpose of the assurance is to obtain federal and state financial assistance, including any and all federal and state grants, loans, reimbursement, contracts, etc. The

Applicant recognizes and agrees that state financial assistance will be extended based on the representations made in this assurance. This assurance is binding on the Applicant, its successors, transferees, assignees, etc. Failure to comply with any of the above assurances may result in suspension, termination, or reduction of grant funds.

All appropriate documentation, as outlined above, must be maintained on file by the Applicant and available for Cal OES or public scrutiny upon request. Failure to comply with these requirements may result in suspension of payments under the grant or termination of the grant or both and the subrecipient may be ineligible for award of any future grants if the Cal OES determines that any of the following has occurred: (1) the recipient has made false certification, or (2) violates the certification by failing to carry out the requirements as noted above.

All of the language contained within this document must be included in the award documents for all subawards at all tiers. All recipients are bound by the Department of Homeland Security Standard Terms and Conditions 2017, Version 7.0, hereby incorporated by reference, which can be found at: https://www.dhs.gov/publication/fy15-dhs-standard-terms-and-conditions.

Applicant: ______________________________

Signature of Authorized Agent: ______________________________

Printed Name of Authorized Agent: ______________________________

Title: ______________________________ Date: ______________________________

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Initials _____

Orange County Fire Authority

AGENDA STAFF REPORT

Budget and Finance Committee Meeting **Agenda Item No. 4A**
July 11, 2018 **Discussion Calendar**

Monthly Investment Reports

Contact(s) for Further Information

Tricia Jakubiak, Treasurer triciajakubiak@ocfa.org 714.573.6301
Treasury & Financial Planning

Jane Wong, Assistant Treasurer janewong@ocfa.org 714.573.6305

Summary

This agenda item is a routine transmittal of the monthly investment reports submitted to the Committee in compliance with the investment policy of the Orange County Fire Authority and with Government Code Section 53646.

Prior Board/Committee Action

Not Applicable.

RECOMMENDED ACTION(S)

Review the proposed agenda item and direct staff to place the item on the agenda for the Executive Committee meeting of July 26, 2018, with the Budget and Finance Committee's recommendation that the Executive Committee receive and file the reports.

Impact to Cities/County

Not Applicable.

Fiscal Impact

Not Applicable.

Background

Attached is the final monthly investment report for the month ended May 31, 2018. A preliminary investment report as of June 22, 2018, is also provided as the most complete report that was available at the time this agenda item was prepared.

Attachment(s)

Final Investment Report – May 2018/Preliminary Report – June 2018

Attachment

Orange County Fire Authority Monthly Investment Report

Final Report – May 2018

Preliminary Report – June 2018

Monthly Investment Report
Table of Contents

Orange County Fire Authority

Final Investment Report

May 31, 2018

EXECUTIVE SUMMARY

Portfolio Activity & Earnings

During the month of May 2018, the size of the portfolio decreased by $6.4 million to $201.5 million. Significant receipts for the month included various apportionments of property taxes, intergovernmental agency contract and grant payments, a cash contract payment and charges for current services totaling $18.6 million. Significant disbursements for the month included primarily two biweekly payrolls which were approximately $11.3 million each with related benefits. Total May cash outflows amounted to approximately $25.9 million. The portfolio's balance is expected to decrease further in June as there are no major receipts scheduled for the month.

In May, the portfolio's yield to maturity (365-day equivalent) increased by 5 basis points to 1.70%. The effective rate of return rose by 9 basis points to 1.68% for the month and by 5 basis points to 1.29% for the fiscal year to date. The average maturity of the portfolio shortened by 12 days to 84 days to maturity.

Economic News

The U.S. economy continued to grow in May 2018, albeit some mixed economic activities. Employment conditions strengthened further. There were a total of 223,000 new jobs created in May, a much stronger number than expected, and the unemployment number continued to drop, declining to an 18-year low rate of 3.8%. Consumer confidence remained high, and retail sales came in much stronger than expected. Both manufacturing and non-manufacturing activity reversed and increased in May. The CPI (Consumer Price Index) rose by 0.2% as expected. On the other hand, durable goods orders continued to decline in May, and industrial production also dropped slightly. New home sales picked up more than expected while existing home sales continued to pull back in May. On June 13, 2018, the Federal Market Committee met at its scheduled meeting and voted to raise the federal funds rate to a new target range of 1.75% - 2.00%. In its released statement, the Committee also upgraded its outlook on the economy.

BENCHMARK COMPARISON AS OF MAY 31, 2018

3 Month T-Bill:	*1.90%*	*1 Year T-Bill:*	*2.27%*
6 Month T-Bill:	*2.07%*	*LAIF:*	*1.76%*

OCFA Portfolio: 1.68%

PORTFOLIO SIZE, YIELD, & DURATION

	Current Month	***Prior Month***	***Prior Year***
Book Value-	*$201,451,392*	*$207,870,213*	*$194,157,495*
Yield to Maturity (365 day)	*1.70%*	*1.65%*	*0.97%*
Effective Rate of Return	*1.68%*	*1.59%*	*1.00%*
Days to Maturity	*84*	*96*	*130*

Orange County Fire Authority
1 Fire Authority Road
Irvine, Irvine, CA 92602
(714)573-6301

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Summary
May 31, 2018

Investments	Par Value	Market Value (See Note 1 on page 9)	Book Value (See Note 2 on page 9)	% of Portfolio	Term	Days to Maturity	YTM/C 360 Equiv.	YTM/C 365 Equiv.
Money Mkt Mutual Funds/Cash	11,844,952.15	11,844,952.15	11,844,952.15	5.88	1	1	1.243	1.260
Federal Agency Coupon Securities	26,000,000.00	25,752,990.00	26,000,000.00	12.90	962	344	1.283	1.301
Federal Agency Disc. -Amortizing	23,000,000.00	22,951,410.00	22,952,960.00	11.39	120	40	1.704	1.728
Treasury Coupon Securities	26,000,000.00	25,916,140.00	25,923,326.89	12.86	171	115	1.863	1.889
Treasury Discounts -Amortizing	50,000,000.00	49,788,190.00	49,792,597.40	24.71	127	80	1.821	1.847
Local Agency Investment Funds	65,000,000.00	64,839,970.07	65,000,000.00	32.26	1	1	1.731	1.755
Investments	**201,844,952.15**	**201,093,652.22**	**201,513,836.44**	**100.00%**	**192**	**84**	**1.681**	**1.704**
Cash and Accrued Interest								
Passbook/Checking (not included in yield calculations)	123,037.33	123,037.33	123,037.33		1	1	0.000	0.000
Accrued Interest at Purchase		20,521.98	20,521.98					
Subtotal		143,559.31	143,559.31					
Total Cash and Investments	**201,967,989.48**	**201,237,211.53**	**201,657,395.75**		**192**	**84**	**1.681**	**1.704**

Total Earnings	May 31 Month Ending	Fiscal Year To Date
Current Year	283,082.42	1,869,267.00
Average Daily Balance	**197,955,963.13**	**158,218,710.23**
Effective Rate of Return	**1.68%**	**1.29%**

"I certify that this investment report accurately reflects all pooled investments and is in compliance with the investment policy adopted by the Board of Directors to be effective on January 1, 2018. A copy of this policy is available from the Clerk of the Authority. Sufficient investment liquidity and anticipated revenues are available to meet budgeted expenditure requirements for the next thirty days and the next six months."

Patricia Jakubiak 6/1/18

Patricia Jakubiak, Treasurer

Cash and Investments with GASB 31 Adjustment:

Book Value of Cash & Investments before GASB 31 (Above)	$	201,657,395.75
GASB 31 Adjustment to Books (See Note 3 on page 9)	$	(206,003.82)
Total	$	201,451,391.93

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Investments
May 31, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value (See Note 1 on page 9)	Book Value (See Note 2 on page 9)	Stated Rate	YTM/C 365	Days to Maturity	Maturity Date
Money Mkt Mutual Funds/Cash											
SYS528	528	Federated Treasury Obligations			11,844,952.15	11,844,952.15	11,844,952.15	1.260	1.260	1	
		Subtotal and Average	**10,791,394.80**		**11,844,952.15**	**11,844,952.15**	**11,844,952.15**		**1.260**	**1**	
Federal Agency Coupon Securities											
3133EFJP3	869	Federal Farm Credit Bank (Callable Anytime)		10/15/2015	10,000,000.00	9,963,800.00	10,000,000.00	1.100	1.054	136	10/15/2018
3133EGPD1	921	Federal Farm Credit Bank (Callable Anytime)		04/20/2017	7,000,000.00	6,884,500.00	7,000,000.00	1.180	1.375	426	08/01/2019
3134GBHT2	922	Fed Home Loan Mtg Corp		04/25/2017	9,000,000.00	8,904,690.00	9,000,000.00	1.625	1.518	511	10/25/2019
		Subtotal and Average	**26,000,000.00**		**26,000,000.00**	**25,752,990.00**	**26,000,000.00**		**1.301**	**344**	
Federal Agency Disc. -Amortizing											
313385XN1	934	Fed Home Loan Bank		01/11/2018	9,000,000.00	9,000,000.00	9,000,000.00	1.430	1.478	0	06/01/2018
313385ZW9	939	Fed Home Loan Bank		04/19/2018	9,000,000.00	8,973,810.00	8,974,660.00	1.810	1.870	56	07/27/2018
313385D29	945	Fed Home Loan Bank		04/26/2018	5,000,000.00	4,977,600.00	4,978,300.00	1.860	1.924	84	08/24/2018
		Subtotal and Average	**27,870,861.45**		**23,000,000.00**	**22,951,410.00**	**22,952,960.00**		**1.728**	**40**	
Treasury Coupon Securities											
912828XF2	935	Treasury Note		03/08/2018	8,000,000.00	7,998,400.00	7,998,303.03	1.125	1.675	14	06/15/2018
912828T83	943	Treasury Note		04/19/2018	9,000,000.00	8,951,490.00	8,955,420.32	0.750	1.960	152	10/31/2018
912828M64	944	Treasury Note		04/19/2018	9,000,000.00	8,966,250.00	8,969,603.54	1.250	2.010	167	11/15/2018
		Subtotal and Average	**25,914,379.18**		**26,000,000.00**	**25,916,140.00**	**25,923,326.89**		**1.889**	**115**	
Treasury Discounts -Amortizing											
912796PM5	936	US Treasury Bill		03/08/2018	8,000,000.00	7,989,600.00	7,989,986.00	1.669	1.701	27	06/28/2018
912796PL7	937	US Treasury Bill		03/15/2018	3,000,000.00	2,998,290.00	2,998,163.75	1.695	1.726	13	06/14/2018
912796PM5	938	US Treasury Bill		03/15/2018	3,000,000.00	2,996,100.00	2,996,208.75	1.685	1.717	27	06/28/2018
912796PU7	940	US Treasury Bill		04/19/2018	9,000,000.00	8,967,960.00	8,968,950.00	1.800	1.835	69	08/09/2018
912796PZ6	941	US Treasury Bill		04/19/2018	9,000,000.00	8,947,170.00	8,948,385.00	1.860	1.901	111	09/20/2018
912796QD4	942	US Treasury Bill		04/19/2018	9,000,000.00	8,931,690.00	8,933,106.25	1.925	1.971	139	10/18/2018
912796PV5	946	US Treasury Bill		05/24/2018	4,000,000.00	3,982,880.00	3,983,031.12		1.874	83	08/23/2018
912796PY9	947	US Treasury Bill		05/31/2018	5,000,000.00	4,974,500.00	4,974,766.53	1.873	1.909	97	09/06/2018
		Subtotal and Average	**42,379,327.70**		**50,000,000.00**	**49,788,190.00**	**49,792,597.40**		**1.847**	**80**	
Local Agency Investment Funds											
SYS336	336	Local Agency Invstmt Fund			65,000,000.00	64,839,970.07	65,000,000.00	1.755	1.755	1	
		Subtotal and Average	**65,000,000.00**		**65,000,000.00**	**64,839,970.07**	**65,000,000.00**		**1.755**	**1**	

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Investments
May 31, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	YTM/C 365	Days to Maturity
		Total and Average	197,955,963.13		201,844,952.15	201,093,652.22	201,513,836.44		1.704	84

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Cash
May 31, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	YTM/C 365	Days to Maturity
Money Mkt Mutual Funds/Cash										
SYS10033	10033	Revolving Fund		07/01/2017	20,000.00	20,000.00	20,000.00		0.000	1
SYS4	4	Union Bank		07/01/2017	103,037.33	103,037.33	103,037.33		0.000	1
		Average Balance	**0.00**	Accrued Interest at Purchase		20,521.98	20,521.98			**1**
				Subtotal		143,559.31	143,559.31			
	Total Cash and Investments		**197,955,963.13**		**201,967,989.48**	**201,237,211.53**	**201,657,395.75**		**1.704**	**84**

Orange County Fire Authority
1 Fire Authority Road
Irvine, Irvine, CA 92602
(714)573-6301

ORANGE COUNTY FIRE AUTHORITY
Aging Report
By Maturity Date
As of June 1, 2018

Aging Interval	Date Range	Maturities	Payments	Maturity Par Value	Percent of Portfolio	Current Book Value	Current Market Value
Aging Interval: 0 days	(06/01/2018 - 06/01/2018)	5 Maturities	0 Payments	85,967,989.48	42.64%	85,967,989.48	85,807,959.55
Aging Interval: 1 - 30 days	(06/02/2018 - 07/01/2018)	4 Maturities	0 Payments	22,000,000.00	10.90%	21,982,661.53	21,982,390.00
Aging Interval: 31 - 60 days	(07/02/2018 - 07/31/2018)	1 Maturities	0 Payments	9,000,000.00	4.45%	8,974,660.00	8,973,810.00
Aging Interval: 61 - 91 days	(08/01/2018 - 08/31/2018)	3 Maturities	0 Payments	18,000,000.00	8.89%	17,930,281.12	17,928,440.00
Aging Interval: 92 - 121 days	(09/01/2018 - 09/30/2018)	2 Maturities	0 Payments	14,000,000.00	6.91%	13,923,151.53	13,921,670.00
Aging Interval: 122 - 152 days	(10/01/2018 - 10/31/2018)	3 Maturities	0 Payments	28,000,000.00	13.83%	27,888,526.57	27,846,980.00
Aging Interval: 153 - 183 days	(11/01/2018 - 12/01/2018)	1 Maturities	0 Payments	9,000,000.00	4.45%	8,969,603.54	8,966,250.00
Aging Interval: 184 - 274 days	(12/02/2018 - 03/02/2019)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
Aging Interval: 275 - 365 days	(03/03/2019 - 06/01/2019)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
Aging Interval: 366 - 1095 days	(06/02/2019 - 05/31/2021)	2 Maturities	0 Payments	16,000,000.00	7.94%	16,000,000.00	15,789,190.00
Aging Interval: 1096 days and after	(06/01/2021 -)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
	Total for	21 Investments	0 Payments		100.00	201,636,873.77	201,216,689.55

NOTES TO PORTFOLIO MANAGEMENT REPORT

Note 1: Market value of the LAIF investment is calculated using a fair value factor provided by LAIF. The MUFG Union Bank (formerly Union Bank) Trust Department provides market values of the remaining investments.

Note 2: Book value reflects the cost or amortized cost before the GASB 31 accounting adjustment.

Note 3: GASB 31 requires governmental entities to report investments at fair value in the financial statements and to reflect the corresponding unrealized gains/ (losses) as a component of investment income. The GASB 31 adjustment is recorded only at fiscal year end. The adjustment for June 30, 2017 includes a decrease of ($68,353) to the LAIF investment and a decrease of ($137,651) to the remaining investments.

Note 4: The Federated Treasury Obligations money market mutual fund functions as the Authority's sweep account. Funds are transferred to and from the sweep account to/from OCFA's checking account in order to maintain a target balance of $1,000,000 in checking. Since this transfer occurs at the beginning of each banking day, the checking account sometimes reflects a negative balance at the close of the banking day. The negative closing balance is not considered an overdraft since funds are available in the money market mutual fund. The purpose of the sweep arrangement is to provide sufficient liquidity to cover outstanding checks, yet allow that liquidity to be invested while payment of the outstanding checks is pending.

Local Agency Investment Fund *(LAIF)*

As of May 31, 2018, OCFA has $65,000,000 invested in LAIF. The fair value of OCFA's LAIF investment is calculated using a participant fair value factor provided by LAIF on a quarterly basis. The fair value factor as of March 31, 2018 is 0.997538001. When applied to OCFA's LAIF investment, the fair value is $64,839,970 or ($160,030) below cost. Although the fair value of the LAIF investment is lower than cost, OCFA can withdraw the actual amount invested at any time.

LAIF is included in the State Treasurer's Pooled Money Investment Account (PMIA) for investment purposes. The PMIA market valuation at May 31, 2018 is included on the following page.

State of California
Pooled Money Investment Account
Market Valuation
5/31/2018

Description	Carrying Cost Plus Accrued Interest Purch.	Fair Value	Accrued Interest
United States Treasury:			
Bills	$ 15,175,919,718.58	$ 15,250,662,000.00	NA
Notes	$ 24,420,473,576.58	$ 24,309,422,500.00	$ 63,913,433.00
Federal Agency:			
SBA	$ 838,712,594.07	$ 828,886,511.46	$ 1,229,194.42
MBS-REMICs	$ 29,791,987.57	$ 30,411,518.07	$ 139,184.33
Debentures	$ 1,678,597,705.60	$ 1,669,168,850.00	$ 4,350,297.25
Debentures FR	$ -	$ -	$ -
Debentures CL	$ 350,000,000.00	$ 345,654,500.00	$ 1,742,611.50
Discount Notes	$ 12,568,406,777.39	$ 12,612,136,250.00	NA
Supranational Debentures	$ 539,001,891.07	$ 536,521,900.00	$ 1,266,613.00
Supranational Debentures FR	$ 100,541,692.17	$ 100,749,034.22	$ 328,935.57
CDs and YCDs FR	$ 425,000,000.00	$ 425,000,000.00	$ 1,833,640.97
Bank Notes	$ 1,000,000,000.00	$ 999,446,531.85	$ 5,579,222.23
CDs and YCDs	$ 13,475,000,000.00	$ 13,468,508,756.04	$ 61,926,819.40
Commercial Paper	$ 6,703,898,041.60	$ 6,728,276,138.88	NA
Corporate:			
Bonds FR	$ -	$ -	$ -
Bonds	$ -	$ -	$ -
Repurchase Agreements	$ -	$ -	$ -
Reverse Repurchase	$ -	$ -	$ -
Time Deposits	$ 4,810,240,000.00	$ 4,810,240,000.00	NA
AB 55 & GF Loans	$ 672,124,000.00	$ 672,124,000.00	NA
TOTAL	$ 82,787,707,984.63	$ 82,787,208,490.52	$ 142,309,951.67

Fair Value Including Accrued Interest $ 82,929,518,442.19

Repurchase Agreements, Time Deposits, AB 55 & General Fund loans, and
Reverse Repurchase agreements are carried at portfolio book value (carrying cost).

Orange County Fire Authority

Preliminary Investment Report

June 22, 2018

Orange County Fire Authority
1 Fire Authority Road
Irvine, Irvine, CA 92602
(714)573-6301

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Summary
June 22, 2018

Investments	Par Value	Market Value (See Note 1 on page 18)	Book Value (See Note 2 on page 18)	% of Portfolio	Term	Days to Maturity	YTM/C 360 Equiv.	YTM/C 365 Equiv.
Money Mkt Mutual Funds/Cash	7,920,498.68	7,920,498.68	7,920,498.68	4.34	1	1	1.243	1.260
Federal Agency Coupon Securities	26,000,000.00	25,742,970.00	26,000,000.00	14.24	962	322	1.283	1.301
Federal Agency Disc. -Amortizing	19,000,000.00	18,940,340.00	18,940,865.00	10.37	108	60	1.888	1.915
Treasury Coupon Securities	18,000,000.00	17,928,630.00	17,935,480.51	9.82	203	138	1.958	1.985
Treasury Discounts -Amortizing	47,000,000.00	46,849,240.00	46,846,620.70	25.65	130	63	1.829	1.854
Local Agency Investment Funds	65,000,000.00	64,839,970.07	65,000,000.00	35.59	1	1	1.731	1.755
Investments	**182,920,498.68**	**182,221,648.75**	**182,643,464.89**	**100.00%**	**202**	**82**	**1.710**	**1.734**
Cash								
Passbook/Checking (not included in yield calculations)	97,936.87	97,936.87	97,936.87		1	1	0.000	0.000
Total Cash and Investments	**183,018,435.55**	**182,319,585.62**	**182,741,401.76**		**202**	**82**	**1.710**	**1.734**

Total Earnings	June 22 Month Ending	Fiscal Year To Date
Current Year	195,622.47	2,064,889.47
Average Daily Balance	**190,020,422.66**	**160,178,479.62**
Effective Rate of Return	**1.71%**	**1.32%**

"I certify that this investment report accurately reflects all pooled investments and is in compliance with the investment policy adopted by the Board of Directors to be effective on January 1, 2018. A copy of this policy is available from the Clerk of the Authority. Sufficient investment liquidity and anticipated revenues are available to meet budgeted expenditure requirements for the next thirty days and the next six months."

Patricia Jakubiak 6/29/18

Patricia Jakubiak, Treasurer

Cash and Investments with GASB 31 Adjustment:

Book Value of Cash & Investments before GASB 31 (Above)	$	*182,741,401.76*
GASB 31 Adjustment to Books (See Note 3 on page 18)	$	*(206,003.82)*
Total	$	*182,535,397.94*

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Investments
June 22, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value (See Note 1 on page 18)	Book Value (See Note 2 on page 18)	Stated Rate	YTM/C 365	Days to Maturity	Maturity Date
Money Mkt Mutual Funds/Cash											
SYS528	528	Federated Treasury Obligations			7,920,498.68	7,920,498.68	7,920,498.68	1.260	1.260	1	
		Subtotal and Average	**11,410,778.09**		**7,920,498.68**	**7,920,498.68**	**7,920,498.68**		**1.260**	**1**	
Federal Agency Coupon Securities											
3133EFJP3	869	Federal Farm Credit Bank (Callable Anytime)		10/15/2015	10,000,000.00	9,970,600.00	10,000,000.00	1.100	1.054	114	10/15/2018
3133EGPD1	921	Federal Farm Credit Bank (Callable Anytime)		04/20/2017	7,000,000.00	6,880,370.00	7,000,000.00	1.180	1.375	404	08/01/2019
3134GBHT2	922	Fed Home Loan Mtg Corp		04/25/2017	9,000,000.00	8,892,000.00	9,000,000.00	1.625	1.518	489	10/25/2019
		Subtotal and Average	**26,000,000.00**		**26,000,000.00**	**25,742,970.00**	**26,000,000.00**		**1.301**	**322**	
Federal Agency Disc. -Amortizing											
313385ZW9	939	Fed Home Loan Bank		04/19/2018	9,000,000.00	8,984,790.00	8,984,615.00	1.810	1.870	34	07/27/2018
313385D29	945	Fed Home Loan Bank		04/26/2018	5,000,000.00	4,984,000.00	4,983,983.33	1.860	1.924	62	08/24/2018
313385J49	948	Fed Home Loan Bank		06/14/2018	5,000,000.00	4,971,550.00	4,972,266.67	1.920	1.986	104	10/05/2018
		Subtotal and Average	**15,994,807.31**		**19,000,000.00**	**18,940,340.00**	**18,940,865.00**		**1.915**	**60**	
Treasury Coupon Securities											
912828T83	943	Treasury Note		04/19/2018	9,000,000.00	8,958,150.00	8,961,872.64	0.750	1.960	130	10/31/2018
912828M64	944	Treasury Note		04/19/2018	9,000,000.00	8,970,480.00	8,973,607.87	1.250	2.010	145	11/15/2018
		Subtotal and Average	**23,020,897.55**		**18,000,000.00**	**17,928,630.00**	**17,935,480.51**		**1.985**	**138**	
Treasury Discounts -Amortizing											
912796PM5	936	US Treasury Bill		03/08/2018	8,000,000.00	7,998,800.00	7,998,145.56	1.669	1.701	5	06/28/2018
912796PM5	938	US Treasury Bill		03/15/2018	3,000,000.00	2,999,550.00	2,999,297.92	1.685	1.717	5	06/28/2018
912796PU7	940	US Treasury Bill		04/19/2018	9,000,000.00	8,979,210.00	8,978,850.00	1.800	1.835	47	08/09/2018
912796PZ6	941	US Treasury Bill		04/19/2018	9,000,000.00	8,958,960.00	8,958,615.00	1.860	1.901	89	09/20/2018
912796QD4	942	US Treasury Bill		04/19/2018	9,000,000.00	8,943,930.00	8,943,693.75	1.925	1.971	117	10/18/2018
912796PV5	946	US Treasury Bill		05/24/2018	4,000,000.00	3,987,840.00	3,987,528.89		1.874	61	08/23/2018
912796PY9	947	US Treasury Bill		05/31/2018	5,000,000.00	4,980,950.00	4,980,489.58	1.873	1.909	75	09/06/2018
		Subtotal and Average	**48,593,939.72**		**47,000,000.00**	**46,849,240.00**	**46,846,620.70**		**1.854**	**63**	
Local Agency Investment Funds											
SYS336	336	Local Agency Invstmt Fund			65,000,000.00	64,839,970.07	65,000,000.00	1.755	1.755	1	
		Subtotal and Average	**65,000,000.00**		**65,000,000.00**	**64,839,970.07**	**65,000,000.00**		**1.755**	**1**	

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Investments
June 22, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	YTM/C 365	Days to Maturity
		Total and Average	190,020,422.66		182,920,498.68	182,221,648.75	182,643,464.89		1.734	82

ORANGE COUNTY FIRE AUTHORITY
Portfolio Management
Portfolio Details - Cash
June 22, 2018

CUSIP	Investment #	Issuer	Average Balance	Purchase Date	Par Value	Market Value	Book Value	Stated Rate	YTM/C 365	Days to Maturity
Money Mkt Mutual Funds/Cash										
SYS10033	10033	Revolving Fund		07/01/2017	20,000.00	20,000.00	20,000.00		0.000	1
SYS4	4	Union Bank		07/01/2017	77,936.87	77,936.87	77,936.87		0.000	1
		Average Balance	**0.00**							**1**
		Total Cash and Investments	**190,020,422.66**		**183,018,435.55**	**182,319,585.62**	**182,741,401.76**		**1.734**	**82**

ORANGE COUNTY FIRE AUTHORITY
Aging Report
By Maturity Date
As of June 23, 2018

Orange County Fire Authority
1 Fire Authority Road
Irvine, Irvine, CA 92602
(714)573-6301

				Maturity Par Value	Percent of Portfolio	Current Book Value	Current Market Value
Aging Interval: 0 days	(06/23/2018 - 06/23/2018)	4 Maturities	0 Payments	73,018,435.55	39.96%	73,018,435.55	72,858,405.62
Aging Interval: 1 - 30 days	(06/24/2018 - 07/23/2018)	2 Maturities	0 Payments	11,000,000.00	6.02%	10,997,443.48	10,998,350.00
Aging Interval: 31 - 60 days	(07/24/2018 - 08/22/2018)	2 Maturities	0 Payments	18,000,000.00	9.83%	17,963,465.00	17,964,000.00
Aging Interval: 61 - 91 days	(08/23/2018 - 09/22/2018)	4 Maturities	0 Payments	23,000,000.00	12.54%	22,910,616.80	22,911,750.00
Aging Interval: 92 - 121 days	(09/23/2018 - 10/22/2018)	3 Maturities	0 Payments	24,000,000.00	13.09%	23,915,960.42	23,886,080.00
Aging Interval: 122 - 152 days	(10/23/2018 - 11/22/2018)	2 Maturities	0 Payments	18,000,000.00	9.81%	17,935,480.51	17,928,630.00
Aging Interval: 153 - 183 days	(11/23/2018 - 12/23/2018)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
Aging Interval: 184 - 274 days	(12/24/2018 - 03/24/2019)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
Aging Interval: 275 - 365 days	(03/25/2019 - 06/23/2019)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
Aging Interval: 366 - 1095 days	(06/24/2019 - 06/22/2021)	2 Maturities	0 Payments	16,000,000.00	8.76%	16,000,000.00	15,772,370.00
Aging Interval: 1096 days and after	(06/23/2021 -)	0 Maturities	0 Payments	0.00	0.00%	0.00	0.00
	Total for	19 Investments	0 Payments		100.00	182,741,401.76	182,319,585.62

NOTES TO PORTFOLIO MANAGEMENT REPORT

Note 1: Market value of the LAIF investment is calculated using a fair value factor provided by LAIF. The MUFG Union Bank Trust Department provides market values of the remaining investments.

Note 2: Book value reflects the cost or amortized cost before the GASB 31 accounting adjustment.

Note 3: GASB 31 requires governmental entities to report investments at fair value in the financial statements and to reflect the corresponding unrealized gains/ (losses) as a component of investment income. The GASB 31 adjustment is recorded only at fiscal year end. The adjustment for June 30, 2017 includes a decrease of ($68,353) to the LAIF investment and a decrease of ($137,651) to the remaining investments.

Note 4: The Federated Treasury Obligations money market mutual fund functions as the Authority's sweep account. Funds are transferred to and from the sweep account to/from OCFA's checking account in order to maintain a target balance of $1,000,000 in checking. Since this transfer occurs at the beginning of each banking day, the checking account sometimes reflects a negative balance at the close of the banking day. The negative closing balance is not considered an overdraft since funds are available in the money market mutual fund. The purpose of the sweep arrangement is to provide sufficient liquidity to cover outstanding checks, yet allow that liquidity to be invested while payment of the outstanding checks is pending.

GLOSSARY

INVESTMENT TERMS

Basis Point. Measure used in quoting yields on bonds and notes. One basis point is .01% of yield.

Book Value. This value may be the original cost of acquisition of the security, or original cost adjusted by the amortization of a premium or accretion of a discount. The book value may differ significantly from the security's current value in the market.

Commercial Paper. Unsecured short-term promissory notes issued by corporations, with maturities ranging from 2 to 270 days; may be sold on a discount basis or may bear interest.

Coupon Rate. Interest rate, expressed as a percentage of par or face value, that issuer promises to pay over lifetime of debt security.

Discount. The amount by which a bond sells under its par (face) value.

Discount Securities. Securities that do not pay periodic interest. Investors earn the difference between the discount issue price and the full face value paid at maturity. Treasury bills, bankers' acceptances and most commercial paper are issued at a discount.

Effective Rate of Return. Rate of return on a security, based on its purchase price, coupon rate, maturity date, and the period between interest payments.

Federal Agency Securities. Securities issued by agencies such as the Federal National Mortgage Association and the Federal Farm Credit Bank. Though not general obligations of the US Treasury, such securities are sponsored by the government and therefore have high credit ratings. Some are issued on a discount basis and some are issued with coupons.

Federal Funds. Funds placed in Federal Reserve banks by depository intuitions in excess of current reserve requirements. These depository institutions may lend fed funds to each other overnight or on a longer basis. They may also transfer funds among each other on a same-day basis through the Federal Reserve banking system. Fed Funds are considered to be immediately available funds.

Fed Funds Rate. The interest rate charged by one institution lending federal funds to another.

Federal Open Market Committee. The branch of the Federal Reserve Board that determines the direction of monetary policy.

Local Agency Investment Fund (LAIF). A California State Treasury fund which local agencies may use to deposit funds for investment and for reinvestment with a maximum of $50 million for any agency ***(excluding bond funds, which have no maximum)***. It offers high liquidity because deposits can be converted to cash in 24 hours and no interest is lost. Interest is paid quarterly and the State's administrative fee cannot to exceed 1/4 of a percent of the earnings.

Market value. The price at which the security is trading and could presumably be purchased or sold.

Maturity Date. The specified day on which the issuer of a debt security is obligated to repay the principal amount or face value of security.

Money Market Mutual Fund. Mutual funds that invest solely in money market instruments (short-term debt instruments, such as Treasury bills, commercial paper, bankers' acceptances, repurchase agreements and federal funds).

Par. Face value or principal value of a bond typically $1,000 per bond.

Rate of Return. The amount of income received from an investment, expressed as a percentage. A *market rate of return* is the yield that an investor can expect to receive in the current interest-rate environment utilizing a buy-and-hold to maturity investment strategy.

Treasury Bills. Short-term U.S. government non-interest bearing debt securities with maturities of no longer than one year. The yields on these bills are monitored closely in the money markets for signs of interest rate trends.

Treasury Notes. Intermediate U.S. government debt securities with maturities of one to 10 years.

Treasury bonds. Long-term U.S. government debt securities with maturities of 10 years or longer.

Yield. Rate of return on a bond.

Yield-to-maturity. Rate of return on a bond taking into account the total annual interest payments, the purchase price, the redemption value and the amount of time remaining until maturity.

ECONOMIC TERMS

Conference Board Consumer Confidence Index A survey that measures how optimistic or pessimistic consumers are with respect to the economy in the near future.

Consumer Price Index (CPI). A measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. Changes in CPI are used to assess price changes associated with the cost of living.

Durable Goods Orders. An economic indicator released monthly that reflects new orders placed with domestic manufacturers for delivery of factory durable goods such as autos and appliances in the near term or future.

Gross Domestic Product. The monetary value of all the finished goods and services produced within a country's borders in a specific time period. It includes all of private and public consumption, government outlays, investments and exports less imports that occur within a defined territory.

Industrial Production. An economic indicator that is released monthly by the Federal Reserve Board. The indicator measures the amount of output from the manufacturing, mining, electric and gas industries.

ISM Institute for Supply Management (ISM) Manufacturing Index. A monthly index that monitors employment, production inventories, new orders and supplier deliveries.

ISM Non-manufacturing Index. An index based on surveys of non-manufacturing firms' purchasing and supply executives. It tracks economic data for the service sector.

Leading Economic Index. A monthly index used to predict the direction of the economy's movements in the months to come. The index is made up of 10 economic components, whose changes tend to precede changes in the overall economy.

National Federation of Independent Business Small Business Optimism Index. An index based on surveys of small business owners' plans and expectations regarding employment, capital, inventories, economic improvement, credit conditions, expansion, and earnings trends in the near term or future.

Producer Price Index. An index that measures the average change over time in the selling prices received by domestic producers for their output.

University of Michigan Consumer Sentiment Index. An index that measures the overall health of the economy as determined by consumer opinion. It takes into account an individual's feelings toward his or her own current financial health, the health of the economy in the short term and the prospects for longer term economic growth.

Orange County Fire Authority

AGENDA STAFF REPORT

Budget and Finance Committee Meeting | **Agenda Item No. 4B**
July 11, 2018 | **Discussion Calendar**

Director Request to Explore Using the Orange County Investment Pool as an Additional Investment Option

Contact(s) for Further Information

Lori Zeller, Assistant Chief Business Services Department	lorizeller@ocfa.org	714.573.6020
Tricia Jakubiak, Treasurer Treasury & Financial Planning	triciajakubiak@ocfa.org	714.573.6301

Summary

This agenda item is submitted in response to a request from Director Bartlett (County of Orange) for staff to explore using the Orange County Investment Pool as an additional investment option for OCFA.

Prior Board/Committee Action

Not Applicable.

RECOMMENDED ACTION(S)

In response to Director Bartlett's request:

1. Review the attached response from the County Treasurer.
2. Direct staff to place the item on the agenda for the Board of Directors meeting of July 26, 2018, with the Budget and Finance Committee's recommendation that the Board of Directors approve the Orange County Investment Pool as an authorized and suitable investment under OCFA's Investment Policy.

Impact to Cities/County

Not Applicable.

Fiscal Impact

Not Applicable.

Background

On November 17, 2016, Director Bartlett (County of Orange) requested staff to explore using the Orange County Investment Pool (OCIP) as an additional investment option for OCFA. A list of questions was compiled to assist with the review (Attachment 1). The County Treasurer's responses to the due diligence questionnaire are included as Attachments 2 and 3.

Below is the timeline of actions that have taken place to date:

OCIP Review Timeline

11/17/16	Director Bartlett requested OCFA staff explore OCIP as an investment option for OCFA.
12/13/16	Transmitted OC Treasurer a list of due diligence questions for response.
03/09/17	Received OC Treasure's response to due diligence questions.
05/04/17	OCFA staff completed review/evaluation of OC Treasurer's response to due diligence questions. Transmitted OC Treasurer a list of follow-up questions/clarifications.
11/29/17	Emailed OC Treasurer requesting status of follow-up questions/ clarifications. Received OC Treasurer's email reply that she would send follow-up information by the week of December 4, 2017.
02/08/18	Received OC Treasurer's email indicating she would send additional follow-up information by next week.
03/08/18	Received OC Treasurer's response on follow-up information.
03/14/18	Emailed OC Treasurer requesting response to one outstanding item.
03/16/18	Received OC Treasure's response to the one outstanding item.

Government sponsored Investment Pools are listed as Authorized Investments under Section 12 of OCFA's Investment Policy.

Attachments
1. OCFA's Due Diligence Questionnaire
2. Orange County Treasurer's Response to Questions 1-12
3. Orange County Treasurer's Response to Questions 13-24

ORANGE COUNTY FIRE AUTHORITY
Due Diligence Questions for the Orange County Investment Pool (OCIP)

Orange County Investment Pool

1. Please attach a copy of the most recent Investment Policy for the OCIP. Discuss any changes from last year.

2. Is the OCIP rated? If so, please attach the most recent rating report.

3. What portion, if any, of the OCIP is commingled with the longer term pool?

4. What is the current administrative fee for OCIP?

5. Please provide the last 3 years of interest earnings for the OCIP net of fees.

6. Please provide the size of the OCIP for the past 3 years. What are the main drivers resulting in an increase or decrease in the size of the OCIP.

7. Please attach a list of the OCIP participants for each of the last 3 years and indicate the amount they have invested in the OCIP and if the agency is a mandatory or a voluntary participant.

8. What is the current liquidity of the OCIP? How soon could a voluntary participant liquidate 100% of its funds?

Investment Transactions

9. What are the procedures for establishing an account, making deposits and withdrawals and allocating interest earnings? Attach any relevant instructions.

10. Is there a limit to the number of deposits and withdrawals in a month?

11. Are there any dollar limits for deposits, withdrawals and/or balances?

12. Is advance notification required for deposits and withdrawals?

13. What are the deadlines for making deposits and withdrawals?

Investment Team

14. Who will be the day-today contact for OCFA?

15. Provide an organization chart of the current investment team along with their resumes and tenure with the County.

16. Are any of the key investment positions currently vacant?

17. Please attach a list of the current brokers you are using. How frequently does the Treasurer update the list? What is the process for reviewing potential broker/dealers? Who approves the list?

18. Does the Treasurer use an investment adviser? If so, attach any reports produced in 2016.

Investment Oversight

19. Please discuss the levels of review over OCIP?

20. Who are the members of the Treasury Oversight Committee? How frequently do they meet? Have they raised any issues in the past 3 years? Please attach any agendas, reports and minutes for 2016.

21. Who is responsible for auditing the OCIP and how frequently is an audit performed? Were any issues raised in the past 3 years? Please attach the most recent audit report.

22. Has the Grand Jury reviewed the Treasurer's operations in the past 3 years? If so, please attach their report and the County's response.

23. Has the Treasurer reported being out of compliance with the Investment Policy over the past 3 years?

24. The Treasurer recently added LAIF as an Investment option for the OCIP. Since OCFA is already invested in LAIF, does the Treasurer see this as being redundant?

Orange County Investment Pool (OCIP)

1. **Please attach a copy of the most recent Investment Policy for the OCIP. Discuss any changes from last year.**

   - Attached is the Investment Policy for 2017 (Attachment A) and is available on the website at ocgov.com/ocinvestments.

   - The major changes from last year are as follows:

     a. Increase GSE issuer limit to 50% from 33% (Government Code limit is 100%)

     b. Reduce maximum remaining maturity from five years to three years for Negotiable Certificates of Deposit and Medium Term Notes (Government Code limit is five years)

2. **Is the OCIP rated? If so, please attach the most recent rating report.**

   - OCIP is not rated.

   - The Short-term portion of OCIP (OCMMF) is rated and the longer-term portion of OCIP is not rated. The OCMMF is rated "AAAm" by Standard and Poor's (S&P) rating service. We have attached the latest rating report (Attachment N) that was just received and will be available soon on the website at ocgov.com/ocinvestments.

3. **What portion, if any, of the OCIP is commingled with the longer term pool?**

   - Approximately 70% of OCIP is invested in the long-term pool.

4. **What is the administrative fee for OCIP?**

   - The current estimated administrative fee for FY 2016-17 is 6.5 basis points and is included in the monthly investment report executive summary on the website at ocgov.com/ocinvestments.

5. **Please provide the last 3 years of interest earnings for the OCIP net of fees.**

   - We have attached the history for OCIP (Attachment B) and it is available on the website at ocgov.com/ocinvestments.

6. **Please provide the size of the OCIP for the past 3 years. What are the main drivers in an increase or decrease in the size of the OCIP.**

   - FY 2016-17 Average Balance (YTD 12-31-16): $3.7 Billion

   - FY 2015-16 Average Balance: $3.8 Billion

   - FY 2014-15 Average Balance: $3.5 Billion

As you can see, the average balance has not significantly changed and each month the investment reports provide average balances at ocgov.com/ocinvestments. The main drivers to change in the size of OCIP would be if there were significant increases in property tax collections or significant increases to County reserve accounts.

7. **Please attach a list of the OCIP participants for each of the last 3 years and indicate the amount they have invested in the OCIP and if the agency is a mandatory or a voluntary participant.**

- We have provided the voluntary and involuntary participant list that is on the last page of our monthly investment report (Attachment C) with dates of entry. We have also provided the top 10 OCIP participants balances (Attachment D).

8. **What is the current liquidity of the OCIP? How soon could a voluntary participant liquidate 100% of its funds?**

   - As of 01-31-17, there is 10% liquidity in 30 days and 30% liquidity in 180 days.

   - Currently, we maintain 50% of all voluntary pool participants' funds for withdrawal within three days. For withdrawals over $5 million or more, we request at least one day advance notice, so 100% could be withdrawn with one day notice, but as with LAIF, the Treasurer reserves the right to approve each withdrawal to make sure that it will not impact the other pool participants negatively.

Investment Transactions

9. **What are the procedures for establishing an account, making deposits and withdrawals and allocating interest earnings? Attach any relevant instructions.**

   - Attached are form of agreement for deposit and investment, allocation and apportionment of pool interest earnings and procedures (Attachments E, F and G). These documents are also available on the website at ocgov.com/ocinvestments.

10. **Is there a limit to the number of deposits and withdrawals in a month?**

    - No.

11. **Are there any dollar limits for deposits, withdrawals and/or balances?**

    - No.

12. **Is advance notification required for deposits and withdrawals?**

    - Notice is required only for withdrawals as noted above, and advance notice of large deposits is appreciated.

13. What are the deadlines for making deposits and withdrawals?

- For same day transactions, the deadline is 9:30 am.

<u>Investment Team</u>

14. Who will the day-to-day contact for OCFA?

- Gary Nguyen - Director of Investments, 714-834-4774 or gnguyen@ttc.ocgov.com

15. Provide an organization chart of the current investment team along with their resumes and tenure with the County.

- Please refer to the attached investment team biographies and the department organization chart (Attachment H).

16. Are any of the key investment positions currently vacant?

- The Assistant Portfolio Manager position is currently vacant and is in the recruitment process.

17. Please attach a list of current brokers you are using. How frequently does the Treasurer update the list? What is the process for reviewing potential broker/dealers? Who approves the list?

- Please refer to Attachment I for a complete list of the approved broker-dealers and approved broker-dealers are evaluated annually. Applications from new brokers are generally accepted every two years.

- Each broker/dealer on the approved list is vetted through a process to determine its financial stability and its standing with the relevant regulatory agencies. We also ensure that the broker/dealer's addition to the list will add value to our investment process. Additionally, this broker/dealer list is reviewed annually to determine whether each broker/dealer continues to meet the requirements of being an appropriate counterparty.

- The Treasurer approves the broker/dealer changes after review of the recommendation from the Director of Investments.

18. Does the Treasurer use an investment adviser? If so, attach any reports produced in 2016.

- No.

<u>Investment Oversight</u>

19. Please discuss the levels of review over OCIP?

- Daily, all trades are put through a pre- and post-trade evaluation both manually and through our electronic trading platform (Bloomberg AIM). All trades are approved by the Director of

Investments or by the authorized designee. Once trades are executed, they are also reviewed independently for compliance exceptions by the Treasury Division.

- The Treasury Oversight Committee ("TOC") meets quarterly to provide oversight and review the monthly investment report that includes all audit reports. The Board of Supervisors annually reviews and approves the Investment Policy Statement, TOC By-laws and receives a verbal and written from the TOC.

- A number of review and audits are required and the latest summary is outlined in Attachment J.

20. Who are the members of the Treasury Oversight Committee? How frequently do they meet? Have they raised any issues in the past 3 years? Please attach any agendas, reports and minutes for 2016.

- The Treasury Oversight Committee (TOC) was established by the Board of Supervisors (BOS) on December 19, 1995 by Resolution No. 95-946 in accordance with the California Government Code Article 6 of Division 2 of Title 3, Sections 27130-27137 (Article 6). The TOC structure approved by the BOS consists of seven members: the County Auditor-Controller or designee, the County Executive Officer or designee, the County Superintendent of Schools or designee, and four members of the public. The members of the TOC as of December 31, 2016 are as follows:

Name	Member Type
Gary Capata (Chair)	Public Member
Laura Parisi (Vice Chair)	Public Member
William "Andy" Dunn	Public Member
Frank Kim	County Executive Officer
Al Mijares	County Superintendent of Schools
Richard Rohm	Public Member
Eric Woolery	Auditor-Controller

- TOC meets on a quarterly basis.

- Attached are the 2016 agendas, reports and minutes for 2016 (Attachments K). These are also available online at ocgov.com/ocinvestments.

21. Who is responsible for auditing the OCIP and how frequently is an audited performed? Were any issues raised in the past 3 years? Please attach the most recent audit report.

- The Treasury Oversight Committee is required to annual cause an audit per Gov't Code section 27134. The current auditor selected by the Board of Supervisors is the Auditor-Controller- Internal Audit Division.
- In addition, the TOC requires that a quarterly compliance audit be performed by the Auditor-Controller Internal Audit.
- Finally, in conjunction with the County's CAFR, the external County auditor also may perform testing of the investments.
- No compliance exceptions have been identified in FY 2014-15, FY 2015-16 or in the current FY 2016-17.
- The annual compliance report for calendar year 2015 and the Continuous Compliance Monitoring for Quarter End September 30, 2016 are attached (Attachment L).

22. Has the Grand Jury reviewed the Treasurer's operations in the past 3 years? If so, please attach their report and the County's response.

No, but we have attached the latest report (Attachment M).

23. Has the Treasurer reported being out of compliance with the Investment Policy over the past 3 years?

- No Compliance Issues have been reported in FY 2014-15, 2015-16 or in the current FY 2016-17 to date.

24. The Treasurer recently added LAIF as an Investment option for the OCIP. Since OCFA is already invested in LAIF, does the Treasurer see this as being redundant?

- The Treasurer may use a variety of short-term liquidity options including LAIF and Government Money Market Mutual Funds to meet its participants' liquidity needs. The County has the same restrictions of $65 million as OCFA and the $65 million represents less than 2% of OCIP.

Jakubiak, Tricia

From:	Shari Freidenrich <Shari.Freidenrich@ttc.ocgov.com>
Sent:	Wednesday, March 14, 2018 5:16 PM
To:	Jakubiak, Tricia
Cc:	Gary Nguyen
Subject:	RE: Follow-Up to Response to letter regarding OCIP

Dear Tricia:

Yes, we can send you the bios. This time, our response will be timely!

☺

Shari

Shari L. Freidenrich, CPA, CCMT, CPFA, CPFIM, ACPFIM
Treasurer-Tax Collector
Office of the Treasurer-Tax Collector
Shari.Freidenrich@ttc.ocgov.com

OCgov.com

County of Orange
P.O. Box 4515
Santa Ana, CA 92702-4515
Phone: (714) 834-7625
Fax: (714) 834-2912
ocgov.com/octaxbill
ocgov.com/octaxmap
ocgov.com/taxreminder
ocgov.com/melloroos
ocgov.com/taxauction
ocgov.com/ocinvestments

From: Jakubiak, Tricia [mailto:TriciaJakubiak@ocfa.org]
Sent: Wednesday, March 14, 2018 4:10 PM
To: Shari Freidenrich
Cc: Gary Nguyen
Subject: RE: Follow-Up to Response to letter regarding OCIP

Hi Shari
Can you please update the attached bios. I understand Leslie Morales has retired and the organization chart shows 2 new hires: Priyanka Shukla and Meline Carranza. Thanks.

Tricia

From: Shari Freidenrich [mailto:Shari.Freidenrich@ttc.ocgov.com]
Sent: Thursday, March 08, 2018 12:43 PM
To: Jakubiak, Tricia <TriciaJakubiak@ocfa.org>
Cc: Gary Nguyen <gnguyen@TTC.OCGOV.com>
Subject: FW: Follow-Up to Response to letter regarding OCIP
Importance: High

Mimecast Attachment Protection has deemed this file to be safe, but always exercise caution when opening files.

Dear Tricia:

See the following responses to your questions. We apologize for the delay, County Counsel wanted to do some additional research on the withdrawal question when I asked them again on it. We are also available to come back to your Board or Committee if they want to do due diligence on how they funds are invested prior to any apportionments, as every day, we receive in property tax dollars that will be apportioned to your agency.

Please let us know if you have further questions.

Shari

Shari L. Freidenrich, CPA, CCMT, CPFA, CPFIM, ACPFIM
Treasurer-Tax Collector
Office of the Treasurer-Tax Collector
Shari.Freidenrich@ttc.ocgov.com
gov.com
County of Orange
P.O. Box 4515
Santa Ana, CA 92702-4515
Phone: (714) 834-7625
Fax: (714) 834-2912
ocgov.com/octaxbill
ocgov.com/octaxmap
ocgov.com/taxreminder
ocgov.com/melloroos
ocgov.com/taxauction
ocgov.com/ocinvestments

From: Jakubiak, Tricia
Sent: Thursday, May 04, 2017 2:40 PM

To: 'Shari Freidenrich' <Shari.Freidenrich@ttc.ocgov.com>
Subject: RE: Follow-Up to Response to letter regarding OCIP

Good Afternoon Shari

We completed our review of the attached and have a few follow-up items/clarifications on your response to our questions:

Question #1 – Regarding Section XVIII of the Investment Policy (Page 16) do the withdrawal requirements apply to both mandatory and voluntary participants?

Yes, in theory it applies to both mandatory and voluntary participants. However, as mandatory participants are not allowed to invest outside of the Treasurer, it is really a moot question for them as they can't pull funds out for investment purposes anyway. We will plan to update the Investment Policy Statement (IPS) to more closely mirror the language in Government Code section 27136 when we take the IPS to the Board for 2019.

Question #2 - Attachment N was a letter from S&P affirming the rating. Please confirm that there are no recent analyses or reports from S&P on the OCIP.

S&P reviews the Principal Stability Fund Rating for the OC Money Market Fund annually and publishes their reports in March. Along with the annual report, S&P also produces an investment pool profile that is published every March and September. Attached is the latest OC Money Market Fund profile as of September 29, 2017.

Question #15 - Please expand the Org Chart (Attachment H) to include the names and titles for the Investment and Treasury personnel.

Question #17 – Please provide more detail on the Treasurer's broker/dealer review process and attach any questionnaire that the firms must complete.

We maintain a strict policy for the selection and approval of broker/dealers in order to select the most appropriate broker/dealers capable of delivering the best execution and pricing when trading financial instruments.

Each broker/dealer on the approved list is vetted through a process to determine its financial stability and its standing with the relevant regulatory agencies. We also ensure that the broker/dealer's addition to the list will add value to our investment process. Current broker/dealers are reviewed annually to determine whether each broker/dealer continues to meet the requirements of being an appropriate counterparty and to ensure compliance with our IPS by our Investment and Treasury Division staff. Generally, every two years, we open our broker/dealer application period to ensure that we are maintaining appropriate brokers.

There are several criteria considered when selecting a broker/dealer, which include:

- The broker's capability to provide services at the lowest possible cost
- Sufficient, competent broker personnel and support staff including back-up personnel when the main broker is out of the office
- The broker's electronic trading capabilities, important for trade execution and pricing
- Timely acknowledgement and correction of trade errors

- The efficient clearance and settlement of trades

Attached is the Broker-Dealer application/questionnaire that is used.

Question #21 – Referencing the January 27, 2016 TOC meeting minutes, what is the role of PFM? Please attach a copy of their recommendations/reports.

We have attached the their contract and the Agenda packet that provides the scope of services. We have also provided a copy of their reports.

Question#21 – Referencing the July 27, 2016 TOC meeting minutes, please provide details on the internal control deficiency that was noted and the remedy that was implemented.

The deficiency in internal controls identified was that in the daily compliance file, a management signature was not on the one of the five investments packets reviewed for that day. The compliance process involves Treasury management reviewing all investments on a post trade basis. To remedy the deficiency in future, Treasury management implemented an additional verification step that now requires an additional check for signatures by the individual filing the investment packet.

Question #22 – Please provide the County's response to R1, R2 and R3 from the Grand Jury's 2012-13 review. The response provided was from Year 2011-12 and related to property taxes.

We apologize for sending a different Grand Jury report, here is the correct report.

Thank you
Tricia

From: Shari Freidenrich [mailto:Shari.Freidenrich@ttc.ocgov.com]
Sent: Thursday, March 09, 2017 12:33 PM
To: Jakubiak, Tricia <TriciaJakubiak@ocfa.org>
Cc: Gary Nguyen <gnguyen@TTC.OCGOV.com>
Subject: Response to letter regarding OCIP
Importance: High

074 Treasurer-Tax Collector Org Summary 022817.docx
100 Compliance QE 16-3 1615 Final Report TTC Investment Portfolio dtd 120616.pdf
100 TTC Final Report dtd 110116.pdf
2012-2013 Orange County Grand Jury Report - An Investment and Compliance Review of the Orange County Treasurer.pdf
Attachment A - 2017 Investment Policy Statement.pdf
Attachment B - Apportionment Yields and Basis Point Fees as of 01.31.17.pdf
Attachment C - Participant List.pdf
Attachment D - Top 10 OCIP Participants.pdf
Attachment E - Sample Agreement.pdf
Attachment F - Allocation of Interest Earnings.pdf
Attachment G - Procedures for Voluntary Participants.pdf
Attachment H - Investment Division Biographies.pdf
Attachment I - Approved Broker-Dealer List.pdf
Attachment J - Review & Audit Schedule.pdf
Attachment K - TOC Agenda 10-19-16.pdf

Attachment K -Oct. 2016 TOC Minutes Approved.pdf
Attachment K -TOC Agenda 04.27.16.pdf
Attachment K -TOC Agenda 07-27-16.pdf
Attachment K -TOC Agenda 012216.pdf
Attachment K -TOC Minutes 012716 Approved.pdf
Attachment K -TOC Minutes 042716 Approved.pdf
Attachment K -TOC Minutes 072716 Approved.pdf
Grand Jury Response 102312.pdf
OCMMF 2017Mar06 Affirmation PSFR.pdf
Orange County Investment Pool Responses for OCFA.doc

Dear Tricia:

I am sorry that we are just getting it to you. We have been swamped with budget and submitted our FY 17/18 budget this week.

Let me know if you have any additional questions. We look forward to working with you if you find that we are a suitable investment as we provide additional diversification and alternate liquidity to many other government agencies.

Shari

Shari L. Freidenrich, CPA
Treasurer-Tax Collector
Office of the Treasurer-Tax Collector

County of Orange
P.O. Box 4515
Santa Ana, CA 92702-4515
Phone: (714) 834-7625
Fax: (714) 834-2912
ocgov.com/octaxbill
ocgov.com/octaxmap
ocgov.com/taxreminder
ocgov.com/melloroos
ocgov.com/taxauction
ocgov.com/ocinvestments

Attachment A – 2017 Investment Policy Statement
Attachment B - Apportionment Yields and Basis Points Fees

Attachment C – Participant List

OC TREASURER'S RESPONSE TO QUESTION #1

Orange County Treasurer

Investment Policy Statement

(Approved By B.O.S. 11/22/2016)

TABLE OF CONTENTS Page No.

ORANGE COUNTY TREASURER
INVESTMENT POLICY STATEMENT

PURPOSE

This policy is intended to provide the structure for the prudent investment of the cash balances entrusted to the Orange County Treasurer (the "Treasurer") and outline the policies to assist in maximizing the efficiency of the Treasurer's cash management system while meeting the daily cash flow demands of the County, the School Districts, Community Colleges, voluntary participants and other County-related agency funds. The Treasurer's Investment Policy Statement is approved annually by the County Board of Supervisors as required by California Government Code Section 53646 (a) (1) and reviewed annually by the Treasury Oversight Committee, pursuant to the requirements of California Government Code Section 27133. (All references are to the California Government Code unless otherwise stated.)

I. POLICY STATEMENT

The investment practices and policies of the Treasurer are based on compliance with State law and prudent money management. The primary goal is to invest public funds in a manner that will provide the maximum security of principal invested with secondary emphasis on providing adequate liquidity to pool participants and lastly to achieve a market rate of return within the parameters of prudent risk management while conforming to all applicable statutes and resolutions governing the investment of public funds.

The Orange County Investment Fund (the "OCIF"), which includes all cash balances entrusted to the Treasurer as noted above, is designed to meet both the investment and cash requirements of our participants. If separate funds are established, the Treasurer shall determine on a cash flow basis what percent of available cash will be invested in each fund.

II. SCOPE

The scope of this Investment Policy Statement applies to all financial assets as indicated in II.1 below.

1. FUNDS

The Treasurer is responsible for investing the unexpended cash of the OCIF, defined as all monies under the investment authority of the Treasurer, including funds, and subsets of funds, for the Orange County Department of Education, and excluding the County employee's pension and medical trust funds which are invested separately by Orange County Employees Retirement System (OCERS), and those funds that are invested separately by the County Treasurer under bond indenture agreements. The County Funds are accounted for in the County's CAFR and include:

- Governmental Funds, including the General Fund
- Enterprise Funds
- Fiduciary Funds
- Any other funds or new funds created by the County, unless specifically exempted

a) Pooled Funds:

It is the Treasurer's policy to pool certain funds for investment purposes to provide efficiencies and economies of scale. Investing through pooled funds will provide for greater use of funds by allowing for more efficient cash flows, a reduction in transaction costs, and improved access to the market. In addition to allowing for one pool for all participants, OCIF may also be split into different pools to meet the specific needs of participants such as short-term pools and longer-term pools. Each pool established will be reviewed separately for purposes of determining compliance with the Investment Policy Statement. These pools are based on the investment requirements detailed in Government Code Sections 53600 et seq. and 53630 et seq.

i. If a longer-term pool such as an extended fund is established by the Treasurer, it will be utilized for investment requirements generally longer than one year. It will be invested primarily in high grade securities.

ii. If a short-term pool is established, it can be established as a single pool or as separate pools depending on the needs of the pool participants. These pools will be utilized for shorter-term investment requirements and providing liquidity for immediate cash needs. They will be invested primarily in cash-equivalent securities to fulfill the primary goals of safety and liquidity.

b) Specific Investment Accounts:

From time to time, the Treasurer may be authorized by a participant's governing board to invest other specific investments or to manage bond proceeds issued by the County, a local school district, voluntary participant, or other local agency. This may include deposits that are set aside for future needs of a long-term nature and may be appropriately invested in longer-term securities as allowed by Government Code. Participating agencies will sign a written agreement acknowledging that there may be risk to principal should they desire to redeem funds early, thereby forcing an early sale of securities rather than holding investments to maturity.

No investment will be made in any security with a remaining maturity in excess of five years at the time of purchase, unless the Board of Supervisors has granted express authority to make such an investment specifically or as part of an investment program, which may include investing through pooled funds. Board of Supervisor's approval must occur at least three months prior to the investment or investment programs being effective. Strategies for such deposits may include matching maturities with long-term liabilities.

III. PRUDENCE

Government Code Sections 27000.3 and Section 53600.3 provides that the "prudent investor" standard is to be used by the Treasurer as a fiduciary of public funds. This standard provides that when investing, reinvesting, purchasing, acquiring, exchanging, selling, or managing public funds, the Treasurer shall act with care, skill, prudence, and diligence under the circumstances then prevailing, specifically including, but not limited to, the general economic conditions and the anticipated needs of the County and other depositors that a prudent person acting in a like capacity and familiarity with those matters would use in the conduct of funds of a like character and with like aims, to safeguard the principal and maintain the liquidity needs of the County and the other depositors. Within the limitation of this section and considering individual investments as part of an overall investment strategy, investments may be acquired as authorized by law.

The Treasurer and those delegated staff shall act in accordance with written procedures and the Investment Policy Statement, exercise due diligence, report in a timely fashion and implement appropriate controls to mitigate adverse developments.

IV. DELEGATION OF AUTHORITY

Annually, the County Board of Supervisors delegates to the Treasurer the authority to invest and reinvest the funds of the County and other depositors as specified in Government Code Sections 27000.1, 53607 and 53608. Such delegation is conditioned upon the Treasurer submitting any and all investment policies and amendments thereto to the Board for review and approval. The Treasurer may further delegate investment authority to such persons within the Treasurer's Department as deemed appropriate.

V. OBJECTIVES

Criteria for selecting investments and the absolute order of priority are:

1. **SAFETY**
   Safety of principal is the foremost objective of the investment program. Investments shall be undertaken in a manner that seeks to ensure the preservation of capital in the overall portfolio.

   The Treasurer shall seek to preserve principal and minimize capital losses by mitigating credit risk and market risk as follows:

   a) **Credit Risk:** Defined as an issuer's ability and willingness to repay interest and principal. Credit risk shall be mitigated by diversifying the fund among issues and issuers so that the failure of any one issue or issuer would not result in a significant loss of income or principal to participants.

   b) **Market Risk:** Defined as the risk of market value fluctuations due to changes in the general level of interest rates. Because longer-term securities generally have greater market risk than shorter-term securities, market risk will be mitigated by establishing a maximum weighted average maturity or duration for the portfolio. Occasional market losses on individual securities are inevitable with active portfolio management and must be considered within the context of the overall investment return.

2. **LIQUIDITY**
   Liquidity refers to the recurring maturity of a portion of the investment portfolio, as well as the ability to sell an investment at any given moment with a minimal chance of principal loss. A portion of OCIF, which may be in a separate pool, will maintain liquidity for the purpose of meeting all operating requirements and reasonably anticipated cash flow needs.

3. YIELD

Yield refers to the objective of attaining a market rate of return commensurate with the risk profile and cash flow characteristics of the portfolio throughout budgetary and economic cycles. Although the Treasurer may employ certain indices to gauge the funds' rate of return, such indices shall be used solely for comparative purposes and do not constitute a warranty or guarantee of actual fund performance.

4. MARK-TO-MARKET

Investment pools, as described in Section II, 1 (a) of this Investment Policy Statement, are marked to market. To the extent reasonably possible and consistent with the Treasurer's trust and fiduciary duty, any funds in a short-term pool will attempt to stabilize at a $1.00 net asset value (NAV). If the ratio of the market value of the short-term pool divided by the book value of the short-term pool is less than $.995 or greater than $1.005, holdings may be sold as necessary to maintain the ratio between $.995 and $1.005.

The Treasurer will act on a "best efforts" basis to stabilize any short-term pools within the $.995 to $1.005 range. However, the $1.00 NAV is not guaranteed or insured by the Treasurer for any pool, including any longer-term pool, nor are the pools registered with the Securities Exchange Commission (SEC).

VI. AUTHORIZED INVESTMENTS

The County is authorized by Government Code Section 53600 et seq. to invest in specific types of securities. Investments not specifically listed below are prohibited. Consistent with the requirements of law and this Investment Policy Statement, the Treasurer may place orders for the execution of transactions with or through such broker/dealers, banks or counterparties as may be selected from time to time at his/her discretion. All securities must be U.S. dollar denominated. To the extent consistent with the objectives stated above, the investment restrictions outlined below, and the investment limitations specified in Sections VII and VIII, the pools may invest in the following areas.

1. U. S. TREASURY SECURITIES

United States Treasury bills, notes, bonds, or certificates of indebtedness, for which the full faith and credit of the United States are pledged for the payment of principal and interest. There is no limit on the percentage of a pool that can be invested in this category.

2. U. S. GOVERNMENT AGENCY SECURITIES

Obligations, participations, or other instruments of, or issued by, a federal agency or a United States government-sponsored enterprise (GSE). There is no limit on the percentage of a pool that can be invested in this category, but each issuer is limited to 50% of any individual pool's total assets except that GSE issuers rated AA- or higher with final maturities of 30 days or less are excluded from the calculation of the 33% limit.

3. COMMERCIAL PAPER

Eligible commercial paper shall be of "prime" quality of the highest ranking or of the highest letter and number rating as provided by a Nationally Recognized Statistical Rating Organization (NRSRO), shall not exceed 270 days maturity, and shall not exceed 40% of a pool. The entity that issues the commercial paper shall meet all of the following conditions in either paragraph (a) or paragraph (b):

a) Has total assets in excess of five hundred million dollars ($500,000,000), is organized and operating within the United States as a general corporation, and has debt other than commercial paper, if any, that is rated "A" or higher by a NRSRO.

b) Is organized in the United States as a special purpose corporation, trust, or limited liability company, has program-wide credit enhancements including, but not limited to overcollateralization, letters of credit or a surety bond, has commercial paper that is rated A-1 or higher, or the equivalent, by a NRSRO.

Split ratings (i.e. A2/P1) are not allowed, and two NRSRO ratings are required. No more than 5% of the total assets of any individual pool may be invested in any one issuer's commercial paper.

4. NEGOTIABLE CERTIFICATES OF DEPOSIT

Negotiable certificates of deposit issued by a nationally or state-chartered bank, savings association, or, federal association (as defined by Section 5102 of the California Financial Code) a state-licensed branch of a foreign bank. Issuing banks must be rated by at least two NRSROs, have a short-term rating of not less than A1/P1 and a long-term rating of not less than an "A" from a NRSRO, if any. No more than 30% of any individual pool's total assets may be invested in negotiable certificates of deposit and maximum remaining maturity cannot exceed three years.

5. REPURCHASE AGREEMENTS

Investments in repurchase agreements for the purpose of this Investment Policy Statement means a purchase of securities by the Treasurer pursuant to an agreement by which the seller will repurchase the securities on or before a specified date and for a specified amount and will deliver the underlying securities to the Treasurer by book entry, physical delivery, or by third party custodial agreement. The term of a repurchase agreement shall not exceed one year. The term "securities," for the purpose of repurchase agreements, means securities of the same issuer, description, issue date, and maturity.

To participate in repurchase agreements, a master repurchase agreement must be completed and signed by all parties involved. The Treasurer will maintain a signed copy of the agreement. Repurchase agreements are required to be collateralized by securities or cash.

a) Collateralization:

In order to anticipate market changes and provide a level of security for all repurchase agreement transactions, the market value of securities that underlie a repurchase agreement shall be valued at 102% or greater of the funds borrowed against those securities and the value shall be adjusted no less frequently than weekly. Since the market value of the underlying securities is subject to daily market fluctuations, the investments in repurchase agreements shall be in compliance if the value of the underlying securities is brought back up to 102% no later than the next business day.

Collateral will be limited to cash, and U.S. Treasury and U.S. Government Agency securities. For compliance purposes, U.S. Treasury and/or U.S. Government Agency collateral are exempt from the issuer limits as stated in Section VIII.2. Collateral will be held by an independent third party with whom the Treasurer has a current custodial agreement. A clearly marked evidence of ownership (safekeeping/custody receipt) must be supplied to the Treasurer and retained. No collateral substitutions may be made without prior approval of the Treasurer.

Investments in repurchase agreements are limited to no more than 20% of any individual pool's total assets. Agreements are subject to Government Code Section 53601 and must comply with the delivery requirements and the maturity provision from Section 53601.

6. BANKERS' ACCEPTANCES

Bankers' acceptances, also known as time drafts (bills of exchange), are drawn on and accepted by a commercial bank. Purchases of bankers' acceptances shall not exceed 180 days maturity. Issuing banks must be rated by at least two of the NRSROs and have a short-term rating of at least A1/P1 and a long-term rating of not less than "A" from a NRSRO, if any. Bankers' acceptances are limited to no more than 40% of any individual pool's total assets.

7. MONEY MARKET MUTUAL FUNDS

Shares of beneficial interest issued by diversified management companies that are money market mutual funds registered with the Securities and Exchange Commission under the Investment Company Act of 1940 (15 U.S.C. Sec. 80a-1 et seq.), which only invest in direct obligations in U.S. Treasury bills, notes, and bonds, U.S. Government Agencies, Municipal Debt, and repurchase agreements with a weighted average maturity of 60 days or less. Money Market Mutual Funds that do not maintain a constant Net Asset Value (NAV) are prohibited. Money market mutual funds are not required to conform to the restrictions detailed in this Investment Policy Statement, but are limited to no more than 20% of any individual pool's total assets. The Treasurer shall be required to investigate money market mutual funds prior to investing and perform a periodic review, but at least annually thereafter while the funds are invested in the money market mutual fund. At a minimum, approved money market mutual funds shall have met either of the following criteria:

a) Attained the highest ranking or the highest letter and numerical rating provided by no less than two NRSROs.

b) Retained an investment advisor registered or exempt from registration with the Securities and Exchange Commission with not less than five years experience managing money market mutual funds with assets under management in excess of $500,000,000.

8. STATE POOL – LOCAL AGENCY INVESTMENT FUND

The Treasurer may invest in the Local Agency Investment Fund (LAIF) established by the State Treasurer under Government Code Section 16429.1. LAIF has no final stated maturity and will be reported as a one-day maturity. Investments in LAIF shall not exceed $50 million per pool.

9. MUNICIPAL DEBT

Such instruments are defined as being issued by a local or state agency, including:

a) Bonds payable solely out of the revenues from a revenue-producing property owned, controlled, or operated by the local agency or by a department, board, agency or authority of the local agency.

b) Registered state warrants or treasury notes or bonds, including bonds payable solely out of the revenues from a revenue-producing property owned, controlled, or operated by the state or by a department, board, agency, or authority of a state.

c) Bonds, notes, warrants, or other evidences of indebtedness of any local agency within a state, including bonds payable solely out of the revenues from a revenue-producing property owned, controlled, or operated by the local agency, or by a department, board, agency, or authority of the local agency.

Issuing municipalities must have a short-term rating of not less than A1/P1 and a long-term rating of not less than an "A" from the NRSROs, and two NRSRO ratings of "A" or better are required unless they have a single NRSRO rating of AA-/AA3 or better. Municipal debt issued by the County of Orange, California is exempt from this credit rating requirement.

10. MEDIUM-TERM NOTES

Medium-term notes are defined as all corporate and depository institution debt securities with a maximum remaining maturity of not more than 397 days for any short-term pools and three years for any other pools such as a longer-term pool. Medium-term notes must be issued by corporations organized and operating within the United States or by depository institutions licensed by the United States or any state and operating within the United States. Notes eligible for investment shall be rated not less than "A" or its equivalent from at least two NRSROs and if remaining maturity is longer than 397 days, it shall be rated by at least two NRSROs and have obtained no less than an "AA" rating by both. Investments in medium-term notes are limited to no more than 30% of any individual pool's total assets.

11. INVESTMENT POOLS

Shares of beneficial interest issued by a joint powers authority organized pursuant to Government Code Section 6509.7 that invests in the securities and obligations as authorized under 53601 (a) to (o), inclusive, and that comply with the investment restrictions of Government Code Sections 53600 through 53610 and Section 53630. The Treasurer shall be required to investigate all local government investment pools prior to investing and perform a quarterly review thereafter while the funds are invested in the pool. The analysis shall include, but is not limited to, the following characteristics of a pool/fund as part of its investigation and quarterly review:

- Eligible securities
- Maximum maturity
- REPO collateral/counter-party
- Size of the pool/fund
- Limits on withdrawal/deposit
- Expense ratio

Investments in this investment type are limited to no more than 20% of any individual pool's total assets. No more than 10% of an individual pool shall be invested in a single investment pool.

12. SUPRANATIONAL SECURITIES

Supranational securities are defined as United States dollar denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by the International Bank for Reconstruction and, Development, International Finance Corporation, or Inter-American Development Bank, with a maximum remaining maturity five years or less, and eligible for purchase and sale within the United States. Supranational securities eligible for investment shall be rated "AA" or better from at least two NRSROs. Investments in supranationals shall not exceed 30 percent of any individual pool's total assets.

VII. INVESTMENT RESTRICTIONS

1. CREDIT RATINGS

Credit ratings will be applied at the time of purchase of a security. A subsequent downgrade in a security's credit rating will not constitute a violation of the Investment Policy Statement. Securities which are downgraded below the minimum acceptable rating levels must be reviewed for possible sale within a reasonable amount of time. Municipal debt issued by the County of Orange, California is exempt from the credit rating requirements listed below. U.S. Government obligations (as defined in Section VI (1) and VI (2)) are exempt from the credit rating requirements listed below. The credit ratings referred to in this policy must be assigned by one of the following Nationally Recognized Statistical Rating Organizations (NRSRO): Standard & Poor's Corporation "S&P," Moody's Investors Service, Inc. "Moody's", and Fitch Ratings "Fitch."

a) Short-term debt ratings – (two of the following and not less than the following)

"A-1" or "SP-1"	Standard & Poor's Corporation (S&P)
"P-1" or "MIG 1/VMIG 1"	Moody's Investors Service, Inc. (Moody's)
"F1"	Fitch Ratings (Fitch)

Split ratings are not allowed, i.e. A-1/P-1/F2 or similar. An issuer of short-term debt must have no less than an "A" rating on long-term debt, if any.

Long-term debt ratings – Investments purchased for short-term pools or with remaining maturities of 397 days or less- shall be rated by at least two NRSROs and have obtained no less than an "A" rating by any. Investments purchased for pools with remaining maturities longer than 397 days, shall be rated by at least two NRSROs and have obtained no less than an "AA" rating by any. If an issuer of long-term debt has a short-term rating, then it may not be less than A-1/SP-1 or P-1/MIG1 or F1 and should be rated by two NRSROs.

b) Repurchase Agreement counterparties shall have a minimum short-term rating, or counterparty rating, of no less than A-1 or equivalent by two NRSROs and have capital of not less than $500 million.

c) Any issuer that has been placed on "Credit Watch-Negative" by a NRSRO will be placed on hold and current holdings reviewed for possible sale within a reasonable period of time unless the following criteria are met and are also approved in writing by the Treasurer prior to purchase:

The issuer has:

(a) an A-1+ or F1+ short-term rating; or

(b) at least an AA or Aa2 long-term rating.

d) If any issuer is placed on "Credit Watch-Negative" by a NRSRO, all related entities, including parent and subsidiaries, will also be placed on hold and subject to the above requirements.

VIII. DIVERSIFICATION AND MATURITY RESTRICTIONS

It is the policy of the Treasurer to diversify the pooled funds. Investments are diversified to minimize the risk of loss resulting in overconcentration of assets in a specific maturity, specific issuer, or a specific class of securities. Diversification strategies shall be established by the Treasurer and periodically reviewed.

1. AUTHORIZED INVESTMENTS AND ISSUER CONCENTRATION

Only debt issued by firms listed on the Office of the Treasurer's Approved Issuer List may be purchased. The following diversification limits will also be applied at the time of purchase of a security.

Type of Investment	Cal Gov Code % of Funds Permitted	Orange County IPS	Cal Gov Code Maximum Final Maturity	Orange County IPS Maximum Final Maturity (All Pooled Funds Except Short-Term Funds)	Orange County IPS Maximum Final Maturity (Short-Term Fund)
U.S. Treasury Securities	100%	100%	5 Years	5 Years	397 Days
U.S. Government Agency Securities (GSEs)	100%	100% Total, no more than 50% in one issuer excluding securities with final maturities of30 days or less	5 Years	5 Years	397 Days
Municipal Debt	100%	30% Total, no more than 5% in one issuer except 10%-County of Orange	5 Years	5 Years	397 Days
Medium-Term Notes	30%	30% Total, no more than 5% in one issuer	5 Years	3 Years	397 Days
Bankers Acceptances	40%, 30% of a single issuer	40% Total, no more than 5% in one issuer	180 Days	180 Days	180 Days
Commercial Paper	40%, 10% of a single issuer	40% Total, no more than 5% in one issuer	270 Days	270 Days	270 Days
Negotiable Certificates of Deposits	30%	30% Total, no more than 5% in one issuer	5 Years	3 Years	397 Days
State of California Local Agency Investment Fund	$50 million per account	$50 million per pool	N/A	N/A	N/A
Repurchase Agreements	100%	20% Total, no more than 10% in one issuer	1 Year	1 Year	1 Year
Money Market Mutual Funds	20%	20% Total	N/A	N/A	N/A
Investment Pools	100%	20% Total, no more than 10% in one pool	N/A	N/A	N/A
Supranationals	30%	30% Total, no more than 5% in one issuer	5 Years	5 Years	397 Days

2. MATURITY

a) The weighted average maturity (WAM) of any short-term pool, on a dollar-weighted basis, shall not exceed 60 days.

b) The maximum maturity of any investment purchased will be five years with the exception of investments and investment pools authorized by the Board of Supervisors to be invested in longer than five year maturities.

If short-term and long-term pools are used, the following restrictions will apply:

Short-term pool	13 months (397)
Long-term pool	5 years

c) For purposes of calculating a final maturity date, the earlier of either the final maturity date, pre-refunded date, or mandatory put to tender option date that will be used.

d) For purposes of calculating the weighted average maturity of the portfolio, the maturity of a variable-rate security will be considered its next interest rate reset date, if there is a reasonable expectation that the security will maintain an approximate value of par upon each adjustment of the security's interest rate at any time until final maturity.

3. DURATION

a) All pools, except short-term pools, shall have an effective duration not to exceed a leading 1-3 year index +25%.

IX. PROHIBITED TRANSACTIONS

At the time of purchase, all permitted investments shall conform in all respects with this Investment Policy Statement and with applicable provisions of the Government Code, as may be amended from time to time. No investment prohibited by Government Code shall be permitted herein.

Any investment transactions, credit risk criterion, percentage limitations, or market valuation that are not in compliance with this Investment Policy Statement and cannot be corrected without penalty **at time of purchase** must be documented and approved by the Treasurer in writing as soon as possible. Thereafter, action shall be taken by the Treasurer to correct such matter as soon as practical. If a percentage restriction is adhered to at the time of purchase, a later increase or decrease in percentage resulting from a change in values or assets will not constitute a violation of that restriction.

1. The following transactions are prohibited:

a) Borrowing for investment purposes ("Leverage").

b) Reverse Repurchase Agreements, as defined by Government Code Section 53601(j) (3) and (j) (4) or otherwise.

c) Structured Notes (e.g. inverse floaters, leveraged floaters, structured certificates of deposit, equity-linked securities, event-linked securities). This includes all floating-rate, adjustable-rate or variable-rate securities in which a change in interest rates or other variables that can reasonably be foreseen to occur during their term would result in their market value not returning to par at the time of each interest rate adjustment.

Simple "floating rate notes," whose periodic coupon adjustment is based on a short-term (one-year or less) rate index (such as Treasury bills, federal funds, prime rate, or LIBOR) and which have a reasonable expectation of maintaining a value of par at each interest rate adjustment through final maturity, are exempt from this definition. Additionally, U.S. Treasury and Agency zero coupon bonds, U.S. Treasury and Agency strips, Resolution Funding Corporation (REFCORP) strips, or other callable securities which otherwise meet the quality, maturity, and percent limitations assigned to their respective security category, are exempt from this section.

d) Structured Investment Vehicles (SIV).

e) Derivatives (e.g. options, futures, swaps, swap options, spreads, straddles, caps, floors, collars).

f) Money Market Mutual Funds that do not maintain a constant Net Asset Value (NAV).

X. ETHICS AND CONFLICT OF INTEREST

The Treasurer and all persons involved in the investment process shall refrain from personal business activity, which could create a conflict with proper execution of the investment program, or which could impair the ability to execute impartial investment decisions. The Treasurer and all treasury and investment personnel shall disclose to the Treasury Oversight Committee any material financial interests in financial institutions, broker dealers, and vendors ("outside entities") that conduct business with the County of Orange and shall disclose any material financial investment positions in such outside entities.

1. STATEMENT OF ECONOMIC INTEREST FORM 700

The Treasurer, Auditor-Controller, members of the Treasury Oversight Committee, and all designated employees must annually file a Form 700 (Statement of Economic Interests) in accordance with the County's Conflict-of-Interest Code.

2. COUNTY'S GIFT BAN ORDINANCE – SEC. 1-3-22 THE CODIFIED ORDINANCES, ORANGE COUNTY, CALIF.

The County's Gift Ban Ordinance prohibits the receipt of specified gifts to the Treasurer, Auditor-Controller, and "designated employees" from business entities and individuals that "do business with the County" as that termed in defined in the Ordinance. Under the Ordinance, the term "designated employee" includes every employee of the County who is designated in the County's Conflict-of-Interest Code to file a Form 700 and every member of a board or commission under the jurisdiction of the Board of Supervisors required to file such a form. For purposes of the Treasurer's Office, "designated employees" include: the Chief Assistant Treasurer-Tax Collector, the Assistant Treasurer-Tax Collectors, all investment staff, all financial/credit analysts, all cash managers, and all accounting and compliance staff. The Treasurer will review this list of "designated employees" periodically and submit any proposed changes to the Board of Supervisors for approval.

XI. AUTHORIZED BROKER/DEALERS AND FINANCIAL INSTITUTIONS

The Treasurer will maintain a list of broker/dealers and financial institutions authorized to provide investment and/or depository services and products. Any permitted investment, not purchased directly from an approved issuer, shall be purchased either from a "primary" or regional securities broker/dealer qualifying under SEC Rule 15c3-1(uniform net capital rule) and licensed by the state as a broker/dealer as defined in Section 25004 of the Corporations Code or a "well capitalized" national bank or Federal savings association as defined in Title 12 of the Code of Federal Regulations (CFR) Part 6.4 or a savings association or Federal association as defined by Section 5102 of the California Financial Code. Broker/dealers must comply with the political contribution limitations contained in Rule G-37 of the Municipal Securities Rulemaking Board. Section 27133(c) of the Government Code prohibits the selection of any broker, brokerage, dealer, or securities firm that has made a contribution to the Treasurer, any member of the Board of Supervisors, or any candidate for those offices, within any consecutive 48 month period. A detailed questionnaire is required to be completed by broker/dealers and financial institutions seeking to provide investment services. The Treasurer shall conduct an annual review of each broker/dealer's and financial institution's financial condition and registrations to determine whether it should remain on the approved list for investment and/or depository services and require annual audited financial statements to be on file for each firm. The Treasurer shall, at least every two years, review all new broker/dealers and financial institutions submitting a questionnaire to determine if they should be added to the approved list. The Treasurer shall annually send a copy of the current Investment Policy Statement to all broker/dealers and financial institutions approved to provide investment services to the County, and they shall notify the Treasurer in writing of receipt and that they have read it.

XII. PERFORMANCE EVALUATION

The Treasurer shall submit monthly, quarterly, and annual reports (in compliance with Government Code Sections 53607, 53646, and 27134) to the Treasury Oversight Committee, the pool participants, the County Executive Officer, the Director of Auditor-Controller Internal Audit, the Auditor-Controller, and the Board of Supervisors. These reports shall contain sufficient information to permit an informed outside reader to evaluate the performance of the investment program and shall be in compliance with Government Code. In accordance with GASB Statements 31 and 40, the Treasurer shall provide financial information on investments for the County's Comprehensive Annual Financial Report.

XIII. SAFEKEEPING

All security transactions, including collateral for repurchase agreements, entered into by the Treasurer shall be conducted on a delivery-versus-payment (DVP) basis. All investments shall have the County of Orange and either the OCIF or the specific pool name as its registered owner except for municipal debt issued by the County of Orange and privately placed with the County Treasurer in which case the investments shall have the Orange County Treasurer on behalf of the OCIF as its registered owner.

All securities shall be held by a third party custodian designated by the Treasurer (this does not apply to money market funds or investment pools). The third party custodian shall be required to issue a safekeeping statement to the Treasurer listing the specific instrument, rate, maturity, and other pertinent information.

XIV. MAINTAINING THE PUBLIC TRUST

All participants in the investment process shall act as custodians of the public trust. The overall program shall be designed and managed with a degree of professionalism that is worthy of the public trust.

XV. INTERNAL CONTROLS

The Treasurer shall establish a system of written internal controls, which will be reviewed annually with the County's independent (external) auditor. The controls shall be designed to prevent loss of public funds due to fraud, employee error, and misrepresentation by third parties, unanticipated market changes, or imprudent actions by employees of the Treasurer's Office. The Treasurer shall evaluate audit reports in a timely manner with the Treasury Oversight Committee. The quarterly audit reports of the Treasury shall be provided as required by Government Code Sections 26920 through 26922. Daily compliance of the investment portfolio shall be performed by the Department's Accounting/Compliance Unit. Compliance will be determined on a fair market value basis. Cash held at the bank will not be included in the pool balance. All agreements, statements, and trade packets will be subject to review annually by auditors in conjunction with their audit.

1. INVESTMENT PROCEDURES

The Treasurer shall develop and maintain written administrative procedures for the operation of the investment program that are consistent with this investment policy. Procedures will include reference to safekeeping, Master Repurchase Agreements, wire transfer agreements, collateral and depository agreements, banking service contracts, and other investment and banking related activities. Such procedures shall include explicit delegation of authority to personnel responsible for investment transactions.

No investment personnel may engage in an investment transaction except as provided under terms of this policy and the procedures established by the County Treasurer. The Treasurer shall be responsible for all transactions undertaken and shall establish a system of controls to regulate the activities of all Treasury and Investment personnel.

XVI. EARNINGS AND COSTS APPORTIONMENT

The Treasurer determines the interest earnings for the respective pools on an accrual basis. Accrual basis interest earnings and Treasury administrative fees (see below) are allocated to each individual pool participant based upon their average daily balance on deposit with the Treasurer. The actual cash distribution is generally paid in the months following.

As authorized by Government Code Section 27013, the Treasurer will charge all pool participants for administrative and overhead costs. Costs include, but are not limited to, portfolio management, bank and custodial fees, software maintenance fees, and other indirect costs incurred from handling or managing funds. In addition, the costs of compliance with the Treasury Oversight provisions of Government Code Sections 27130 through 27137 shall be included as administrative costs. The Treasurer shall annually prepare a proposed budget revenue estimate, providing a detailed itemization of all estimated costs which comprise the administrative fee charged in accordance with Government Code Section 27013. The Treasurer will be required to annually reconcile the estimated charges and actual costs incurred and adjust participant accounts accordingly.

Investment earnings and the above estimated fee charge will be allocated to the pool participants on at least a quarterly basis. As of the first working day of the following period, the pool participants' account will reflect the gross investment earnings and the estimated monthly administrative and overhead costs. The Treasurer's monthly report will state the current estimated fees charged to participants.

XVII. VOLUNTARY PARTICIPANTS

Should a local agency within Orange County, or a Joint Powers Agency (JPA) consisting of at least one public agency from within Orange County, not required by California law to deposit monies with the Treasurer desire entry into the Treasurer's Investment Pool, the agency shall comply with the requirements of Government Code Section 53684 and provide to the Treasurer a resolution adopted by its governing board stating that excess funds are available for the purpose of investment. The resolution shall specify that the local agency authorizes the investment of excess funds pursuant to Section 53684, those persons authorized at the agency to coordinate the transactions, the agency's willingness to be bound by the withdrawal provisions of Government Code Section 27136, and the agency's understanding that administrative charges will be deducted by the Treasurer as permitted by Sections 53684(b) and 27013. The Treasurer shall approve or disapprove such agency's request in writing. Upon the Treasurer's approval of voluntary participants to join the pool, the Treasurer will notify the Board of Supervisors within 5 days.

Monies deposited by local agencies approved for entry into the Treasurer's Investment Pool will be invested in the OCIF and shall be invested by the Treasurer in accordance with this Investment Policy Statement, as amended from time to time. The local agency's authorized representative will execute an agreement with the Treasurer. This agreement specifies the contractual terms and conditions by which the Treasurer will manage and invest local agency's excess funds which have been deposited for investment with the Treasurer.

XVIII. WITHDRAWAL

Withdrawal of participant funds for the purpose of investing or depositing these funds outside the County treasury shall require prior written approval from the Treasurer or designee. The Treasurer shall thereafter review the withdrawal request consistent with his/her trust and fiduciary duties. Prior to approving or disapproving the withdrawal request, the Treasurer or designee shall make a finding of the effect on the stability and predictability of the investments and on the interests of the other depositors in the County treasury. (Government Code Sections 27000.3, 27133(h), 27136 and 53684(c))

XIX. PERFORMANCE STANDARDS

The investment portfolio shall be designed with the objective of obtaining a market rate of return throughout budgetary and economic cycles, commensurate with the investment risk constraints and the cash flow needs, but focusing on, in order of importance, preservation of capital, liquidity, and yield.

The Treasurer's investment strategy is to actively manage the portfolios to create less risk than a benchmark comparable index and to use economies of scale to invest and administer the program at a reasonable cost. Given this strategy, the basis used by the Treasurer to determine whether market yields are being achieved shall be the indices most comparable to the fund, such as money rate data published in Barron's, The Wall Street Journal, Bloomberg, or other bond fund indices. The standards enumerated herein do not constitute a guarantee of the fund's performance.

XX. INVESTMENT POLICY STATEMENT REVIEW

This Investment Policy Statement shall be reviewed on an annual basis by the Treasury Oversight Committee prior to being presented to for review and approval by, the Board of Supervisors in an open session.

XXI. FINANCIAL REPORTING

The monthly Treasurer's Investment Report and all compliance Audit Reports shall be provided to the Orange County Board of Supervisors, the County Executive Officer, the Chief Financial Officer, the Director of Auditor-Controller Internal Audit, the Auditor-Controller, the Treasury Oversight Committee, the presiding judge of the Superior Court, the director or director executive officer and Treasurer or other official responsible for the funds of any Local Agency who has investments in the OCIF as allowed by Government Code Sections 53607, 53646, and 53686.

All reports filed by the Treasurer in accordance with Government Code Section 53646 shall, among other matters, state compliance of the portfolio with the Investment Policy Statement, or the manner in which the portfolio is not in compliance. A statement will also be filed by the Treasurer in accordance with Government Code 53646(b) denoting the ability of each pool to meet its expenditure requirements for the next six months or provide an explanation of why sufficient money may not be available.

XXII. LEGISLATIVE CHANGES

Any State of California law that further restricts allowable maturities, investment type, percentage allocations, or any other provision of this Investment Policy Statement will, upon effectiveness, be incorporated into this Investment Policy Statement and supersede any and all previous applicable language.

XXIII. DISASTER RECOVERY PROGRAM

The Treasurer's Disaster Plan includes critical phone numbers and addresses of key treasury and investment personnel as well as currently approved bankers and broker/dealers. Three copies of the Disaster Plan for home, office, and car have been distributed to key treasury and investment personnel. The plan provides for an offsite location to be communicated at the time of readiness if our offices are uninhabitable.

In the event the Treasurer or authorized staff is unable to invest the portfolio, the Treasurer has an agreement with the custodian for a daily sweep of all uninvested cash with the custody bank into a money market mutual fund. Until normal operations of the Treasurer's office have been restored, the limitations on the size of an individual issuer and the percentage restrictions by investment type would be allowed to exceed those approved in this Investment Policy Statement and would be required to be reported to the Board of Supervisors and pool participants in a timely manner.

INVESTMENT POLICY STATEMENT
GLOSSARY

This Glossary is for general reference purposes only and does not constitute an exhaustive or exclusive list of terms and definitions applicable to this Investment Policy Statement. The definitions included herein do not modify any of the terms of this Investment Policy Statement or applicable law.

ACCRUED INTEREST: The amount of interest that is earned but unpaid since the last interest payment date.

ADJUSTABLE RATE NOTE: (See Floating Rate Note)

AGENCY SECURITIES: (See U.S. Government Agency Securities)

AMORTIZATION: The systematic reduction of the amount owed on a debt issue through periodic payments of principal.

AVERAGE LIFE: The average length of time that an issue of serial bonds and/or term bonds with a mandatory sinking fund feature is expected to be outstanding.

ASKED PRICE: The price at which securities are offered from a seller.

ASSET BACKED SECURITIES (ABS): (See Receivable-Backed Securities)

BANKERS' ACCEPTANCE (BA): Negotiable money market instruments issued primarily to finance international trade. These are time drafts in which a bank "accepts" as its financial responsibility to pay the principal at maturity even if the importer does not. In essence, these are bank obligations collateralized by goods being shipped between an exporter and an importer.

BASIS POINT: When a yield is expressed as 7.32%, the digits to the right of the decimal point are known as basis points. One basis point equals 1/100 of one percent. Basis points are used more often to describe changes in yields on bonds, notes and other fixed-income securities.

BID PRICE: The price at which a buyer offers to buy a security.

BOOK ENTRY: The system, maintained by the Federal Reserve, by which most money market securities are "delivered" to an investor's custodian bank. The Federal Reserve maintains a computerized record of the ownership of these securities, and records any changes in ownership corresponding to payments made over the Federal Reserve wire (delivery versus payment). The owners of these securities do not receive physical certificates.

BOOK VALUE: The original cost of the investment, plus accrued interest and amortization of any premium or discount.

BROKER: A broker brings buyers and sellers together and is compensated for his/her service.

CALLABLE BONDS: Bonds that may be redeemed by the issuing company prior to the maturity date.

CALL PRICE: The price at which an issuer may redeem a bond prior to maturity. The price is usually at a slight premium to the bond's original issue price to compensate the holder for loss of income and ownership.

CALL RISK: The risk to a bondholder that a bond may be redeemed prior to maturity.

CAPITAL GAIN/LOSS: The profit or loss realized from the sale of a capital asset.

CERTIFICATE OF DEPOSIT (CD or NCD): A deposit of funds at a bank for a specified period of time that earns interest at a specified rate. Commonly known as "CDs" or "negotiable CDs."

COLLATERAL: Securities or cash pledged by a borrower to secure repayment of a loan or repurchase agreement. Also, securities pledged by a financial institution to secure deposits of public moneys.

COMMERCIAL PAPER (CP): Short-term unsecured promissory notes issued by corporations for maturities of 180 days or less.

CONSUMER RECEIVABLE-BACKED BONDS: (See Receivable-Backed Securities)

CONVEXITY: A measure of a bond's price sensitivity to changing interest rates. A high convexity indicates greater sensitivity of a bond's price to interest rate changes.

CREDIT OUTLOOK: (See Rating Outlook)

CREDIT QUALITY: The measurement of the financial strength of a bond issuer. This measurement helps an investor to understand an issuer's ability to make timely interest payments and repay the loan principal upon maturity. Generally, the higher the credit quality of a bond issuer, the lower the interest rate paid by the issuer because the risk of default is lower. Credit quality ratings are provided by nationally recognized statistical rating organizations.

CREDIT RISK: The risk to an investor that an issuer will default in the payment of interest and/or principal on a security.

CREDIT WATCH: indicates that a company's credit is under review and credit ratings are subject to change.

+ (positive)	Credit is under review for possible upgrade.
- (negative)	Credit is under review for possible downgrade.
Evolving/ Neutral	Credit is under review, direction uncertain.

COUPON: The rate at which a bond pays interest.

CURRENT YIELD: The annual income from an investment divided by the current market value. Since the mathematical calculation relies on the current market value rather than the investor's cost, current yield is unrelated to the actual return the investor will earn if the security is held to maturity.

CUSTODIAN: A bank or other financial institution that keeps custody of stock certificates and other assets.

DEALER: A dealer, as opposed to a broker, acts as a principal in all transactions, buying and selling for his own account.

DELIVERY VERSUS PAYMENT (DVP): Delivery of securities with a simultaneous exchange of money for the securities.

DERIVATIVE: A security whose interest rate of principal amount may vary and are determined by a market index or a combination of market indexes.

DISCOUNT: The difference between the par value of a bond and the cost of the bond, when the cost is below par. Some short-term securities, such as Treasury bills and bankers acceptances, are known as **discount securities**. They sell at a discount from par, and return the par value to the investor at maturity without additional interest. Other securities, which have fixed coupons, trade at a discount when the coupon rate is lower than the current market rate for securities of that maturity and/or quality.

DIVERSIFICATION: An investment principle designed to spread the risk in a portfolio by dividing investments among different sectors, industries and companies.

DOLLAR-WEIGHTED AVERAGE MATURITY: A calculation that expresses the "average maturity" of an investment portfolio using each investment's maturity weighted by the size of that investment.

DOMINION BOND RATING SERVICE, LTD: (see Nationally Recognized Statistical Rating Organization)

DURATION: A measure of the timing of the cash flows, such as the interest payments and the principal repayment, to be received from a given fixed-income security. This calculation is based on three variables: term to maturity, coupon rate and yield to maturity. The duration of a security is a useful indicator of its price volatility for given changes in interest rates.

FEDERAL FUNDS RATE: Interest rate charged by banks with excess reserves at a Federal Reserve district bank to banks needing overnight loans to meet reserve requirements. A target rate is set by the FOMC.

FEDERAL OPEN MARKET COMMITTEE (FOMC): This committee sets Federal Reserve guidelines regarding purchases and sales of government securities in the open market as a means of influencing the volume of bank credit and money.

FEDERAL RESERVE SYSTEM: A U.S. centralized banking system, which has supervisory powers over the 12 Federal Reserve banks and about 6,000 member banks.

FITCH, INC: (see Nationally Recognized Statistical Rating Organization)

FIXED-INCOME SECURITIES: Securities that return a fixed income over a specified period.

FLOATING RATE NOTE: A debt security whose interest rate is reset periodically (monthly, quarterly, annually) and is based on a market index (e.g. Treasury bills, LIBOR, etc.).

INTEREST: The amount earned while owning a debt security, generally calculated as a percentage of the principal amount.

INTERNAL CONTORLS: An internal control structure designed to ensure that the assets of the entity are protected from loss, theft, or misuse. The internal control structure is designed to provide reasonable assurance that these objectives are met. The concept of reasonable assurance recognizes that 1) the cost of a control should not exceed the benefits likely to be derived and 2) the valuation of costs and benefits requires estimates and judgments by management.

INVESTMENT COMPANY ACT OF 1940: Federal legislation which sets the standards by which investment companies, such as mutual funds, are regulated in the areas of advertising, promotion, performance reporting requirements, and securities valuations.

LIQUIDITY: The speed and ease with which an investment can be converted to cash.

LOCAL AGENCY: County, city, city and county, including a chartered city or county, school district, community college district, public district, county board of education, county superintendent of schools, or any public or municipal corporation.

MARK-TO-MARKET: The market valuation for every security in a portfolio used in determining Net Asset Value (NAV).

MARKET RISK: The risk that changes in overall market conditions or interest rate may adversely affect current market prices.

MARKET VALUE: The price at which a security is trading and could presumably be purchased or sold.

MASTER REPURCHASE AGREEMENT: A written contract between the parties of a repurchase agreement establishing each party's rights in all current and future transactions until termination of the contract by either party.

MATURITY: The date upon which the principal or stated value of an investment becomes due and payable.

MEDIUM TERM NOTES (MTN): Debt securities issued by a corporation or depository institution with a maturity ranging from nine months to five years. The term "medium-term note" refers to the time it takes for an obligation to mature, and includes other corporate debt securities originally issued for maturities longer than five years, but which have now fallen within the five-year maturity range. MTNs issued by banks are also called "bank notes."

MONEY MARKET: The market in which short-term debt instruments (Treasury bills, discount notes, commercial paper, bankers acceptances, etc.) are issued and traded.

MONEY MARKET MUTUAL FUNDS: An investment company that pools money from investors and invest in a variety of short-term money market instruments.

MOODY'S INVESTORS SERVICE, INC: (See Nationally Recognized Rating Services)

MUNICIPAL DEBT: Bonds, notes and other securities issued by a state, municipality or county.

NATIONALLY RECOGNIZED STATISTICAL RATING ORGANIZATION (NRSRO): Firms that review the creditworthiness of the issuers of debt securities, and express their opinion in the form of letter ratings (e.g. AAA, AA, A, BBB, etc). The primary rating agencies are the following: Standard & Poor's Corporation; Moody's Investor Services, Inc.; Fitch, Inc.; and Dominion Bond Rating Service, Ltd.

NEGOTIABLE CD: (See Certificates of Deposit)

NET ASSET VALUE (NAV): A per-share valuation of a mutual fund based on total assets minus total liabilities.

NON-CALLABLE: Bond that cannot be called at the option of the issuer.

OFFER PRICE: The price asked by a seller of securities.

PAR or PAR VALUE: The amount of principal that must be paid at maturity. Also referred to as the face amount of a bond, normally quoted in $1,000 increments per bond.

PHYSICAL DELIVERY: The delivery of an investment to a custodian bank in the form of a physical certificate and/or supporting documents evidencing the investment (as opposed to "book entry" delivery).

PORTFOLIO: A group of securities held by an individual or institutional investor.

PREMIUM: The difference between the par value of a bond and the market value of the bond, when the market value is above par.

PRICE RISK: The risk that the price of a bond sold prior to maturity will be less than the price at which the bond was originally purchased.

PRIMARY DEALER: One of 21 banks and securities brokerages authorized to buy and sell government securities in direct dealings with the Federal Reserve Bank of New York in its execution of Federal Open Market Operations.

PRIME RATE: The base rate that banks use in pricing commercial loans to their best and most creditworthy customers.

PRINCIPAL: The face value or par value of an investment.

PROSPECTUS: A legal document that must be provided to any prospective purchaser of a new securities offering registered with the SEC. This can include information of the issuer, the issuer's business, the proposed use of proceeds, the experience of the issuer's management, and certain certified financial statements.

RATING OUTLOOK: The potential direction of the credit rating assigned by a NRSRO for a specific company.

REINVESTMENT RISK: The risk that coupon payments (or other payments received) cannot be reinvested at the same rate as the initial investment.

RECEIVABLE-BACKED SECURITIES: Securities collateralized with consumer receivables, such as automobile loans, credit card receivables, or home equity loans, which are owned by the issuer, but placed with a trustee for the benefit of the investor.

RECEIVABLE PASS-THROUGH CERTIFICATE: A debt obligation that is backed by a portfolio of receivables, normally issued by a bank or financial institution. The interest and principal of the obligation is paid out of the cash flow generated by the receivables portfolio.

REFUNDED BOND: A bond secured by an escrow fund that is sufficient to pay off the entire issue of bonds at the next call date (pre-funded) or maturity (escrowed to maturity).

REGISTERED STATE WARRANT: A short-term obligation of a state governmental body issued in anticipation of revenue.

REPURCHASE AGREEMENT (REPO): The purchase of securities, on a temporary basis, with the seller's simultaneous agreement to repurchase the securities back at a later date at a specified price that includes interest for the buyer's holding period.

RULE 2a-7 OF THE INVESTMENT COMPANY ACT: Applies to all money market mutual funds and mandates such funds to maintain certain standards, including a 13-month maturity limit and a 60-day average maturity on investments, to help maintain a constant net asset value of one dollar ($1.00).

RULE G-37 OF THE MUNICIPAL SECURITIES RULEMAKING BOARD: Federal regulations to sever any connection between the making of political contributions and the awarding of municipal securities business.

SAFEKEEPING: Storage and protection of a customer's financial assets, valuables, or documents, provided as a service by an institution serving as Agent or Custodian and, where control is delegated by the customer.

SECURITIES & EXCHANGE COMMISSION (SEC): The federal agency responsible for supervising and regulating the securities industry.

SINKING FUND: Money accumulated on a regular basis in a separate custodial account that is used to redeem debt securities or preferred stock issues.

STANDARD & POOR' S CORPORATION: (See Nationally Recognized Rating Services)

STRUCTURED INVESTMENT VEHICLE (SIV): A pool of investment assets that attempts to profit from credit spreads between short-term debt and long-term structured finance products such as asset-backed securities (ABS). Funding for SIVs comes from the issuance of commercial paper that is continuously renewed or rolled over; the proceeds are then invested in longer maturity assets that have less liquidity but pay higher yields. SIVs often employ great amounts of leverage to generate returns.

SUPRANATIONAL: An entity that is formed by two or more central governments with the purpose of promoting economic development for the member countries. Examples include the International Bank for Reconstruction and Development, International Finance Corporation, and the Inter-American Development Bank.

THIRD-PARTY CUSTODIAL AGREEMENT: (See Custodian)

TOTAL RETURN: The sum of all investment income plus changes in the capital value of the portfolio. For mutual funds, return on an investment is composed of share price appreciation plus any realized dividends or capital gains. This is calculated by taking the following components during a certain time period.

(Price appreciation) + (Dividends paid) + (Capital gains) = Total Return

TRADE DATE: The date and time corresponding to an investor's commitment to buy or sell a security.

U. S. GOVERNMENT AGENCY SECURITIES: Debt securities issued by U.S. Government sponsored enterprises and federally related institutions. These government agencies include: Federal Home Loan Banks (FHLB), Federal Home Loan Mortgage Corporation (FHLMC or Freddie Mac), Federal National Mortgage Association (FNMA or Fannie Mae), Federal Farm Credit Banks (FFCB), Resolution Trust Corporation (RTC), and Tennessee Valley Authority (TVA).

U.S. TREASURY SECURITIES: Securities issued by the U.S. Treasury and backed by the full faith and credit of the United States. Treasuries are considered to have no credit risk, and are the benchmark for interest rates on all other securities in the U.S. and overseas. The Treasury issues both discounted securities and fixed coupon notes and bonds.

> **Treasury bills:** non-interest-bearing discount securities with maturities under one year issued by the U.S. Treasury to finance the national debt.
>
> **Treasury notes:** interest-bearing obligations of the U.S. Treasury with maturities ranging from two to ten years from date of issue.
>
> **Treasury bonds:** interest-bearing obligations issued by the U.S. Treasury with maturities that range from ten to thirty years from date of issue.

UNIFORM NET CAPITAL RULE: SEC Rule 15C3-1 outlining capital requirements for broker/dealers.

VARIABLE RATE NOTE: (See Floating Rate Note)

VOLATILITY: A degree of fluctuation in the price and valuation of securities.

WEIGHTED AVERAGE MATURITY (WAM): The average maturity of all the securities that comprise a portfolio. According to SEC rule 2a-7, the WAM for SEC registered money market mutual funds may not exceed 60 days and no one security may have a maturity that exceeds 397 days.

WHEN ISSUED (WI): A conditional transaction in which an authorized new security has not been issued. All "when issued" transactions are settled when the actual security is issued.

YIELD: The annual rate of return on a debt investment computed as though held to maturity expressed as a percentage.

YIELD TO CALL (YTC): The rate of return an investor earns from a bond assuming the bond is redeemed (called) prior to its nominal maturity date.

YIELD TO MATURITY (YTM): The rate of return earned on an investment considering all cash flows and timing factors: interest earnings, discounts, and premiums above par.

ZERO-COUPON BONDS/U.S. TREASURY STRIPS: A bond which represents ownership of a single coupon or principal payment due on a U.S. Treasury bond. Zeros or strips mature at face value at a specified date in the future and make no payments until that date. They always sell at a discount from face value.

OC TREASURER'S RESPONSE TO QUESTION #2

STANDARD & POOR'S
RATINGS SERVICES
McGRAW HILL FINANCIAL

55 Water Street
New York, NY 10041
212 438 2000 Tel
212 438 5075 Fax

August 11, 2015

County of Orange
P.O. Box 4515
625 N. Ross Street
Santa Ana, CA 92702-4515
Attention: Shari L. Freidenrich, Orange County Treasurer

Re: Orange County Money Market Fund

Dear Ms. Freidenrich:

Standard & Poor's Ratings Services ("Ratings Services") hereby affirms its Principal Stability Fund Rating of "AAAm" for the above-referenced fund.

This letter constitutes Ratings Services' permission for you to disseminate the above-assigned rating to interested parties in accordance with applicable laws and regulations. Any dissemination on any Website by you or your agents shall include the full analysis for the rating, including any updates, where applicable.

To maintain the rating, Ratings Services must receive all information as indicated in the applicable Terms and Conditions. You understand that Ratings Services relies on you and your agents and advisors for the accuracy, timeliness and completeness of the information submitted in connection with the rating and the continued flow of material information as part of the surveillance process. Please send all information via electronic delivery to: Guyna.Johnson@standardandpoors.com. If SEC rule 17g-5 is applicable, you may post such information on the appropriate website. For any information not available in electronic format or posted on the applicable website, please send hard copies to: Standard & Poor's Ratings Services, 55 Water Street, New York, New York 10041-0003, Attention: Guyna Johnson.

The rating is subject to the Terms and Conditions, if any, attached to the Engagement Letter applicable to the rating. In the absence of such Engagement Letter and Terms and Conditions, the rating is subject to the attached Terms and Conditions. The applicable Terms and Conditions are incorporated herein by reference.

Ratings Services is pleased to have the opportunity to provide its rating opinion. For more information please visit our website at www.standardandpoors.com. If you have and questions, please contact us. Thank you for choosing Ratings Services.

Sincerely yours,

Standard & Poor's

Standard & Poor's Ratings Services

Analytical Contact: Guyna Johnson
(312) 233-7008

/ds

STANDARD & POOR'S
RATINGS SERVICES
McGRAW HILL FINANCIAL

Standard & Poor's Ratings Services
Terms and Conditions Applicable To Credit Ratings

You understand and agree that:

General. The credit ratings and other views of Standard & Poor's Ratings Services ("Ratings Services") are statements of opinion and not statements of fact. Credit ratings and other views of Ratings Services are not recommendations to purchase, hold, or sell any securities and do not comment on market price, marketability, investor preference or suitability of any security. While Ratings Services bases its credit ratings and other views on information provided by issuers and their agents and advisors, and other information from sources it believes to be reliable, Ratings Services does not perform an audit, and undertakes no duty of due diligence or independent verification, of any information it receives. Such information and Ratings Services' opinions should not be relied upon in making any investment decision. Ratings Services does not act as a "fiduciary" or an investment advisor. Ratings Services neither recommends nor will recommend how an issuer can or should achieve a particular credit rating outcome nor provides or will provide consulting, advisory, financial or structuring advice.

All Credit Rating Actions in Ratings Services' Sole Discretion. Ratings Services may assign, raise, lower, suspend, place on CreditWatch, or withdraw a credit rating, and assign or revise an Outlook, at any time, in Ratings Services' sole discretion. Ratings Services may take any of the foregoing actions notwithstanding any request for a confidential or private credit rating or a withdrawal of a credit rating, or termination of this Agreement. Ratings Services will not convert a public credit rating to a confidential or private credit rating, or a private credit rating to a confidential credit rating.

Publication. Ratings Services reserves the right to use, publish, disseminate, or license others to use, publish or disseminate the credit rating provided hereunder and any analytical reports, including the rationale for the credit rating, unless you specifically request in connection with the initial credit rating that the credit rating be assigned and maintained on a confidential or private basis. If, however, a confidential or private credit rating or the existence of a confidential or private credit rating subsequently becomes public through disclosure other than by an act of Ratings Services or its affiliates, Ratings Services reserves the right to treat the credit rating as a public credit rating, including, without limitation, publishing the credit rating and any related analytical reports. Any analytical reports published by Ratings Services are not issued by or on behalf of you or at your request. Notwithstanding anything to the contrary herein, Ratings Services reserves the right to use, publish, disseminate or license others to use, publish or disseminate analytical reports with respect to public credit ratings that have been withdrawn, regardless of the reason for such withdrawal. Ratings Services may publish explanations of Ratings Services' credit ratings criteria from time to time and nothing in this Agreement shall be construed as limiting Ratings Services' ability to modify or refine its credit ratings criteria at any time as Ratings Services deems appropriate. The provisions of this paragraph are subject to the restrictions on disclosure of Confidential Information set forth in this Agreement.

Information to be Provided by You. For so long as this Agreement is in effect, in connection with the credit rating provided hereunder, you will provide, or cause to be provided, as promptly as practicable, to Ratings Services all information requested by Ratings Services in accordance with its applicable published credit ratings criteria. The credit rating, and the maintenance of the credit rating, may be affected by Ratings Services' opinion of the information received from you or your authorized agents and advisors. Except for "Excluded Information", as defined below, all information provided to Ratings Services by you or your authorized agents and advisors regarding the credit rating or, if applicable, surveillance of the credit rating, will, as of the date such information is provided, contain no untrue statement of material fact nor omit a material fact necessary in order to make such information, in light of the circumstances in which it was provided, not misleading. Excluded Information means information you cause to be provided by your authorized agents and advisors pursuant to the first sentence of this paragraph with respect to which such agent or advisor has agreed in a writing provided to Ratings Services to make the agreements in this paragraph and to be liable to Ratings Services for breaches of such agreements to the same extent as if you provided the information directly to Ratings Services hereunder. A material breach of the agreements in this paragraph shall constitute a material breach of this Agreement.

Liability Relating to Information to be Provided by You. To the extent permitted by applicable law, you will be liable to Rating Services and its affiliates for all Losses actually incurred and directly resulting from (x) a material breach of the agreements in the immediately preceding paragraph or (y) a claim that the provision by you or your authorized agents and advisors of information to Ratings Services hereunder infringes or violates the intellectual property rights of a third party. For purposes of this paragraph, "Losses" means losses, damages, liabilities, judgments, costs, charges, expenses and reasonable attorneys' fees, including any such losses arising from claims asserted by a third party against Ratings Services, in each case as finally determined by a court of competent jurisdiction in a proceeding in which you are a party. Losses do not include amounts resulting from Ratings Services' gross negligence, intentional wrongdoing or willful misconduct as finally determined by a court of competent jurisdiction in a proceeding in which you are a party.

Confidential Information. For purposes of this Agreement, "Confidential Information" shall mean verbal or written information that you or your authorized agents and advisors have provided to Ratings Services and, in connection with providing such information, have indicated in writing that the information is "Confidential." Notwithstanding the foregoing, information disclosed by you or your authorized agents and advisors to Ratings Services shall not be deemed to be Confidential Information, and Ratings Services shall have no obligation to treat such information as Confidential Information, if such information (i) was known by Ratings Services at the time of such disclosure and was not known by Ratings Services to be subject to a prohibition on disclosure, (ii) was known to the public at the time of such disclosure, (iii) becomes known to the public (other than by an act of Ratings Services or its affiliates) subsequent to such disclosure, (iv) is disclosed to Ratings Services by a third party subsequent to such disclosure and Ratings Services reasonably believes that such third party's disclosure to Ratings Services was not prohibited, (v) is developed independently by Ratings Services or its affiliates without reference to the Confidential Information, or (vi) is approved in writing by you or your authorized agents and advisors for public disclosure. Ratings Services is aware that U.S. and state securities laws may impose restrictions on trading in securities when in possession of material, non-public information and has adopted securities trading and communication policies to that effect.

Ratings Services' Use of Information. Except as required by applicable law or regulation or otherwise provided herein, Ratings Services shall not disclose Confidential Information to third parties.

Ratings Services may (i) use Confidential Information for its credit rating activities, including without limitation, to assign, raise, lower, suspend, place on CreditWatch, or withdraw a credit rating, and assign or revise an Outlook, as well as to make internal determinations about commercial arrangements for its credit rating activities, and (ii) share Confidential Information with its affiliates or agents engaged in the credit ratings business who are bound by appropriate confidentiality obligations ("Ratings Affiliates and Agents").

Subject to the other provisions herein, Ratings Services may also use, and share Confidential Information with any of its affiliates or agents engaged in other financial services businesses who are bound by appropriate confidentiality obligations ("Other Affiliates and Agents", and together with Ratings Affiliates and Agents, "Affiliates and Agents"), for modelling, benchmarking and research purposes.

Subject to the other provisions herein, Ratings Services may publish and/or share with its Affiliates and Agents, who also may publish, data aggregated or derived from Confidential Information, excluding data that is specific to and identifies individual debtors, customers or clients.

Ratings Services will comply with all applicable U.S. and state laws, rules and regulations protecting personally-identifiable information and the privacy rights of individuals. Ratings Services acknowledges for itself and on behalf of its affiliates that you may be entitled to seek specific performance and injunctive or other equitable relief as a remedy for Ratings Services' or its affiliates' disclosure of Confidential Information in violation of this Agreement. Ratings Services and its Affiliates and Agents reserve the right to use, publish, disseminate, or license others to use, publish or disseminate any non-Confidential Information provided by you or your authorized agents and advisors.

Ratings Services Not an Expert, Underwriter or Seller under Securities Laws. Ratings Services has not consented to and will not consent to being named an "expert" or any similar designation under any applicable securities laws or other regulatory guidance, rules or recommendations, including without limitation, Section 7 of the U.S. Securities Act of 1933. Ratings Services is not an "underwriter" or "seller" as those terms are defined under applicable securities laws or other regulatory guidance, rules or recommendations, including without limitation Sections 11 and 12(a)(2) of the U.S. Securities Act of 1933. Rating Services has not performed the role or tasks associated with an "underwriter" or "seller" under the United States federal securities laws or other regulatory guidance, rules or recommendations in connection with this engagement.

Office of Foreign Assets Control. As of the date of this Agreement, (a) neither you nor the issuer (if you are not the issuer) or any of your or the issuer's subsidiaries, or any director or corporate officer of any of the foregoing entities, is the subject of any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Department of the Treasury ("OFAC Sanctions"), (b) neither you nor the issuer (if you are not the issuer) is 50% or more owned or controlled, directly or indirectly, individually or collectively, by one or more persons or entities that is or are the subject of OFAC Sanctions, and (c) to the best of your knowledge, no entity 50% or more owned or controlled by a direct or indirect parent of you or the issuer (if you are not the issuer) is the subject of OFAC Sanctions. For purposes of clause (c) in this section, "parent" is a person or entity owning or controlling, directly or indirectly, 50% or more of you or the issuer (if you are not the issuer). For so long as this Agreement is in effect, you will promptly notify Ratings Services if any of these circumstances change.

Ratings Services' Use of Confidential and Private Credit Ratings. Ratings Services may use confidential and private credit ratings in its analysis of the debt issued by collateralized debt obligation (CDO) and other investment vehicles. Ratings Services may disclose a confidential or private credit rating as a confidential credit estimate or assessment to the managers of CDO and similar investment vehicles. Ratings Services may permit CDO managers to use and disseminate credit estimates or assessments on a limited basis and subject to various restrictions; however, Ratings Services cannot control any such use or dissemination.

Entire Agreement. Nothing in this Agreement shall prevent you, the issuer (if you are not the issuer) or Ratings Services from acting in accordance with applicable laws and regulations. Subject to the prior sentence, this Agreement, including any amendment made in accordance with the provisions hereof, constitutes the complete and entire agreement between the parties on all matters regarding the credit rating provided hereunder. The terms of this Agreement supersede any other terms and conditions relating to information provided to Ratings Services by you or your authorized agents and advisors hereunder, including without limitation, terms and conditions found on, or applicable to, websites or other means through which you or your authorized agents and advisors make such information available to Ratings Services, regardless if such terms and conditions are entered into before or after the date of this Agreement. Such terms and conditions shall be null and void as to Ratings Services.

Limitation on Damages. Ratings Services does not and cannot guarantee the accuracy, completeness, or timeliness of the information relied on in connection with a credit rating or the results obtained from the use of such information. RATINGS SERVICES GIVES NO EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. Ratings Services, its affiliates or third party providers, or any of their officers, directors, shareholders, employees or agents shall not be liable to you, your affiliates or any person asserting claims on your behalf, directly or indirectly, for any inaccuracies, errors, or omissions, in each case regardless of cause, actions, damages (consequential, special, indirect, incidental, punitive, compensatory, exemplary or otherwise), claims, liabilities, costs, expenses, legal fees or losses (including, without limitation, lost income or lost profits and opportunity costs) in any way arising out of or relating to the credit rating provided hereunder or the related analytic services even if advised of the possibility of such damages or other amounts except to the extent such damages or other amounts are finally determined by a court of competent jurisdiction in a proceeding in which you and Ratings Services are parties to result from gross negligence, intentional wrongdoing or willful misconduct of Ratings Services. In furtherance and not in limitation of the foregoing, Ratings Services will not be liable to you, your affiliates or any person asserting claims on your behalf in respect of any decisions alleged to be made by any person based on anything that may be perceived as advice or recommendations. In the event that Ratings Services is nevertheless held liable to you, your affiliates, or any person asserting claims on your behalf for monetary damages under this Agreement, in no event shall Ratings Services be liable in an aggregate amount in excess of seven times the aggregate fees paid to Ratings Services for the credit rating giving rise to the cause of action, up to a maximum of US$5,000,000 except to the extent such monetary damages directly result from Ratings Services' intentional wrongdoing or willful misconduct. The provisions of this paragraph shall apply regardless of the form of action, damage, claim, liability, cost, expense, or loss, whether in contract, statute, tort (including, without limitation, negligence), or otherwise. Neither party waives any protections, privileges, or defenses it may have under law, including but not limited to, the First Amendment of the Constitution of the United States of America.

Credit Ratings Acknowledged for Use in Other Jurisdictions. To the extent that regulatory authorities allow a credit rating agency to acknowledge in one jurisdiction a credit rating issued in another jurisdiction for certain regulatory purposes, Ratings Services may choose to acknowledge such a credit rating and denote such acknowledgement on www.standardandpoors.com with an alphabetic or other identifier affixed to such credit rating or by other means. Ratings Services reserves the right to assign, withdraw or suspend such acknowledgement at any time and in its sole discretion. If Ratings Services acknowledges such a credit rating for regulatory purposes, all limitations set out herein with respect to a credit rating will apply to such acknowledgment of the credit rating, including without limitation, that such acknowledgement is not a recommendation to purchase, hold, or sell any securities nor does it comment on market price, marketability, investor preference or suitability of any security. Ratings Services, its affiliates or third party providers, or any of their officers, directors, shareholders, employees or agents shall not be liable to you, your affiliates or any person asserting claims on your behalf, directly or indirectly, for actions, damages (consequential, special, indirect, incidental, punitive, compensatory, exemplary or otherwise), claims, liabilities, costs, expenses, legal fees or losses (including, without limitation, lost income or lost profits and opportunity costs) in any way arising out of or relating to the assignment, withdrawal, or suspension of such acknowledgement, even if advised of the possibility of such damages or other amounts, except to the extent such damages or other amounts are finally determined by a court of competent jurisdiction in a proceeding in which you and Ratings Services are parties to result from gross negligence, intentional wrongdoing or willful misconduct of Ratings Services.

Termination of Agreement. This Agreement may be terminated by either party at any time upon written notice to the other party. Except where expressly limited to the term of this Agreement, these Terms and Conditions shall survive the termination of this Agreement.

No Third–Party Beneficiaries. Nothing in this Agreement, or the credit rating when issued, is intended or should be construed as creating any rights on behalf of any third parties, including, without limitation, any recipient of the credit rating. No person is intended as a third party beneficiary of this Agreement or of the credit rating when issued.

Binding Effect. This Agreement shall be binding on, and inure to the benefit of, the parties hereto and their successors and assigns. Subject to the limitations contained in this Agreement, Ratings Services shall be liable for the conduct of its affiliates that would otherwise constitute a breach of the terms of this Agreement if Ratings Services had engaged in such conduct itself.

Severability. In the event that any term or provision of this Agreement shall be held to be invalid, void, or unenforceable, then the remainder of this Agreement shall not be affected, impaired, or invalidated, and each such term and provision shall be valid and enforceable to the fullest extent permitted by law.

Amendments. This Agreement may not be amended or superseded except by a writing that specifically refers to this Agreement and is executed manually or electronically by authorized representatives of both parties.

Governing Law. This Agreement and the credit rating letter(s) shall be governed by the internal laws of the State of New York. The parties irrevocably agree that the state and federal courts of New York located in the County of New York shall be the exclusive forums for any dispute arising out of or relating to this Agreement or the credit rating letter(s) and the parties hereby consent to the personal jurisdiction of such courts.

S&P Global Ratings

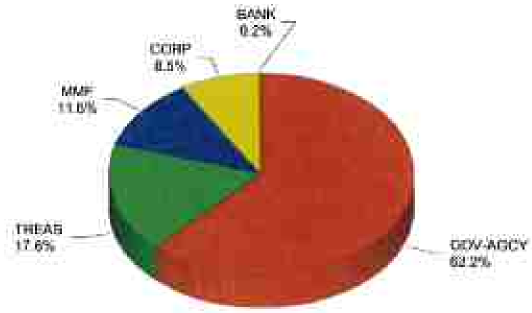
POOL PROFILE **September 29, 2017**

Orange County Money Market Fund

About the Pool

Pool Rating	**AAAm**
Pool Type	Stable NAV Government Investment Pool
Investment Adviser	Office of the Orange County Treasurer
Portfolio Manager	Shari L. Freidenrich
Pool Rated Since	December 2008
Custodian	The Northern Trust Co.

Portfolio Composition as of September 29, 2017



GOV-AGCY - Agency and Government; TREAS - Treasury; MMF - Money Market Fund; CORP - Corporate; BANK - Bank Deposits

Rationale

S&P Global Ratings assigned its 'AAAm' principal stability fund rating to Orange County Money Market Fund (the 'Fund'). The rating is based on our analysis of the Fund's high credit quality, low market-price exposure, and management. The rating reflects the Fund's extremely strong capacity to maintain principal stability and to limit exposure to principal losses due to credit, market, and/or liquidity risks. We review pertinent fund information and portfolio reports weekly as part of our ongoing rating process.

Overview

The Orange County Treasurer's Investment Policy Statement is reviewed and approved annually by the Orange County Board of Supervisors in accordance with the requirements of California Government Code Sections 53646 and 27133 respectively. A seven member oversight committee, comprised of two County officials, a school district official and four public members review the investment policy prior to its approval by the County Board of Supervisors. As manager of the Fund, the Orange County Treasurer invests these public funds to provide the maximum security of principal while meeting the pool participants' daily cash flow needs. The Fund's primary objectives are to provide liquidity to pool participants with a secondary objective to achieve a market rate of return. In attempting to meet its objectives, the Fund is invested in high-quality cash-equivalent securities, providing liquidity for immediate cash needs.

Management

The investment team that is responsible for managing the Fund reports to Orange County Treasurer, Shari Freidenrich, who has been investing and managing public funds for over 20 years. The Assistant Treasurer-Tax Collector-Investments is responsible for the Portfolio's day-to-day management and is supported by an investment team of three professionals. The Chief Assistant Treasurer-Tax Collector-Treasury is responsible for establishing and maintaining strong internal controls and with his Accounting and Compliance team, is responsible for the Portfolio's daily monitoring for compliance with the investment policy.

Portfolio Assets

The Fund is a short-term, liquid component of the Orange County Investment Pool. The Fund is typically comprised of highly rated investments including U.S. agency securities and U.S. Treasury obligations, money market mutual funds and negotiable certificates of deposit. The Fund may also invest in banker's acceptances, corporate commercial paper, investment pools, municipal debt, medium-term notes, repurchase agreements and highly rated counterparties and supranationals. The Fund's weighted average maturities are managed at 60 days or less to increase portfolio liquidity and mitigate interest-rate risk sensitivity. The Fund's investments are typically kept considerably liquid to meet operating requirements and cash-flow needs.

Principal Stability Fund Ratings Definitions

AAAm A fund rated 'AAAm' demonstrates extremely strong capacity to maintain principal stability and to limit exposure to principal losses due to credit risk. 'AAAm' is the highest principal stability fund rating assigned by S&P Global Ratings.

AAm A fund rated 'AAm' demonstrates very strong capacity to maintain principal stability and to limit exposure to principal losses due to credit risk. It differs from the highest-rated funds only to a small degree.

Am A fund rated 'Am' demonstrates strong capacity to maintain principal stability and to limit exposure to principal losses due to credit risk, but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than funds in higher-rated categories.

BBBm A fund rated 'BBBm' demonstrates adequate capacity to maintain principal stability and to limit exposure to principal losses due to credit risk. However, adverse economic conditions or changing circumstances are more likely to lead to a reduced capacity to maintain principal stability.

BBm A fund rated 'BBm' demonstrates speculative characteristics and uncertain capacity to maintain principal stability. It is vulnerable to principal losses due to credit risk. While such funds will likely have some quality and protective characteristics, these may be outweighed by large uncertainties or major exposures to adverse conditions.

Dm A fund rated 'Dm' has failed to maintain principal stability resulting in a realized or unrealized loss of principal.

Plus (+) or Minus (-)
The ratings may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the rating categories.

Principal Stability Rating Approach and Criteria

A S&P Global Ratings principal stability fund rating, also known as a "money market fund rating", is a forward-looking opinion about a fixed income fund's capacity to maintain stable principal (net asset value). When assigning a principal stability rating to a fund, S&P Global Ratings analysis focuses primarily on the creditworthiness of the fund's investments and counterparties, and also its investments' maturity structure and management's ability and policies to maintain the fund's stable net asset value. Principal stability fund ratings are assigned to funds that seek to maintain a stable or an accumulating net asset value.

Generally, when faced with an unanticipated level of redemption requests during periods of high market stress, the manager of any fund may suspend redemptions for up to five business days or meet redemption requests with payments in-kind in lieu of cash. A temporary suspension of redemptions or meeting redemption requests with distributions in-kind does not constitute a failure to maintain stable net asset values. However, higher rated funds are expected to have stronger capacities to pay investor redemptions in cash during times of high market stress because they generally comprise shorter maturity and higher quality investments.

Principal stability fund ratings, or money market fund ratings, are identified by the 'm' suffix (e.g., 'AAAm') to distinguish the principal stability rating from a S&P Global Ratings traditional issue or issuer credit rating. A traditional issue or issuer credit rating reflects S&P Global Ratings view of a borrower's ability to meet its financial obligations. Principal stability fund ratings are not commentaries on yield levels.

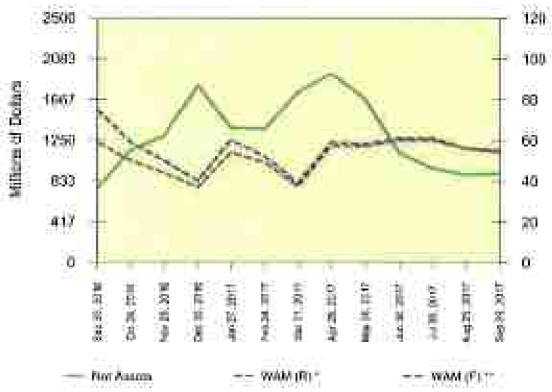
Orange County Money Market Fund *AAAm*

Data Bank as of September 29, 2017

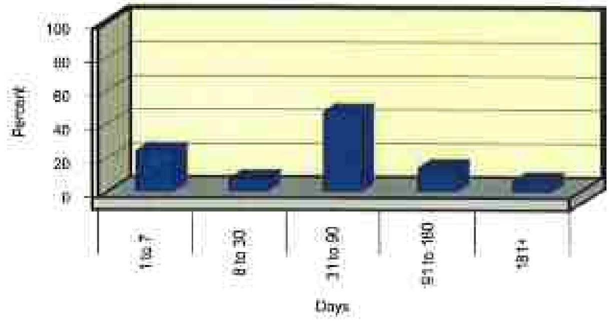
Net Asset Value per Share	$1.00014	Net Assets (millions)	$910.50	Inception Date	June 1996
WAM (R) *	54 days	WAM (F) **	55 days	7 Day Yield	0.98%

* Weighted Average Maturity (Reset) ** Weighted Average Maturity (Final)

Net Assets, WAM (R) and WAM (F)



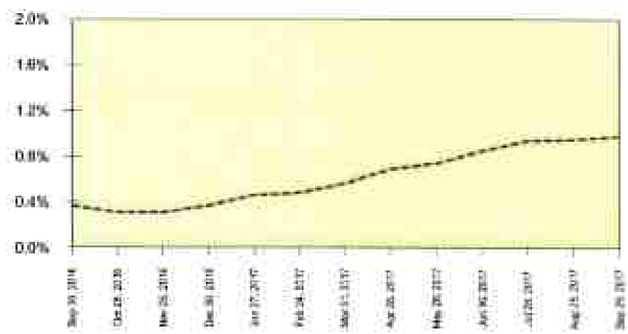
Portfolio Maturity Distribution as of September 29, 2017



Portfolio Credit Quality as of September 29, 2017 *

*As assessed by S&P Global Ratings

Portfolio 7 Day Net-Yield



The yield quoted represents past performance. Past performance does not guarantee future results. Current yield may be lower or higher than the yield quoted.

Pool portfolios are monitored weekly for developments that could cause changes in the ratings. Rating decisions are based on periodic meetings with senior pool executives and public information.

OC TREASURER'S RESPONSE TO QUESTION #5

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM
P.O. BOX 4515
SANTA ANA, CA 92702-4515
ocgov.com/ocinvestments

ORANGE COUNTY INVESTMENT POOL
APPORTIONMENT YIELDS & BASIS POINT FEES

FY 16/17	Date	Year	Monthly Apportionment Gross Yield	Monthly Apportionment Net Yield	Charged Basis Point Fees	Actual Basis Point Fees
	July	2016	.786%	.721%	6.5	
YTD	August	2016	.810%	.745%	6.5	
GROSS	September	2016	.828%	.763%	6.5	
YIELD	October	2016	.781%	.716%	6.5	
.790%	November	2016	.785%	.720%	6.5	
	December	2016	.719%	.654%	6.5	Not Yet
	January	2017	.845%	.780%	6.5	Available
	February	2017				
YTD NET	March	2017				
YIELD	April	2017				
.725%	May	2017				
	June	2017				
FY 15/16						
	July	2015	.536%	.466%	7.0	
YTD	August	2015	.566%	.496%	7.0	
GROSS	September	2015	.641%	.571%	7.0	
YIELD	October	2015	.595%	.525%	7.0	
.644%	November	2015	.578%	.508%	7.0	
	December	2015	.519%	.449%	7.0	Not Yet
	January	2016	.656%	.586%	7.0	Available
	February	2016	.715%	.645%	7.0	
YTD NET	March	2016	.691%	.621%	7.0	
YIELD	April	2016	.690%	.620%	7.0	
.578%	May	2016	.720%	.650%	7.0	
	June	2016	.798%	.778%	2.0	
FY 14/15						
	July	2014	.387%	.320%	6.7	
YTD	August	2014	.420%	.344%	7.6	
GROSS	September	2014	.426%	.350%	7.6	
YIELD	October	2014	.414%	.338%	7.6	
.413%	November	2014	.399%	.323%	7.6	
	December	2014	.331%	.255%	7.6	Not Yet
	January	2015	.399%	.323%	7.6	Available
	February	2015	.469%	.405%	6.4	
YTD NET	March	2015	.451%	.387%	6.4	
YIELD	April	2015	.365%	.301%	6.4	
.343%	May	2015	.435%	.371%	6.4	
	June	2015	.499%	.435%	6.4	

Mission: Ensure safe and timely receipt, deposit, collection and investment of public funds.

FY 13/14	Date	Year	Monthly Apportionment Gross Yield	Monthly Apportionment Net Yield	Charged Basis Point Fees	Actual Basis Point Fees
	July	2013	.373%	.291%	8.2	7.3
YTD	August	2013	.339%	.257%	8.2	7.3
GROSS	September	2013	.353%	.271%	8.2	7.3
YIELD	October	2013	.329%	.247%	8.2	7.3
.337%	November	2013	.304%	.222%	8.2	7.3
	December	2013	.246%	.164%	8.2	7.3
	January	2014	.313%	.231%	8.2	7.3
	February	2014	.371%	.304%	6.7	7.3
YTD NET	March	2014	.358%	.291%	6.7	7.3
YIELD	April	2014	.319%	.252%	6.7	7.3
.261%	May	2014	.380%	.313%	6.7	7.3
	June	2014	.395%	.328%	6.7	7.3

FY 12/13						
	July	2012	.500%	.418%	8.2	8.0
YTD	August	2012	.488%	.406%	8.2	8.0
GROSS	September	2012	.494%	.412%	8.2	8.0
YIELD	October	2012	.476%	.394%	8.2	8.0
.39%	November	2012	.420%	.338%	8.2	8.0
	December	2012	.328%	.246%	8.2	8.0
	January	2013	.395%	.313%	8.2	8.0
	February	2013	.413%	.331%	8.2	8.0
YTD NET	March	2013	.337%	.255%	8.2	8.0
YIELD	April	2013	.276%	.194%	8.2	8.0
.31%	May	2013	.300%	.218%	8.2	8.0
	June	2013	.340%	.258%	8.2	8.0

FY 11/12						
	July	2011	.641%	.541%	10.0	8.4
	August	2011	.596%	.496%	10.0	8.4
GROSS	September	2011	.529%	.429%	10.0	8.4
YIELD	October	2011	.567%	.467%	10.0	8.4
.54%	November	2011	.552%	.452%	10.0	8.4
	December	2011	.426%	.351%	7.5	8.4
	January	2012	.585%	.510%	7.5	8.4
YTD NET	February	2012	.580%	.505%	7.5	8.4
YIELD	March	2012	.470%	.395%	7.5	8.4
.46%	April	2012	.404%	.329%	7.5	8.4
	May	2012	.520%	.445%	7.5	8.4
	June	2012	.618%	.543%	7.5	8.4

OC TREASURER'S RESPONSE TO QUESTION #7

MONTHLY TREASURER'S INVESTMENT REPORT
Distribution List

County of Orange Elected Officials
Honorable Sandra Hutchens, Sheriff-Coroner
Honorable Hugh Nguyen, Clerk-Recorder
Honorable Claude Parrish, Assessor
Honorable Anthony J. Rackauckas, Jr., District Attorney/Public Administrator
Honorable Eric Woolery, Auditor-Controller

Treasury Oversight Committee
Gary Capata
William "Andy" Dunn
Frank Kim
Al Mijares
Laura Parisi
Richard Rohm
Eric Woolery

County of Orange Departments
Assessor
Auditor-Controller
Child Support Services
Clerk of the Board
Clerk-Recorder
County Counsel
County Executive Office
District Attorney/Public Administrator
Health Care Agency
Human Resources Services
John Wayne Airport
OC Community Resources
OC Dana Point Harbor
OC Public Works
OC Waste & Recycling
Independent Review
Performance Audit
Probation
Public Defender
Registrar of Voters
Sheriff-Coroner
Social Services Agency

County Agencies
Children & Families Commission
Civic Center Commission
Law Library
Orange County Employees Retirement System
Orange County Cemetery District
Orange County Fire Authority
Orange County Transportation Authority
Transportation Corridor Agencies

State of California
CDIAC
Superior Court

Orange County School Districts
Orange County Department of Education
Anaheim City School District
Anaheim Union High School District
Brea-Olinda Unified School District
Buena Park School District
Capistrano Unified School District
Centralia School District
Cypress School District
Fountain Valley School District
Fullerton School District
Fullerton Joint Union High School District
Garden Grove Unified School District
Huntington Beach City School District
Huntington Beach Union High School District
Irvine Unified School District
Laguna Beach Unified School District
La Habra City School District
Los Alamitos Unified School District
Lowell Joint School District
Magnolia School District
Newport-Mesa Unified School District
Ocean View School District
Orange Unified School District
Placentia-Yorba Linda Unified School District
Saddleback Valley Unified School District
Santa Ana Unified School District
Savanna School District
Tustin Unified School District
Westminster School District

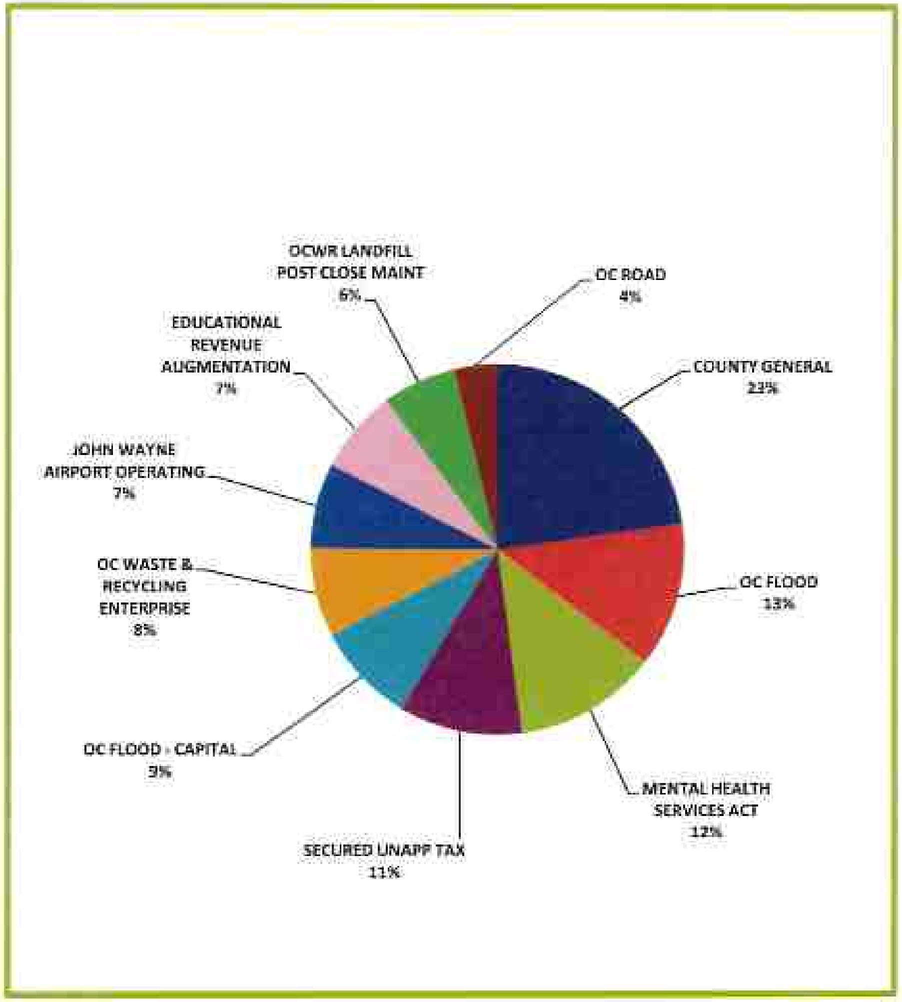
Orange County Community College Districts (CCD)
Coast Community CCD
North Orange County CCD
Rancho-Santiago CCD
South Orange County CCD

Orange County Regional Occupational Programs (ROP)
Capistrano-Laguna Beach ROP
Coastline ROP
North Orange County ROP

Voluntary Pool Participants (date approved)
Serrano Water District (6-22-99)
City of Villa Park (10-2-01)
City of Tustin (5-21-02)
Mesa Water District (8-9-02)
Orange County Water District (3-30-04)
Municipal Water District of OC (7-27-04)
Orange County Mosquito and Vector Control District (11-14-06)
Buena Park Library District (2-9-10)
Local Agency Formation Commission (10-5-10)
Villa Park Community Services Foundation (4-5-11)
City of Laguna Niguel (3-13-14)
City of Lake Forest (12-16-15)
Foothill/Eastern TCA (10-14-16)
San Joaquin Hills TCA (10-14-16)
Foothill/Eastern TCA/RCC (11-17-16)

ORANGE COUNTY INVESTMENT POOL
TOP TEN POOL PARTICIPANTS
AS OF JANUARY 31, 2017

FUND #	FUND NAME		BALANCE
100	COUNTY GENERAL	$	484,271,702
400	OC FLOOD		272,014,731
13Y	MENTAL HEALTH SERVICES ACT		266,030,188
673	SECURED UNAPP TAX		227,641,002
404	OC FLOOD - CAPITAL		188,032,766
299	OC WASTE & RECYCLING ENTERPRISE		166,215,917
280	JOHN WAYNE AIRPORT OPERATING		159,177,877
664	EDUCATIONAL REVENUE AUGMENTATION		155,649,123
279	OCWR LANDFILL POST-CLOSE MAINT		136,197,535
115	OC ROAD		80,267,835
	TOTAL	**$**	**2,135,498,676**



OC TREASURER'S RESPONSE TO QUESTION #9

AGREEMENT
FOR
THE DEPOSIT AND INVESTMENT OF EXCESS FUNDS
INTO THE COUNTY TREASURY

THIS AGREEMENT is made and entered into as of the date fully executed by and between ________________________________ hereinafter referred to as "Local Agency," and the County of Orange, California a political subdivision of the State of California, hereinafter referred to as "County."

RECITALS

WHEREAS, Section 53684 of the California Government Code allows local agencies to deposit excess funds into the County Treasury for purposes of investment by the County Treasurer-Tax Collector (the "Treasurer"); and

WHEREAS, Local Agency has found that it may, from time to time, be advantageous to make such deposits for purposes of investment with the Treasurer; and

WHEREAS, the treasurer or other official responsible for the funds of the Local Agency has determined, and may determine from time to time, that excess funds of the Local Agency exist which are not required for immediate use; and

WHEREAS, the governing body of Local Agency has authorized the deposit of moneys of Local Agency for purposes of investment with the County Treasury in accordance with the provisions of Section 53684 of the California Government Code; and

WHEREAS, with the consent of the Treasurer, the Treasurer may accept for investment deposits of Local Agency, provided that Local Agency is located within Orange County ,or a Joint Powers Authority (JPA) consisting of at least one public agency from within Orange County;

NOW, THEREFORE, in consideration of the mutual promise herein, the parties agree as follows:

ARTICLES

1. ACKNOWLEDGMENT

The parties acknowledge that the Recitals are true and correct.

2. SCOPE OF AGREEMENT

This Agreement specifies the contractual terms and conditions by which County will manage and invest Local Agency's excess funds which have been deposited for investment with the Treasurer. Pursuant to various provisions of the Government Code and Revenue and Taxation Code, the Treasurer shall provide central depository and investment services for Local Agency.

3. COUNTY INVESTMENT POOL/INVESTMENT POLICY STATEMENT

Local Agency understands that the funds it deposits for investment will be held in the Orange County Investment Pool (OCIP) and shall be invested by the Treasurer in accordance with the policies contained in the Orange County Treasurer Investment Policy Statement (the "IPS"), as now in effect and as may be revised from time to time.

4. LOCAL AGENCY ACKNOWLEDGMENTS

Local Agency acknowledges that it has received and carefully reviewed the IPS, and, is familiar with its contents. Having considered and weighed the risks of investing (including, but not limited to, the risks of loss of interest and principal) the Local Agency has determined that it is appropriate and legal to invest its moneys in the Orange County Treasury as permitted by the IPS. The Local Agency has been advised by the Treasurer and understands that the IPS may be amended by the Treasurer without the review or consent of Local Agency.

To the extent its moneys are invested with the County, in whole or in part, in OCIP, the Local Agency further acknowledges that it has reviewed and understands Net Asset Value ("NAV") risk that is discussed in Section V of the IPS. The Local Agency finds and determines that investment of any of its moneys in OCIP is an appropriate investment of its moneys.

5. TERM OF AGREEMENT

This Agreement shall become effective on the date fully executed and shall continue indefinitely, unless this Agreement is terminated earlier by either party in accordance with Article 8.

6. DEDUCTION OF ADMINISTRATIVE FEES

Local Agency agrees that the Treasurer shall deduct administrative charges from its gross interest income pursuant to California Government Code Sections 53684(b) and 27013.

7. AMENDMENT

Neither party shall make any change to this Agreement without the others written consent. Such changes shall be incorporated into an Agreement Amendment, which shall not become effective until signed by the parties. The Treasurer may make amendments if the changes are ministerial.

8. TERMINATION

Either party in accordance with this Article may terminate the provision of services under this Agreement, in whole or in part, whenever either party shall determine that such termination is its best interest. Any such termination shall be effected by delivery to the other party of a Notice of Termination specifying the extent to which services under the

Agreement are terminated, and the date upon which such termination will become effective.

After receipt of a Notice of Termination, and except as otherwise agreed:

(a) The County shall stop performing under this Agreement on the date specified and to the extent specified in the Notice of Termination.

(b) Local Agency shall request no further services requiring work to be performed after the termination date as specified in the Notice of Termination.

Upon termination, Local Agency agrees to pay the County for all services performed prior to termination.

9. DEPOSITS AND WITHDRAWALS

The officers or employees listed on the *Authorized Signature List*, or their successors in office, shall be authorized to deposit and request withdrawals of moneys of Local Agency in the County Treasury. When Local Agency requests withdrawal of funds from the County Treasury, Local Agency and County shall comply with all applicable withdrawal provisions pursuant to California law, as now in effect and as may be subsequently added, including but not limited to Government Code Section 27136.

10. NOTICES

Where required to be given under this Agreement, notice shall be in writing and shall be deemed given when delivered personally or deposited in the United States mail, postage prepaid, certified, addressed as follows:

Local Agency:

County: Orange County Treasurer-Tax Collector
Attention: Shari L. Freidenrich
P.O Box 4515
Santa Ana, CA 92702-4515

11. MERGER/NO CONTINUING WAIVER

This Agreement contains the entire and complete understanding of the parties and supersedes any and all other prior agreements, oral or written, and discussions of the parties with respect to the provision of services under this Agreement. No waiver of any term or condition of this Agreement shall be deemed a continuing waiver thereof.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date(s) written below.

DATED ____________________

LOCAL AGENCY

By ___________________________

By ___________________________

DATED ____________________

COUNTY OF ORANGE, CALIFORNIA,
a political subdivision of the State of
California

By ___________________________
Shari L. Freidenrich
Orange County Treasurer-Tax Collector

APPROVED AS TO FORM:

[INSERT NAME OF LOCAL AGENCY]

By ___________________________
Counsel for Local Agency

DATED: ____________________

COUNTY OF ORANGE

By ___________________________
Angelica C. Daftary, Deputy County Counsel
Office of the County Counsel

DATED: ____________________

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

P.O.BOX 4515
SANTA ANA, CA 92702-4515
ocgov.com/ocinvestments

OVERVIEW OF POOLED FUNDS AND ALLOCATION AND APPORTIONMENT OF INVESTMENT POOL INTEREST EARNINGS TO PARTICIPANTS

Information about the County and Educational Investment Pools

The County Treasurer maintains two cash and investment pools: the Orange County Investment Pool ("OCIP") and the Orange County Educational Investment Pool ("OCEIP") (together "the Pools"), the latter of which is utilized exclusively by the County's public school and community college districts. These pools are maintained for the County and other non-County entities for the purpose of benefiting from economies of scale through pooled investment activities and are authorized by Government Code Section 27130. This code section states that, "by pooling deposits from local agencies and other participants, county treasuries operate in the public interest when they consolidate banking and investment activities, reduce duplication, achieve economies of scale, and carry out coherent and consolidated investment strategies."

Both OCIP and OCEIP funds are invested in a short-term component and long-term component. The Treasurer may also maintain specific investment accounts for certain Agency or County and School District monies which are held separate and apart from the Pools. Each participant's deposits in the Pools are allocated based on their balance amount in relation to total pooled funds between the short-term and the long-term components.

Oversight of Pooled Funds

The Orange County pooled funds are monitored on a daily basis by the staff of the Accounting/Compliance unit of the Treasury Division. The Auditor Controller's Internal Audit Division also monitors the portfolio monthly and provides a quarterly report. The Auditor-Controllers' Internal Audit Division also conducts a quarterly review and annual audit of the Orange County pooled funds. The scope of the review is to verify account balances on a quarterly basis. The scope of the audit is specified by Government Auditing Standards (GAS). The Treasurer also contracts with independent outside auditors who conduct a review of the Investment portfolio as required by Sections 27130 through 27137 of the Government Code and provisions made by the County's Investment Policy. All reports issued by the Auditor Controller and independent auditors are made available to the public online.

On a weekly basis, the Treasury Investment Committee (TIC) meets to discuss market conditions as it pertains to the investments. This group is made up of the Treasurer, Chief Assistant Treasurer-Tax Collector-Treasury, Assistant Treasurer-Tax Collector-Investments, Assistant Portfolio Manager, Jr. Financial Analyst, Credit Analyst and two investment interns.

The Treasury Oversight Committee (TOC) is a Brown Act Committee, meets at least quarterly and all other times as needed. The committee discusses, reviews and recommends all potential changes to the Investment Policy Statement. Members of the Treasury Oversight Committee include the Auditor-Controller, County Executive Officer, the County Superintendent of Schools and four members of the public. The TOC is required to present an oral and written report annually to the Board of Supervisors and copies of the TOC report can be found at ocgov.com/ocinvestments.

Significant Accounting Assumptions and Valuation of Pool Participant Shares

The Pools value participants' shares using an amortized cost basis. Specifically, the Pools distribute income to participants based on their relative participation during the period. Income is calculated based on (1) realized investment gains and losses calculated on an amortized cost basis, (2) interest income based on stated rates (both paid and accrued), (3) amortization of discounts and premiums on a straight line basis, and reduced by (4) investment and administrative expenses.

This method differs from the fair value method set forth in Governmental Accounting Standards Board Statement 31 because the amortized cost method is not designed to distribute to participants all unrealized gains and losses in the fair values of the Pools' investments. The County does not guarantee or insure the Net Asset Value of the Pools, nor are the Pools registered with the SEC.

California Government Code Section 53647

The interest apportionment process is set forth in California Government Code Section 53647 as follows:

(a) Interest on all money deposited belongs to, and shall be paid quarterly into the general fund of, the local agency represented by the officer making the deposit, unless otherwise directed by law.

(b) Notwithstanding the provisions of subdivision (a), and except as otherwise directed by law, if the governing body of the local agency represented by the officer making the deposit so directs, such interest shall be paid to the fund which contains the principal on which the interest accrued.

Timing of Interest Apportionment Postings to Participant Accounts

The Treasurer determines the interest earnings for the respective Pools on an accrual basis. On a monthly basis, accrual basis interest earnings and a Treasury Administrative Fee are allocated to each individual Pool participant based upon their average daily balance on deposit with the Treasurer. Pool participant earnings are posted as an accrual in the Treasurer's Fund Accounting System on the first business day of the following month. Pool participants' accrual basis earnings are recorded as a receivable along with the related revenue in the County's general ledger in the following month. Accrued but undistributed interest earnings (interest receivable) are added to Pool participants' average balances in determining a participant's relative share of the Pool's monthly accrual basis earnings.

The County uses a fund called Unapportioned Interest to accumulate and apportion interest earnings. Accruals are posted as of the first business day of the following month and the cash distribution subsequently occurs once there is sufficient cash in this fund to pay the entire accrual earnings for the respective month.

The Treasurer's apportions or deposits the interest earnings to Pool participants' cash accounts after the related earnings are collected. This posting to cash may occur from 45 to 90 days after the end of the accrual month. The exact number of days depends on the actual cash receipts of coupon payments and maturities. Each month the Treasurer includes a forecast in the Treasurer's Monthly Investment Report estimating the date Pool participants may expect to see an actual cash deposit of interest earnings to their cash accounts in the County general ledger.

Portfolio Yield vs. Apportionment Yield

The Treasurer's Monthly Investment Report includes detailed information on the Pool's investment inventory, yield, composition, statistics and transactions during the month. The investment pool yield reported in the Treasurer's Monthly Investment Report will vary from the apportionment yield used to allocate and distribute interest earnings to participants. The apportionment yield takes into account cash in banks whereas the portfolio yield is based solely on the yield of the respective investment Pool.

Treasury Administrative Fee

As authorized by California Government Code Section 27013, the Treasurer will charge all pool participants for administrative and overhead costs. Costs include, but are not limited to, portfolio management, bank and custodial fees, software maintenance fees, and other indirect costs incurred from handling or managing funds. In addition, the costs of compliance with the Treasury Oversight provisions of Government Code §27130-27137 shall be included as administrative costs. The above fee charge will be allocated to the Pool participants on a monthly basis. As of the first working day of the next month, the Pool participants' account will reflect the gross investment earnings and the monthly administrative and overhead costs. The charge is expressed as a basis point and applied to Pool participants' average balance for the month to determine the charge for each participant.

Investment Policy Statement

At least annually, the Treasury Oversight Committee recommends and the Board of Supervisors approves the Orange County Treasurer's Investment Policy Statement (IPS). Please review the currently approved IPS, which is available on the Treasurer's website ocgov.com/ocinvestments.

Reporting

The Treasurer publishes the Treasurer's Monthly Investment Report and makes it available on the web at ocgov.com/ocinvestments. The Monthly Apportionment Yields' and Basis Points Fees' Summary is also available at ocgov.com/ocinvestments.

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

P.O. BOX 4515
SANTA ANA, CA 92702-4515
ocgov.com/ocinvestments

PROCEDURES FOR VOLUNTARY PARTICIPANTS TRANSACTIONS

- Available hours: 7:30 a.m. to 4:30 p.m.
- Transaction Request Forms can be faxed to **714-834-2912** or mailed to:

  Orange County Treasurer
  Attn: Fund Accounting Group
  P.O. Box 4515
  Santa Ana, CA 92702-4515

- For same-day transactions, please fax the signed Transaction Request Form by 9:30 a.m. Transaction Request Forms received after 9:30 am will be for the next business day
- Provide at least one-day's advance notice for withdrawals of $5 million or more
- Transactions may be requested 10 calendar days in advance of the Effective Date of Transaction
- Once the Transaction Request Form has been received, we will e-mail a receipt confirmation to the contact e-mail address
- Transfers will be processed only through bank account(s) authorized by the agency in writing, must be in the agency's name and must be a bank account that is currently on file with our office
- For Withdrawal transaction(s), we will notify the contact e-mail address of the confirmation number once the transaction is completed
- For Deposit transaction(s), we may request the confirmation number from the agency, and will notify the contact e-mail address of the confirmation number once the transaction is completed
- Signatures on deposit and withdrawal requests will be verified to the agency authorized signature list

Questions? Contact Melissa Dobbins at (714) 834-2913 or mdobbins@ttc.ocgov.com. Please do not send sensitive information by e-mail.

Orange County Investment Pool (OCIP)

1. **Please attach a copy of the most recent Investment Policy for the OCIP. Discuss any changes from last year.**

   - Attached is the Investment Policy for 2017 (Attachment A) and is available on the website at ocgov.com/ocinvestments.
   - The major changes from last year are as follows:

     a. Increase GSE issuer limit to 50% from 33% (Government Code limit is 100%)

     b. Reduce maximum remaining maturity from five years to three years for Negotiable Certificates of Deposit and Medium Term Notes (Government Code limit is five years)

2. **Is the OCIP rated? If so, please attach the most recent rating report.**

   - OCIP is not rated.
   - The Short-term portion of OCIP (OCMMF) is rated and the longer-term portion of OCIP is not rated. The OCMMF is rated "AAAm" by Standard and Poor's (S&P) rating service. We have attached the latest rating report (Attachment N) that was just received and will be available soon on the website at ocgov.com/ocinvestments.

3. **What portion, if any, of the OCIP is commingled with the longer term pool?**

   - Approximately 70% of OCIP is invested in the long-term pool.

4. **What is the administrative fee for OCIP?**

   - The current estimated administrative fee for FY 2016-17 is 6.5 basis points and is included in the monthly investment report executive summary on the website at ocgov.com/ocinvestments.

5. **Please provide the last 3 years of interest earnings for the OCIP net of fees.**

   - We have attached the history for OCIP (Attachment B) and it is available on the website at ocgov.com/ocinvestments.

6. **Please provide the size of the OCIP for the past 3 years. What are the main drivers in an increase or decrease in the size of the OCIP.**

   - FY 2016-17 Average Balance (YTD 12-31-16): $3.7 Billion
   - FY 2015-16 Average Balance: $3.8 Billion
   - FY 2014-15 Average Balance: $3.5 Billion

As you can see, the average balance has not significantly changed and each month the investment reports provide average balances at ocgov.com/ocinvestments. The main drivers to change in the size of OCIP would be if there were significant increases in property tax collections or significant increases to County reserve accounts.

7. **Please attach a list of the OCIP participants for each of the last 3 years and indicate the amount they have invested in the OCIP and if the agency is a mandatory or a voluntary participant.**

- We have provided the voluntary and involuntary participant list that is on the last page of our monthly investment report (Attachment C) with dates of entry. We have also provided the top 10 OCIP participants balances (Attachment D).

8. **What is the current liquidity of the OCIP? How soon could a voluntary participant liquidate 100% of its funds?**

   - As of 01-31-17, there is 10% liquidity in 30 days and 30% liquidity in 180 days.
   - Currently, we maintain 50% of all voluntary pool participants' funds for withdrawal within three days. For withdrawals over $5 million or more, we request at least one day advance notice, so 100% could be withdrawn with one day notice, but as with LAIF, the Treasurer reserves the right to approve each withdrawal to make sure that it will not impact the other pool participants negatively.

<u>Investment Transactions</u>

9. **What are the procedures for establishing an account, making deposits and withdrawals and allocating interest earnings? Attach any relevant instructions.**

   - Attached are form of agreement for deposit and investment, allocation and apportionment of pool interest earnings and procedures (Attachments E, F and G). These documents are also available on the website at ocgov.com/ocinvestments.

10. **Is there a limit to the number of deposits and withdrawals in a month?**

   - No.

11. **Are there any dollar limits for deposits, withdrawals and/or balances?**

   - No.

12. **Is advance notification required for deposits and withdrawals?**

   - Notice is required only for withdrawals as noted above, and advance notice of large deposits is appreciated.

13. **What are the deadlines for making deposits and withdrawals?**

    - For same day transactions, the deadline is 9:30 am.

Investment Team

14. **Who will the day-to-day contact for OCFA?**

    - Gary Nguyen - Director of Investments, 714-834-4774 or gnguyen@ttc.ocgov.com

15. **Provide an organization chart of the current investment team along with their resumes and tenure with the County.**

    - Please refer to the attached investment team biographies and the department organization chart (Attachment H).

16. **Are any of the key investment positions currently vacant?**

    - The Assistant Portfolio Manager position is currently vacant and is in the recruitment process.

17. **Please attach a list of current brokers you are using. How frequently does the Treasurer update the list? What is the process for reviewing potential broker/dealers? Who approves the list?**

    - Please refer to Attachment I for a complete list of the approved broker-dealers and approved broker-dealers are evaluated annually. Applications from new brokers are generally accepted every two years.

    - Each broker/dealer on the approved list is vetted through a process to determine its financial stability and its standing with the relevant regulatory agencies. We also ensure that the broker/dealer's addition to the list will add value to our investment process. Additionally, this broker/dealer list is reviewed annually to determine whether each broker/dealer continues to meet the requirements of being an appropriate counterparty.

    - The Treasurer approves the broker/dealer changes after review of the recommendation from the Director of Investments.

18. **Does the Treasurer use an investment adviser? If so, attach any reports produced in 2016.**

    - No.

Investment Oversight

19. **Please discuss the levels of review over OCIP?**

    - Daily, all trades are put through a pre- and post-trade evaluation both manually and through our electronic trading platform (Bloomberg AIM). All trades are approved by the Director of

Investments or by the authorized designee. Once trades are executed, they are also reviewed independently for compliance exceptions by the Treasury Division.

- The Treasury Oversight Committee ("TOC") meets quarterly to provide oversight and review the monthly investment report that includes all audit reports. The Board of Supervisors annually reviews and approves the Investment Policy Statement, TOC By-laws and receives a verbal and written from the TOC.

- A number of review and audits are required and the latest summary is outlined in Attachment J.

20. Who are the members of the Treasury Oversight Committee? How frequently do they meet? Have they raised any issues in the past 3 years? Please attach any agendas, reports and minutes for 2016.

- The Treasury Oversight Committee (TOC) was established by the Board of Supervisors (BOS) on December 19, 1995 by Resolution No. 95-946 in accordance with the California Government Code Article 6 of Division 2 of Title 3, Sections 27130-27137 (Article 6). The TOC structure approved by the BOS consists of seven members: the County Auditor-Controller or designee, the County Executive Officer or designee, the County Superintendent of Schools or designee, and four members of the public. The members of the TOC as of December 31, 2016 are as follows:

Name	Member Type
Gary Capata (Chair)	Public Member
Laura Parisi (Vice Chair)	Public Member
William "Andy" Dunn	Public Member
Frank Kim	County Executive Officer
Al Mijares	County Superintendent of Schools
Richard Rohm	Public Member
Eric Woolery	Auditor-Controller

- TOC meets on a quarterly basis.

- Attached are the 2016 agendas, reports and minutes for 2016 (Attachments K). These are also available online at ocgov.com/ocinvestments.

21. Who is responsible for auditing the OCIP and how frequently is an audited performed? Were any issues raised in the past 3 years? Please attach the most recent audit report.

- The Treasury Oversight Committee is required to annual cause an audit per Gov't Code section 27134. The current auditor selected by the Board of Supervisors is the Auditor-Controller- Internal Audit Division.

- In addition, the TOC requires that a quarterly compliance audit be performed by the Auditor-Controller Internal Audit.

- Finally, in conjunction with the County's CAFR, the external County auditor also may perform testing of the investments.

- No compliance exceptions have been identified in FY 2014-15, FY 2015-16 or in the current FY 2016-17.

- The annual compliance report for calendar year 2015 and the Continuous Compliance Monitoring for Quarter End September 30, 2016 are attached (Attachment L).

22. Has the Grand Jury reviewed the Treasurer's operations in the past 3 years? If so, please attach their report and the County's response.

No, but we have attached the latest report (Attachment M).

23. Has the Treasurer reported being out of compliance with the Investment Policy over the past 3 years?

- No Compliance issues have been reported in FY 2014-15, 2015-16 or in the current FY 2016-17 to date.

24. The Treasurer recently added LAIF as an Investment option for the OCIP. Since OCFA is already invested in LAIF, does the Treasurer see this as being redundant?

- The Treasurer may use a variety of short-term liquidity options including LAIF and Government Money Market Mutual Funds to meet its participants' liquidity needs. The County has the same restrictions of $65 million as OCFA and the $65 million represents less than 2% of OCIP.

Jakubiak, Tricia

From:	Shari Freidenrich <Shari.Freidenrich@ttc.ocgov.com>
Sent:	Thursday, March 08, 2018 12:43 PM
To:	Jakubiak, Tricia
Cc:	Gary Nguyen
Subject:	FW: Follow-Up to Response to letter regarding OCIP
Attachments:	Mimecast Attachment Protection Instructions; S&P Profile - September 2017.pdf; Broker Dealer Application.pdf; Grand Jury Response.pdf; OC Pool Structure Memo May 2015 Final.pdf; New Monthly Report Format Mock-Up Draft1.pdf; PFM CONTRACT AND ASR 2014.pdf; TTC Org Chart - Treasury and Investments 0218.pdf
Importance:	High

Dear Tricia:

See the following responses to your questions. We apologize for the delay, County Counsel wanted to do some additional research on the withdrawal question when I asked them again on it. We are also available to come back to your Board or Committee if they want to do due diligence on how they funds are invested prior to any apportionments, as every day, we receive in property tax dollars that will be apportioned to your agency.

Please let us know if you have further questions.

Shari

Shari L. Freidenrich, CPA, CCMT, CPFA, CPFIM, ACPFIM
Treasurer-Tax Collector
Office of the Treasurer-Tax Collector
Shari.Freidenrich@ttc.ocgov.com
gov.com
County of Orange
P.O. Box 4515
Santa Ana, CA 92702-4515
Phone: (714) 834-7625
Fax: (714) 834-2912
ocgov.com/octaxbill
ocgov.com/octaxmap
ocgov.com/taxreminder
ocgov.com/melloroos
ocgov.com/taxauction
ocgov.com/ocinvestments

From: Jakubiak, Tricia
Sent: Thursday, May 04, 2017 2:40 PM
To: 'Shari Freidenrich' <Shari.Freidenrich@ttc.ocgov.com>
Subject: RE: Follow-Up to Response to letter regarding OCIP

Good Afternoon Shari

We completed our review of the attached and have a few follow-up items/clarifications on your response to our questions:

Question #1 – Regarding Section XVIII of the Investment Policy (Page 16) do the withdrawal requirements apply to both mandatory and voluntary participants?

Yes, in theory it applies to both mandatory and voluntary participants. However, as mandatory participants are not allowed to invest outside of the Treasurer, it is really a moot question for them as they can't pull funds out for investment purposes anyway. We will plan to update the Investment Policy Statement (IPS) to more closely mirror the language in Government Code section 27136 when we take the IPS to the Board for 2019.

Question #2 - Attachment N was a letter from S&P affirming the rating. Please confirm that there are no recent analyses or reports from S&P on the OCIP.

S&P reviews the Principal Stability Fund Rating for the OC Money Market Fund annually and publishes their reports in March. Along with the annual report, S&P also produces an investment pool profile that is published every March and September. Attached is the latest OC Money Market Fund profile as of September 29, 2017.

Question #15 - Please expand the Org Chart (Attachment H) to include the names and titles for the Investment and Treasury personnel.

Question #17 – Please provide more detail on the Treasurer's broker/dealer review process and attach any questionnaire that the firms must complete.

We maintain a strict policy for the selection and approval of broker/dealers in order to select the most appropriate broker/dealers capable of delivering the best execution and pricing when trading financial instruments.

Each broker/dealer on the approved list is vetted through a process to determine its financial stability and its standing with the relevant regulatory agencies. We also ensure that the broker/dealer's addition to the list will add value to our investment process. Current broker/dealers are reviewed annually to determine whether each broker/dealer continues to meet the requirements of being an appropriate counterparty and to ensure compliance with our IPS by our Investment and Treasury Division staff. Generally, every two years, we open our broker/dealer application period to ensure that we are maintaining appropriate brokers.

There are several criteria considered when selecting a broker/dealer, which include:

- The broker's capability to provide services at the lowest possible cost
- Sufficient, competent broker personnel and support staff including back-up personnel when the main broker is out of the office
- The broker's electronic trading capabilities, important for trade execution and pricing
- Timely acknowledgement and correction of trade errors

- The efficient clearance and settlement of trades

Attached is the Broker-Dealer application/questionnaire that is used.

Question #21 – Referencing the January 27, 2016 TOC meeting minutes, what is the role of PFM? Please attach a copy of their recommendations/reports.

We have attached the their contract and the Agenda packet that provides the scope of services. We have also provided a copy of their reports.

Question#21 – Referencing the July 27, 2016 TOC meeting minutes, please provide details on the internal control deficiency that was noted and the remedy that was implemented.

The deficiency in internal controls identified was that in the daily compliance file, a management signature was not on the one of the five investments packets reviewed for that day. The compliance process involves Treasury management reviewing all investments on a post trade basis. To remedy the deficiency in future, Treasury management implemented an additional verification step that now requires an additional check for signatures by the individual filing the investment packet.

Question #22 – Please provide the County's response to R1, R2 and R3 from the Grand Jury's 2012-13 review. The response provided was from Year 2011-12 and related to property taxes.

We apologize for sending a different Grand Jury report, here is the correct report.

Thank you
Tricia

From: Shari Freidenrich [mailto:Shari.Freidenrich@ttc.ocgov.com]
Sent: Thursday, March 09, 2017 12:33 PM
To: Jakubiak, Tricia <TriciaJakubiak@ocfa.org>
Cc: Gary Nguyen <gnguyen@TTC.OCGOV.com>
Subject: Response to letter regarding OCIP
Importance: High

074 Treasurer-Tax Collector Org Summary 022817.docx
100 Compliance QE 16-3 1615 Final Report TTC Investment Portfolio dtd 120616.pdf
100 TTC Final Report dtd 110116.pdf
2012-2013 Orange County Grand Jury Report - An Investment and Compliance Review of the Orange County Treasurer.pdf
Attachment A - 2017 Investment Policy Statement.pdf
Attachment B - Apportionment Yields and Basis Point Fees as of 01.31.17.pdf
Attachment C - Participant List.pdf
Attachment D - Top 10 OCIP Participants.pdf
Attachment E - Sample Agreement.pdf
Attachment F - Allocation of Interest Earnings.pdf
Attachment G - Procedures for Voluntary Participants.pdf
Attachment H - Investment Division Biographies.pdf
Attachment I - Approved Broker-Dealer List.pdf
Attachment J - Review & Audit Schedule.pdf
Attachment K - TOC Agenda 10-19-16.pdf

Attachment K -Oct. 2016 TOC Minutes Approved.pdf
Attachment K -TOC Agenda 04.27.16.pdf
Attachment K -TOC Agenda 07-27-16.pdf
Attachment K -TOC Agenda 012216.pdf
Attachment K -TOC Minutes 012716 Approved.pdf
Attachment K -TOC Minutes 042716 Approved.pdf
Attachment K -TOC Minutes 072716 Approved.pdf
Grand Jury Response 102312.pdf
OCMMF 2017Mar06 Affirmation PSFR.pdf
Orange County Investment Pool Responses for OCFA.doc

Dear Tricia:

I am sorry that we are just getting it to you. We have been swamped with budget and submitted our FY 17/18 budget this week.

Let me know if you have any additional questions. We look forward to working with you if you find that we are a suitable investment as we provide additional diversification and alternate liquidity to many other government agencies.

Shari

Shari L. Freidenrich, CPA
Treasurer-Tax Collector
Office of the Treasurer-Tax Collector

County of Orange
P.O. Box 4515
Santa Ana, CA 92702-4515
Phone: (714) 834-7625
Fax: (714) 834-2912
ocgov.com/octaxbill
ocgov.com/octaxmap
ocgov.com/taxreminder
ocgov.com/melloroos
ocgov.com/taxauction
ocgov.com/ocinvestments

Attachment A – 2017 Investment Policy Statement
Attachment B - Apportionment Yields and Basis Points Fees

Attachment C – Participant List

Attachment D – Top 10 OCIP Participant

Attachment E – Sample Agreement

Attachment F – Allocation of Interest

Attachment G – Procedures

Attachment H – Investment Team Biographies and Dept. Org Chart

Attachment I – Approved Broker-Dealers

Attachment J – Review & Audit Schedule

Attachment K - 2016 TOC Agenda & Minutes

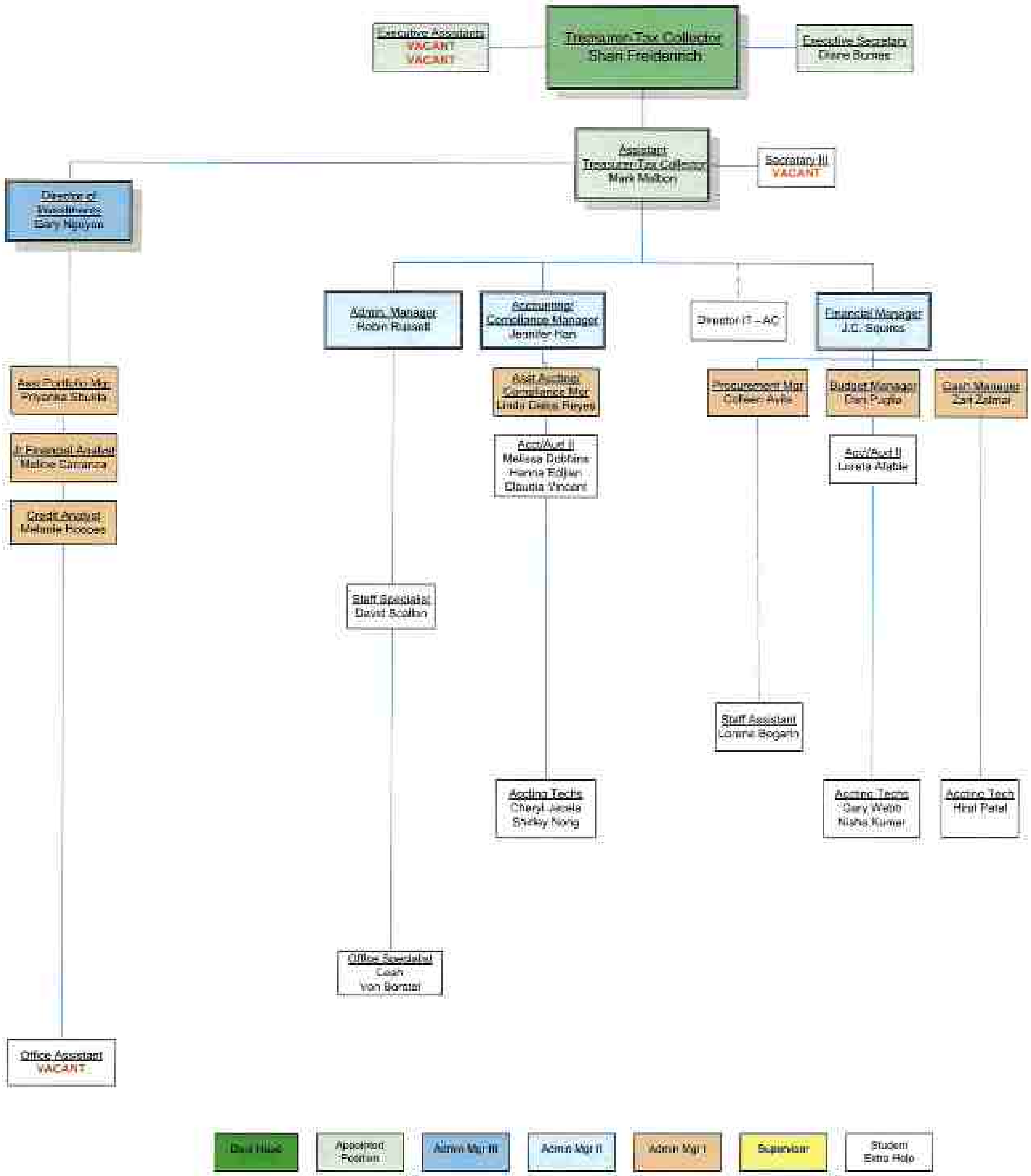
Attachment L – Audit Reports

Attachment M – Grand Jury Report

Attachment N – S & P report for Money Market portion of OCIP

OC TREASURER'S RESPONSE TO QUESTION #15

Treasurer-Tax Collector
Investments & Treasury Divisions
March 2018



Investment Division Biographies

Director of Investments – Gary Nguyen

Mr. Nguyen has been a member of the investment team since 2016. He is responsible for managing the county's $8+ billion portfolio and staff comprised of three investment/analyst professionals and two rotating college students. Prior to joining the County, he was at the City of Long Beach, where he reported to the Treasurer and oversaw the Treasury and Investments functions. Prior to that, he was the Treasury Manager for Investments and Strategy for Hyundai Capital America, the head Portfolio Investment Manager in charge of managing the liquidity and core investment portfolios for Toyota Financial Services and began his career in the asset management industry at PIMCO and Metropolitan West. Mr. Nguyen has over 20 years of experience in finance and investments in the public and private sectors. Mr. Nguyen graduated with a double major in Finance and Marketing from California State University, Fullerton. He is a Certified Treasury Professional and currently is a level II Chartered Financial Analyst candidate.

Lead Assistant Portfolio Manager – Priyanka Shukla

Ms. Shukla has served as the Lead Assistant Portfolio Manager at the County of Orange, Treasurer-Tax Collector's Investment Division since November of 2017. Prior to joining the County, she worked for the Oregon State Treasury, where she worked with the Treasurer and the Chief Investment Officer on the investment strategies and compliance for over $100 billion dollars of public assets. Previously, she served as the Controller, overseeing all aspects of financial accounting and reporting, at the Oregon Department of Revenue. Ms. Shukla has held various trading positions prior to joining the public sector focused on fixed income and equity strategies. She has 15 years of experience in finance and investments in the public and private sectors. Ms. Shukla received a Master of Business Administration degree from the University of Southern California's Marshall School of Business and holds the Chartered Financial Analyst (CFA), Chartered

Alternative Investment Analyst (CAIA) and Certificate in Investment Performance Measurement (CIPM) designations.

Assistant Portfolio Manager – Meline Carranza

Meline Carranza has served as the Assistant Portfolio Manager at the County of Orange, Treasurer-Tax Collector's Investment Division since November of 2017. Ms. Carranza has extensive experience in investment banking. Prior to joining the County, she worked as an Operations Client Service Manager and Fund Accountant for Deutsche Bank, overseeing a portfolio of $14 Billion. Before her tenure at Deutsche Bank she worked as an Annuity Operations Analyst at PacificLife. Ms. Carranza holds an MBA from California State University of Dominguez Hills, with a BA from University of California, Irvine. She is currently a Level I Chartered Financial Analyst Candidate.

Credit Analyst - Melanie Hoopes

Melanie Hoopes, CFA has served as the Credit Analyst at the County of Orange, Treasurer-Tax Collector's Investments Division since March of 2015. Ms. Hoopes has significant experience in investment research. Prior to joining the County, she worked as an Editor for FactSet Systems, an investment strategist at Bedell Investment Counseling in Walnut Creek, CA, and a financial advisor at Core Asset Management in San Rafael, CA. She holds an MBA from the University of California at Berkeley, a BS degree from Arizona State University, and has been a CFA charter holder since 2006.

OC TREASURER'S RESPONSE TO QUESTION #17

APPROVED BROKER/DEALERS

Banc of America Securities

Barclays Capital

BNP Paribas

BNY Mellon Capital Markets, LLC

Castle Oak Securities

Citigroup Global Markets

Daiwa Capital Markets

Deutsche Bank Securities

FTN Financial

Goldman Sachs

Great Pacific Securities

J.P Morgan

Jefferies & Company

Mizuho Securities USA, Inc.

Morgan Stanley Dean

RBC Capital Markets

TD Securities

UBS

COUNTY OF ORANGE

OFFICE OF THE COUNTY TREASURER
SHARI L. FREIDENRICH, TREASURER-TAX COLLECTOR

BROKER-DEALER APPLICATION

BROKER:

Section I: STATEMENT OF POSITION AND GENERAL REQUIREMENTS

The County of Orange Treasurer-Tax Collector will annually review the financial condition, services provided, and registration of broker-dealers that are authorized to provide financial services to the County in order to determine whether these broker-dealers should remain on the County's "Approved Provider List." In addition, the County may periodically solicit requests from brokers not on the approved list to apply for consideration and also receives unsolicited requests for broker-dealers to be considered for approval.

As part of this process, the County also provides each broker-dealer with a copy of the County's most current "Investment Policy Statement" and a certification form. Each broker-dealer is required to complete and submit the certification form as proof that it has received the County's "Investment Policy Statement," read it, and intends to comply with it.

Section II: APPLICATION REQUIRED DOCUMENTATION

The County must receive the following documents from each prospective only broker-dealer and annually from each approved broker-dealer within 60 days of year-end:

- ✓ A completed Broker-Dealer Application (prospective only)
- ✓ A copy of the firm's most recent audited Annual Report
- ✓ A copy of the firm's current Form BD Status Report
- ✓ A copy of wiring and delivering instructions
- ✓ MSRB Rule G-37 filing for the past 48 months

Also, in the case of a regional broker:

- ✓ A copy of the firm's most recent SEC Form X-17 A-5 "Focus Report" (in the case of a non-bank) or most recent Consolidated Reports of Condition and Income for A Bank With Domestic and Foreign Offices – FFIEC 031 (in the case of a bank)

These documents may be delivered in person, by mail, or by courier to:

Mailing Address:

County of Orange
Attn: Treasurer-Tax Collector
Post Office Box 4515
Santa Ana, California 92702-4515

Physical Address:

County of Orange
625 N. Ross Street
Hall of Finance, Building 11, Room G-58
Santa Ana, California 92701

If a currently authorized broker-dealer fails to submit the above-referenced documents by the specified deadline, then the County may suspend all business dealings with that broker-dealer, and may elect to terminate its business relationship with the broker-dealer.

If you have any questions about this application, please contact Shari Freidenrich at (714) 834-7625.

Section II: APPLICATION FOR AUTHORIZED BROKER-DEALER DISCLOSURE

1. Name of Firm ______________________ CRD# ____________

2. Address ______________________ ______________________
(Local) (National Headquarters)

______________________ ______________________
______________________ ______________________

3. Has your firm operated under a different business name in the last 12 months? If so, please identify the name, date of the name change, and the reason for the name change.

____
____
____
____

4. Telephone No. ______________________ ______________________
(Local) (National Headquarters)

5. Primary Representative: Manager/Partner-in-Charge

Primary Representative	Manager/Partner-in-Charge
Name: ____________	Name: ____________
Title: ____________	Title: ____________
Telephone No.: ____________	Telephone No.: ____________
Fax No.: ____________	Fax No.: ____________
E-Mail: ____________	E-Mail: ____________
No. of years in Institutional Sales: ______	No. of years in Institutional Sales: ______
No. of years with firm: ______	No. of years with firm: ______
CRD #: ____________	CRD #: ____________

6. Are you a Primary Dealer in U.S. Government Securities? ☐ Yes ☐ No

7. Are you a Regional Dealer in U.S. Government Securities? ☐ Yes ☐ No

8. If your firm **IS NOT** a primary dealer, has it consistently complied with the Federal Reserve Bank's capital adequacy guidelines over the last 12 months? (check one)

☐ Yes ☐ No

9. Are you a Broker instead of a Dealer, i.e. you **DO NOT** own positions of Securities?

☐ Yes ☐ No

10. What is the net capitalization of your Firm? ______________________

11. What is the date of your Fiscal Year-End? ______________________

12. Is your Firm owned by a Holding Company? If so, what is its name and net capitalization?

____

13. Do you participate in the SIPC Insurance program? If not, please explain.

____
____
____

14. Which of the following instruments does your local desk offer regularly?

☐ T-Bills ☐ Treasury Notes/Bonds ☐ Discount Notes ☐ NCD'S
☐ Agencies (specify) ____________ ____________ ____________
☐ BA's (Domestic) ☐ BA's (Foreign) ☐ Commercial Paper ☐ Mid-Term Notes

15. Which of the above does your Firm specialize in Marketing?

____
____
____

16. Please identify your most directly comparable Local Agency clients in our geographical area.

Entity	**Contact Person**	**Telephone No.**	**Client Since**

17. What reports, transactions, confirmation and paper trail would we receive?

____
____
____

18. Please include samples of research reports or market information that your firm regularly provides to local agency clients. Please include what types of communication or method of delivery (i.e., e-mail, FAX). Please include any other services that you offer that we may be interested in.

19. What precautions are taken by your Firm to protect the interest of the public when dealing with government agencies as investors?

____
____
____

20. Has your firm been subject to any litigation, arbitration, or regulatory proceedings, either pending, adjudicated, or settled within the last 12 months, that involved allegations of improper, fraudulent, disreputable, or unfair activities related to the sale of securities to or the purchase of securities from institutional clients? (check one)

☐ Yes ☐ No If "yes", please describe each matter briefly.

____
____
____

21. What precautions are taken by your Firm to protect the interest of the public when dealing with government agencies as investors?

22. Attach certified documentation of your capital adequacy and financial solvency. In addition, an audited financial statement must be provided within 120 days of your fiscal year-end.

23. Please indicate a percentage breakdown of your client base by portfolio size.

24. Have any of your firm's public sector clients ever sustained a loss on a securities transaction or loss of principal arising from a misunderstanding or misrepresentation of the risk characteristics of a financial instrument that was recommended by and purchased through your firm? (check one)

☐ Yes ☐ No If "yes", please describe each matter briefly.

25. Have any of your firm's public sector clients claimed, in writing, within the last five years, that your firm was responsible for any investment losses? (check one)

☐ Yes ☐ No If "yes", please describe each matter briefly.

26. Is the Primary Member, or other member in the local office, an Associate member of the following:

Yes	No	Organization	How Long	Member Name
☐	☐	CMTA:		
☐	☐	APT of the US & Canada:		
☐	☐	GIOA:		
☐	☐	CACTTC:		

27. What training would you provide for our employees and investment officers?

28. What portfolio information do you prefer from your clients?

29. No Broker/Dealer of security firm shall be selected who has, within any consecutive 48-month period, made a political contribution in an amount exceeding the limitations contained in Rule G-37 of the Municipal Securities Rulemaking Board, to the local treasurer or any member of the Board of Supervisors or to any candidate for these offices. Please provide a current copy of your firm's MSRB Rule G-37 filing.

____

____

____

30. Does your firm meet the County minimum capitalization of $10 million and five years of operation? (check one)

☐ Yes ☐ No

Note: If you wish to provide more complete answers than space permits, please reference question numbers on an attachment.

Section III: CERTIFICATION (may be provided on a separate sheet, and we have provided sample language below)

We have received and read the Orange County current Investment Policy Statement. As of the date hereof, our firm meets the requirements as shown in section XI. Authorized Financial Dealers and Qualified Institutions of your Investment Policy Statement. All salespersons covering your account will be made aware of this Investment Policy Statement, and will be directed to give consideration to its provisions and constraints in selecting investment opportunities to present to the County of Orange.

NOTE: Completion of Application is only part of County's certification process and DOES NOT guarantee or imply that the applicant will be approved to do business with the County.

SIGNED: ____________________ NAME (print): ____________________

DATE: ____________________

COUNTERSIGNED: ____________________ NAME (print): ____________________

DATE: ____________________

OC TREASURER'S RESPONSE TO QUESTION #18

50 California Street
Suite 2300
San Francisco, CA 94111

415 982-5544
415 982-4513 fax
www.pfm.com

PFM
The PFM Group
Financial & Investment Advisors

May 4, 2015

Memorandum

To: Shari Freidenrich, Treasurer-Tax Collector
Orange County

From: Ken Schiebel, Managing Director
Nancy Jones, Managing Director
Sarah Meacham, Director
Charles Cook, Analyst
PFM Asset Management LLC

Re: Orange County Pool Structure

The purpose of this memo is to consider and evaluate options available to Orange County (the "County") for the structure and management of the investment pools for which it is responsible. The County is currently responsible for managing three pools of funds:

- Orange County Investment Pool (OCIP),
- Orange County Educational Investment Pool (OCEIP), and
- John Wayne Airport Investment Pool (JWA).

This analysis focuses on potential structures for managing the OCIP and OCEIP, with the goals of continuing to meet the investment objectives of each pool and its participants, as well we seeking management efficiencies and enhanced income.

<u>Current Structure</u>
Both the OCIP and OCEIP have part of their money in money-market-fund-like portfolios (OCMMF and OCEMMF) and part in a combined "Extended Fund" portfolio. The Treasurer's office has responsibility for the allocation of funds between the respective MMF and the Extended Fund based on an assessment of cash flows, liquidity needs, and the opportunity to seek additional investment income by investing in longer-term investments held in the Extended Fund. The existence of three portfolios has been in place for some time and is rooted in certain legacy issues. The needs and preferences of participants relating to pool structure, especially those of mandatory school district participants and voluntary participants, are not directly addressed here, but could be part of the evaluation process.

On the following page, we present options for consolidation of the various pools to create operating efficiencies, simplify operations, and gain potential economies of scale. We have attached graphic representations (Attachment 1) of these options, which may be helpful in understanding the structure of each. We have excluded consideration of the John Wayne Airport funds at this time, as those are currently managed independently. Under each option below, JWA would remain a separate portfolio. Additionally, the County could choose to establish another portfolio for alternative strategies, which may include longer-term investments for a specific purpose for County Pool investors. This would also be a separate portfolio under all the options below.

Option 1: Combine into One Portfolio

Combine the Orange County Money Market Fund (OCMMF), the Orange County Educational Money Market Fund (OCEMMF), and the Extended Fund into one consolidated pooled fund.

Pros

- Managing one portfolio is simpler, easier and more efficient than managing three separate portfolios.
- Portfolio managers would be able to focus on one overall strategy, rather than creating, implementing, managing and monitoring three separate strategies.
- Simplifies trade execution by eliminating the need to allocate purchases across multiple funds.
- Eliminates any potential conflict of interest that might arise when allocating investment opportunities.
- Saves time and complexity with regard to compliance assurance and reporting functions.
- Simplifies trade settlement, custody and reconciliation, as it would require only one custody account and one set of delivery instructions for brokers. Savings from both efficiency and cost.
- Provides consolidated liquidity across all funds and participants, which creates both operating efficiencies and income enhancement opportunities. Maintaining liquidity in each portfolio is less efficient and more costly, especially with short-term rates near zero. Consolidated liquidity would require less investment in short-term investments and immediately available funds, which would allow for placement of funds seeking enhanced return.
- Eliminates the need to transfer funds between the County and the schools, which would limit the volatility of portfolio balances, since County and school cash flows are frequently offsetting.
- Eliminates the need to transfer funds between the MMF portfolios and the Extended Fund portfolio. Any such strategy change could be seamlessly implemented within the consolidated portfolio, and could more quickly respond to changing market conditions.
- Could simplify the County's Investment Policy, since it would not need to specify different objectives, investment parameters, and limits for the two MMFs and the Extended Fund.
- Simplifies record-keeping of participant balances and the investment income allocation process, as each participant would have only one sub-account.

Cons

- Modestly weakens the clarity of purpose that each current fund represents, but generally all strategies and fund needs can be accommodated within the consolidated portfolio using existing strategy and cash flow review procedures.
- County pools would no longer qualify for the existing S&P AAAm ratings, which apply only to shorter-maturity "Principal Stability Funds" that meet certain maturity, quality and diversification requirements. A consolidated pool would have characteristics (e.g., a longer weighted average maturity) that would no longer qualify. The County could seek alternate ratings that apply to longer-maturity funds, which take the form of "credit quality ratings" and "volatility ratings." Or, the County could decide that obtaining—and paying for—a pool rating is no longer necessary. (Note: A credit rating may serve an important function as a signal to investors as to the level of safety of the underlying investments and would be most useful to voluntary investors in this way. The County does not have a significant number of voluntary participants but may want to discuss the need for a rating with them).
- School districts may have a desire to keep their funds separate from the County's funds. Although, much of the school balances are already consolidated within the Extended Fund, and the separate OCEMMF uses the same staff and strategy employed by the County on the OCMMF.

State law allows County Treasurers to pool all investor funds for management in one portfolio and most County Treasurers take this approach.

<u>Option 2: Combine into Two Portfolios by Participant Type</u>
Combine three pools into two by participant source, creating consolidated pools for:

- County: OCIP = OCMMF + the County's portion of the Extended Fund
- School districts: OCEIP = OCEMMF + the Education Fund's portion of the Extended Fund

Pros

- Managing two portfolios is simpler and easier than managing three portfolios. Reduces, but does not eliminate, the complexity of managing multiple portfolios, trade execution, meeting objectives, custody accounts, etc.
- Portfolio managers could manage the portfolios specifically for County cash flows and school district cash flows matched to their specific needs.
- Eliminates the need to transfer funds between the MMF portfolios and the Extended Fund portfolio within each pool.
- County's Investment Policy could be tailored or segregated to meet the specific needs of the County and school districts independently.
- Simplifies record-keeping of participant balances and the investment income allocation process, as each participant would have only one sub-account in one pool or the other, but not both.

- Simplifies County vs. school reporting at month-end.
- Maintains the separation of County funds from school funds.

Cons

- Retains complexity of ensuring compliance across multiple portfolios.
- Neither the OCIP nor OCEIP would qualify for the AAAm rating (described above).
- Does not eliminate the impact of high cash inflows on the portfolio yields during tax collection periods.
- Would continue to require need to maintain a large amount of funds in short-term and very liquid investments to accommodate large apportionments during a short time horizon, adversely impacting yield/return.

Option 3: Combine into Two Pools by Investment Strategy/Horizon

Combine the two current MMFs into one consolidated MMF pool. This would result in one pool for liquidity (a consolidated MMF) while retaining the existing Extended Fund.

Pros

- Managing two portfolios is simpler and easier than managing three portfolios. Reduces, but does not eliminate, the complexity of managing multiple portfolios, trade execution, custody accounts, etc.
- Portfolio managers could manage each pool to the specific strategy and purpose of each fund.
- No change required to the Extended Fund, since it is already currently combined.
- Provides consolidated liquidity across all participants, which creates both operating efficiencies and income enhancement opportunities. Eliminates the need to transfer liquid funds between the County and the Schools, which would limit the volatility of the consolidated MMF balance, since County and school cash flows may be offsetting.
- Would allow for separate strategy development and investment policies for shorter-term MMF vs. longer-term Extended Fund.
- Could accommodate additional strategies in the future, such as an even longer 3-5 year or 5-10 year fund for landfill closure trust funds, etc.

Cons

- Retains complexity of ensuring compliance across multiple portfolios.
- Increases complexity of tracking balances and doing income allocation, as both the County and Schools would have balances in both of the two funds/strategies.
- Adds to the complexity of the month-end reporting.
- Increases back-office workload.
- Does not solve issue of transfers between MMF and Extended Fund.
- Does not eliminate capacity issues for GSE issuers.

PFM

- School districts may have a desire to keep their funds separate from the County's funds.

Recommendation

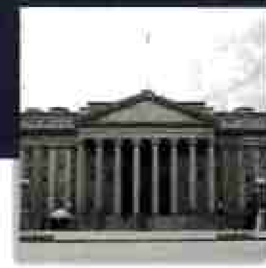
We believe the County could benefit from considering alternative structures for the funds it manages, for itself and for other participants. Each of the three options above has advantages which appear to outweigh disadvantages. Option 1 is the strongest of the choices; it has the greatest number of benefits and appears to offer the most strategic advantages. Consolidating all funds into one portfolio would result in benefits of:

1. Enhanced efficiencies, allowing staff to focus more time on portfolio management and less on back office processing, allocations, compliance assurance and balance management,
2. Potential for increased yield/return through consolidated liquidity, more flexible overall portfolio management opportunities, and more efficient use of policy constraints, and
3. Potential cost savings from fewer accounts and less overhead.

While all three options are viable and have benefits, Option 1 appears to have the most benefits for both the County and the pool participants.

We look forward to assisting the County in evaluating its options.

Attachment 1

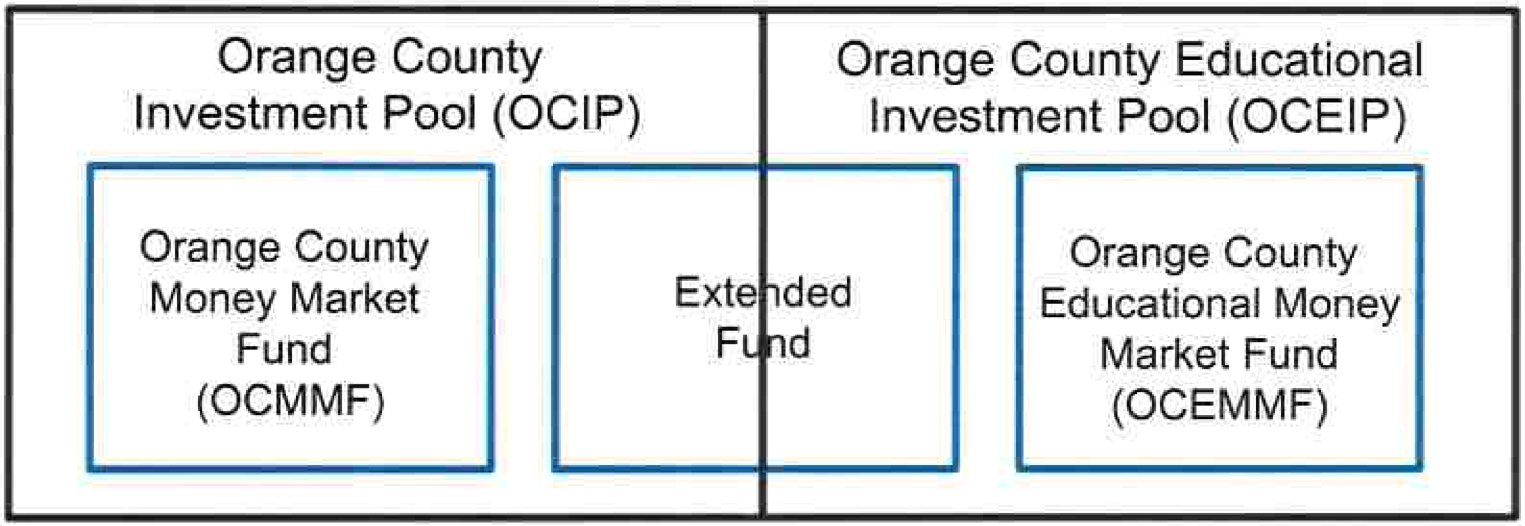


Orange County

COUNTY OF ORANGE CALIFORNIA

Review of Pool Structure
April 2015

Current Pool Structure



<u>Characteristics</u>

- 4 custody accounts
- 4 strategies (OCMMF, OCEMMF, EF, JWA)
- Separate liquidity for each
- Periodic transfers between similar funds

Revised Structure: Option 1

Separate Pools by Strategy

Combined OCIP & OCEIP

Combined MMF & Extended Fund

JWA

Alternative (longer?) Strategy

Strategies for Specific Funds (e.g. landfill closure)

Characteristics
- 2 custody accounts
- 2 strategies
- Shared liquidity
- Facilitates internal transfers
- Optional strategies

Revised Structure: Option 2

Separate Pools for OCIP & OCEIP

OCIP

OCMMF + Extended Fund

OCEIP

OCEMMF + Extended Fund

JWA

Alternative (longer?) Strategy

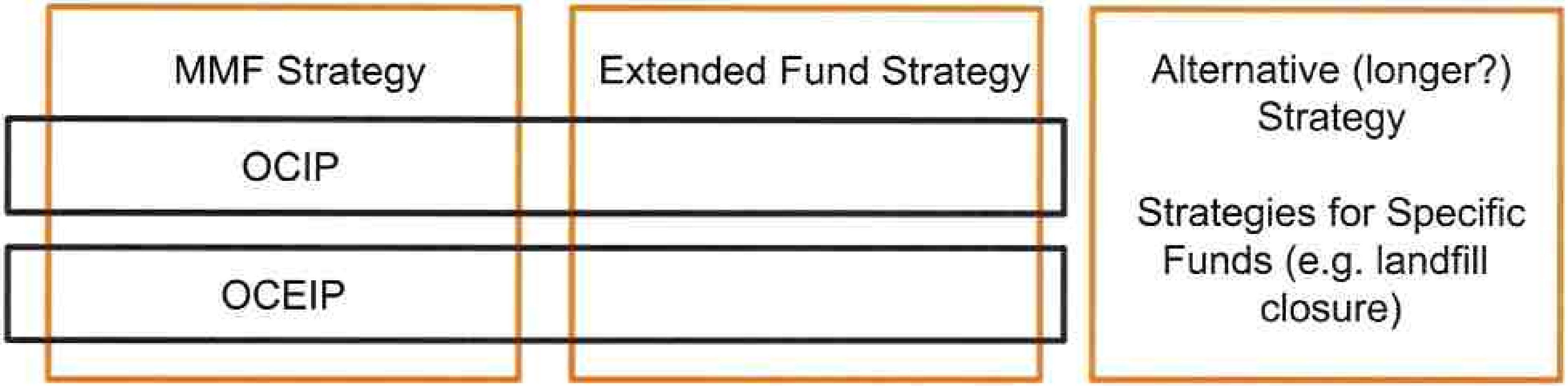
Strategies for Specific Funds (e.g. landfill closure)

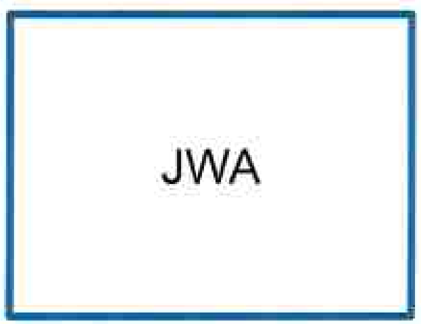
Characteristics

- 3 custody accounts
- 3 strategies
- Separate liquidity for each pool
- Periodic transfers between similar funds
- Optional strategies

Revised Structure: Option 3

Separate Pools by Investment Strategy/Horizon





<u>Characteristics</u>
- 3 custody accounts
- 3 strategies
- Shared liquidity
- Facilitates internal transfers
- Optional strategies

Agenda Item

AGENDA STAFF REPORT

ASR Control 14-000694

MEETING DATE:	05/13/14
LEGAL ENTITY TAKING ACTION:	Board of Supervisors
BOARD OF SUPERVISORS DISTRICT(S):	All Districts
SUBMITTING AGENCY/DEPARTMENT:	Treasurer-Tax Collector (Approved)
DEPARTMENT CONTACT PERSON(S):	Shari Freidenrich (714) 834-7625 Paul Gorman (714) 834-2288

2014 MAY -1 AM 8:58

SUBJECT: Approve Contract with PFM Asset Mgmt. LLC for Investment Advisory Services

CEO CONCUR	**COUNTY COUNSEL REVIEW**	**CLERK OF THE BOARD**
Concur	Approved Agreement to Form	Consent Calendar 3 Votes Board Majority

Budgeted: Yes **Current Year Cost:** $11,250 **Annual Cost:** $90,000

Staffing Impact: No **# of Positions:** **Sole Source:** Yes

Current Fiscal Year Revenue: N/A

Funding Source: Investment Administrative Fees 100% **County Audit in last 3 years** No

Year of Audit

Prior Board Action: 1/29/2008 Item #40, 1/8/2008 Item#16, 12/18/2007 Item #36

RECOMMENDED ACTION(S):

Authorize the County Purchasing Agent or his authorized Deputy to execute Agreement CT-074-14010701 with PFM Asset Management LLC for non-discretionary investment advisory services effective May 15, 2014 to May 14, 2015, for a not-to-exceed amount of $90,000.

SUMMARY:

The Treasurer-Tax Collector (TTC) requests that the Board of Supervisors approve Agreement No. CT-074-14010701 with PFM Asset Management LLC for a one-year term. This contract with PFM Asset Management LLC will assist the department in meeting the investment objective for public funds of safety, liquidity, and yield.

BACKGROUND INFORMATION:

This is a sole source Agreement with PFM Asset Management LLC (PFM) for investment advisory services. This contract is coming to the Board because it is a sole source contract that exceeds $50,000. The proposed compensation to be paid to PFM under this Agreement is a flat fee of $90,000 for the one-year contract term. The Board initially approved a contract with PFM in December 2007 to conduct a risk analysis of the Treasurer's Investment Pools which consisted of a review and evaluation of the three investment pools plus a policy and procedures evaluation. PFM provided a report to the Board on January 28, 2008. In 2011, the Treasurer contracted with PFM to do a follow-up review of the PFM recommendations from the 2008 report.

This current contract is comprised of ten non-discretionary investment related services. These services will supplement the current Investment staff resources. This assistance is especially important since the Investment Division has two positions that are currently vacant and that are under recruitment. Although the Investment staff, the Chief Assistant Treasurer-Tax Collector – Treasury and the Treasurer are ensuring that the day-to-day investments activities are continuing smoothly, there are few resources that can be devoted to longer-term strategic planning. The addition of these advisory services will further enhance the best business practices of the Investment Division, streamline operations, and contribute to the public safety objectives of safety, liquidity, and yield. These service include: (1) Bi-Weekly written strategy reports which will provide strategic analysis and recommendations on relative sector value, yield curve placement, target weighted average maturity/duration and maturity structures, that also will include recommendations on periodic modifications to WAM/duration, and recommendations on investments they believe offers the best relative value based on the yield relationship between the permitted investment sectors; (2) Market Analysis including opportunities to re-balance a portfolio among sectors and /or maturities that can safely add value and enhance investment performance; (3) Weekly Investment Strategy Meetings that will provide feedback and advice on ideas and trading strategies developed by the County; (4) Credit Assistance by advising the County on credit review and monitoring tools and techniques in addition to discussing macro factors affecting high grade corporate credit markets and other events effecting the markets; (5) Short-term vs. Long-Term Portfolio Allocation Analysis including cash flow needs, appropriate allocations between short term and longer term funds and stress testing; (6) Investment Policy Statement Review including making recommendations regarding allowable investments, maximum maturities, credit requirements and procedures to ensure portfolio diversification; (7) Portfolio Structure Analysis that review the current structure and make recommendations for any changes; (8) Monthly Report Design that will include making recommendations on enhancing the report to pool participants and to the Board of Supervisors; (9) Market Updates and Other Special Reports including monthly and quarterly written market updates; (and (10) Broker Relationships including advising the County on the management of broker/dealer relationships.

It is desirable to have an outside registered investment advisor to provide these services as a second review of the portfolio investment strategies and to provide some additional technical analysis of the investment pools not available through software used by County staff.

PFM specializes in providing investment advisory services to the public sector and have been providing these services for over 30 years. As of September 30, 2013, they have $34.5 billion in non-discretionary assets under advisement. PFM is an SEC-registered investment advisor, independent of any financial institution or securities brokerage firm. In California, PFM provides investment advisory services on $24.2 billion of assets, including $14 billion of non-discretionary investment advice and oversight. They current have contracts with the City and County of San Francisco and the County of San Bernardino to provide similar non-discretionary investment services as those proposed in the attached contract. In addition, PFM also contracts with two counties to provide investment oversight, manages portfolios for an additional five counties, and works with 22 counties that are investors in the California Asset Management Program (CAMP).

Due to the nature of this Agreement and PFM's proposed role in providing investment services to the Treasurer-Tax Collector, the Agreement provides that PFM will not be allowed to submit proposals to the County for financial advisory services or contract for any such services with the County so long as this Agreement is in effect. This will eliminate any potential conflict of interests and/or appearance of impropriety.

The County's standard indemnification language had been amended to exclude PFM's obligation to indemnify the County for any negligence on the part of third parties. The County's standard insurance provision has been amended to increase the Professional Liability coverage from $1M to $15M. PFM also requested approval of its self-insured retention of $1M. These three modifications have been reviewed and approved by CEO/Risk Management.

To determine that pricing quoted for the services by PFM was reasonable, the County obtained a copy of the RFP recently done by the County of San Bernardino for similar investment advisory services, including obtaining the pricing quoted by the two responding vendors. In addition, the County obtained a copy of the PFM Agreement with the County and City of San Francisco for similar work. Based on a review of those contracts and the responses to San Bernardino's RFP, the pricing being proposed in this Agreement appears to be reasonable. Because of the vacancies in the two investment positions, the Treasurer will not need to request any additional budget this year and will include the amount necessary in the FY 14/15 Department budget. The cost of these services, which amount to about .15 of a basis point, will be charged to the investment pools and prorated to all pool participants, as allowed by State law, and these costs will be partially offset by the savings during the time these positions were vacant. We believe that the benefits of these investment services will result in more efficient investment services to the investment pools and add value to the pool participants.

FINANCIAL IMPACT:

N/A

STAFFING IMPACT:

N/A

EXHIBIT(S):

1) Sole Source/Proprietary Request Form

ATTACHMENT(S):

1) Agreement CT 074-14010701

OC TREASURER'S RESPONSE TO QUESTION #19

ORANGE COUNTY TREASURER-TAX COLLECTOR
INVESTMENT POLICY (IPS) AND TREASURY OVERSIGHT COMMITTEE (TOC) COMPLIANCE SUMMARY
January 31, 2017

COMPLIANCE CATEGORY	PERFORMED BY	REGULATORY/POLICY GUIDELINES	CURRENT STATUS
Annual Compliance Audit	ACIA	Performance Evaluation-Cal Govt. Code 27134	Annual audit of calendar year 2015 completed.
Quarterly Schedule of Assets Review	ACIA	Performance Evaluation-Cal Govt. Code 26920(a)	Quarter ended September 30, 2016 in progress.
Annual Schedule of Assets Audit	ACIA	Performance Evaluation-Cal Govt. Code 26920(b)	Annual audit as of June 30, 2016 in progress.
Quarterly Continuous Compliance Auditing	ACIA	TOC Directive	Quarter ended September 30, 2016 completed.
Treasury Administrative Fee	TTC	Compensation Agreement-Cal Govt. Code 27013	Annual review of fees for FY 14/15 and FY 15/16 in progress.
Annual Broker/Dealer Review	TTC	Authorized Financial Dealers and Qualified Institutions	Annual review of calendar year 2015 completed.
Annual Broker/Dealer IPS Certification	TTC	Authorized Financial Dealers and Qualified Institutions	All 2016 IPS certifications received.
IPS Compliance Deficiencies	TTC	Investment/Diversification/Maturity Restrictions	FY 16/17 identified zero compliance incidents as of January 31, 2017.
TOC Bylaw Changes	BOS	TOC Review and BOS Annual Approval	The TOC reviewed Bylaws and made one change at the October 19, 2016 meeting. The BOS approved on November 22, 2016.
Annual IPS Approval	BOS	TOC Review and BOS Annual Approval	The TOC reviewed proposed IPS changes at the October 19, 2016 meeting and did not make any additional changes. The BOS approved on November 22, 2016.
TOC Annual Report	BOS	TOC Bylaws Rule 30 - Oral and Written Report	The TOC 2015 Annual Report was presented to BOS on February 9, 2016. The TOC 2016 Annual Report is scheduled for the BOS meeting on February 28, 2017.
Broker/Financial Institution List	TTC	OC Gift Ban Ordinance and Form 700	The TOC members were provided a list of active TTC Broker/Dealers and Financial Institutions at the TOC meeting on October 19, 2016.
Certificates of Compliance	TTC	TOC Bylaws Rule 34 - Annual	The TOC members are in compliance for Calendar Year 2017.
Ethics Training	TTC	TOC Bylaws Rule 34 - Every Two Years	The TOC members are in compliance for Calendar Year 2016 (one submitted in January 2017).
Conflict of Interest Form 700 Filing	TTC	TOC Bylaws Rule 34 / IPS - Every Year	The TOC members are in compliance for Calendar Year 2016.

LEGEND	
Auditor-Controller Internal Audit	ACIA
Board of Supervisors	BOS
Treasury Oversight Committee	TOC
Office of Treasurer-Tax Collector	TTC

OC TREASURER'S RESPONSE TO QUESTION #20

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM
TREASURY OVERSIGHT COMMITTEE MINUTES

Wednesday, October 19, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

GARY CAPATA Chair	**LAURA PARISI** Vice Chair	**DR. WILLIAM "ANDY" DUNN** Member
FRANK KIM Member	**DR. AL MIJARES** Member	**RICHARD ROHM** Member
ERIC WOOLERY Member		

- **Call to Order**
  - Chair Capata called the meeting to order at 3:00 p.m.

- **Welcome**
  - **Members Present:** Gary Capata, Laura Parisi, Dr. Andy Dunn, Richard Rohm and Dr. Al Mijares
  - **Alternates Present:** Michelle Aguirre, Wendy Benkert
  - **Members Absent:** Frank Kim and Eric Woolery
  - **Liaison Present:** Treasurer-Tax Collector Shari Freidenrich

Mr. Gorman introduced Jennifer Han, Accounting/Compliance Manager in the Treasury Unit. Treasurer Freidenrich introduced Executive Assistant Cecilia Hong who will be working on our public communication area and Ronnie Magsaysay from County Counsel who is representing Angie Daftary.

- **Public Comments**
  - There were no public comments made.

- **Minutes**
  - Member Mijares moved to approve the minutes of the July 27, 2016 Treasury Oversight Committee (TOC) meeting. Member Parisi seconded the motion. **Approved 6-0.**

- **New Business**
  - **Receive and File Treasurer's Monthly Investment Report for July, August and September:** Treasurer Freidenrich presented the highlights of these reports. There were no compliance exceptions in July, August or September. During July there were three minor changes made to the Treasurer's Approved Issuer List: 1) placed one negotiable CD issuer on hold, 2) removed POB's that matured 6/30/16 and 3) moved Microsoft Corporation from Negative Watch to Negative Outlook, (still on hold). During August there were no changes made to the Treasurer's Approved Issuer. In September there was one change to the Treasurer's Approved Issuer List. Chevron Corporation was removed as the Investment Pools no longer hold any investments of this issuer. Member Dunn moved to receive and file these reports. Member Rohm seconded the motion. **Approved 7-0.**

  - **Receive and File Report of the Schedule of Assets Held by the County Treasury as of December 31, 2015**: Mr. Gorman explained this is an annual audit mandated by Government Code. There were no material modifications and no instances of non-compliance. Member Mijares moved to receive and file this report. Member Parisi seconded the motion. **Approved 7-0.**

- **Receive and File Report on Review of the Schedule of Assets Held by the County Treasury as of March 31, 2016:** Mr. Gorman explained this is an annual audit mandated by Government Code. This report is designed to determine the amount of money available to invest daily. There were no deficiencies identified under internal controls in management review and approval. Alternate Aguirre moved to receive and file this report. Member Dunn seconded the motion. **Approved 7-0.**

- **Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended June 30, 2016:** Mr. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance deficiencies identified. Member Parisi moved to receive and file this report. Member Rohm seconded the motion. **Approved 7-0.**

- **Receive and File September 2016 TOC Compliance Summary:** Treasurer Freidenrich suggested moving this report before the Schedule of Assets and Continuous Compliance Auditing reports at future meetings, and will make the change to the January Agenda. Mr. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance incidents. Member Dunn moved to receive and file this report. Alternate Aguirre seconded the motion. **Approved 7-0.**

- **Review Bylaws and Rules of Procedures:** Treasurer Freidenrich that explained as part of the TOC Bylaws, the committee is required to review annually. Treasurer Freidenrich reviewed the two changes being submitted for approval; *1) the addition of being a current registered voter which is not a Board requirement for Bylaws and 2) having public comments at the beginning of the meeting only.* After discussion, the Treasurer plans to check the registration on applicants, but the Board does not require it in the Bylaws. Member Mijares moved to approve the Bylaws and Rules of Procedures with only the change; to approve public comments at the beginning of the meeting. Member Dunn seconded the motion. **Approved 7-0.**

- **Review and File Investment Policy Statement:** Treasurer Freidenrich reviewed the IPS approval process. It is the responsibility of the TOC to review the proposed changes to the IPS. Other than formatting and some minor changes, the substantive changes that were recommended are: under Authorized Investments, 1) increase GSE investment percentage limit from 33% to 50% and 2) remove quotes from A rating. Under Negotiable Certificates of Deposit and Medium Term Notes: 1) update to restrict maximum maturity not to exceed three years and 2) updated Unit name under Internal Controls. Member Parisi noted that rating categories were also covered in the Omnibus Bill.

  ACTION ITEM: review Omnibus Bill rating categories

- **Review Irregularity Procedures:** Treasurer Freidenrich stated there are no changes to the policy and we did not receive any input this year. If you notice any irregularities either notify the Treasurer or call the Internal Audit Fraud Hotline that is located at County Counsel.

- **Receive and File Office of the Treasurer Broker-Dealer / Financial Institution List as of 9/30/16:** Treasurer Freidenrich noted that this is a list of all Broker-Dealers, banks and mutual funds we contract with. Member Dunn moved to receive and file this report. Member Parisi seconded the motion. **Approved 7-0.**

- **Review AB 1234 Mandatory Ethics training requirements:** Treasurer Freidenrich explained the Ethics course is required every two years, per the TOC Bylaws. The Clerk of the Board will send a reminder email with a link to complete.

- **Chair's Report:**
  - There was no Chair's report made.

- **Treasurer's Report:**
  - Treasurer Freidenrich reported on the following topics:
    a. Update on recruitment and staffing changes
    b. Update on annual audit
    c. Hand out Certificates of Compliance for signatures
    d. Update on TOC Member terms
    e. Update on annual TOC meeting schedule
    f. Update on Training in 2017
    g. Update on Voluntary Pool Participants
    h. Update on Pool Structure
    i. Update on vendor Wells Fargo
    j. Update on Financial Literacy Day
    k. Update on Internet Timeshare Tax Auction
    l. Update on tax collection statistics
    m. Update on unsecured taxes collections

    ACTION ITEM: Find out when Wells Fargo contract expires

- **Public Comments:**
  - Wendy Benkert announced that she will be retiring from the Department of Education at the end of December.

- **Committee Member Comments:**

  There were no public comments made.

- **Adjournment:**
  - Chair Capata adjourned the meeting at 4:17 p.m. to Wednesday, January 25, 2016, Auditor-Controller's Conference Room #300.

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

TREASURY OVERSIGHT COMMITTEE (TOC) AGENDA

Wednesday, October 19, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

GARY CAPATA, Chair — **LAURA PARISI,** Vice Chair — **DR. ANDY DUNN,** Member

FRANK KIM, Member — **DR. AL MIJARES,** Member — **RICHARD ROHM,** Member

ERIC WOOLERY, Member

1. **Call to Order**

2. **Welcome**

3. **Public Comments**

   At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee, provided that, NO action may be taken on off-agenda items unless authorized by law.

4. **Minutes**
   - Approve July 27, 2016 Minutes

6. **New Business**
   - Receive and File Treasurer's Monthly Investment Report for July, August and September
   - Receive and File Report on Review of the Schedule of Assets Held by the County Treasury as of December 31, 2015
   - Receive and File Report on Review of the Schedule of Assets Held by the County Treasury as of March 31, 2016
   - Receive and File Continuous Compliance Auditing of the Treasurer's Investment Portfolio for the Quarter Ended June 30, 2016
   - Receive and File September 2016 TOC Compliance Summary
   - Review Bylaws and Rules of Procedures
   - Review Investment Policy Statement
   - Review Irregularity Procedures
   - Receive and File Office of the Treasurer Broker-Dealer / Financial Institution List as of 9/30/16
   - Review AB 1234 Mandatory Ethics training requirements

7. **Chair's Report**

8. **Treasurer's Report**

9. **Public Comments**

   At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee provided that, NO action may be taken on off-agenda items unless authorized by law.

10. **Committee Member Comments**

    At this time, members of the Treasury Oversight Committee may comment on agenda or non-agenda matters and ask questions of or give directions to staff, provide travel or member committee reports provided that, NO action may be taken on off-agenda items unless authorized by law.

11. **Adjournment to Wednesday, January 25, 2017 at 3:00 P.M., Auditor/Controller's Conf. Room #300**

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

TREASURY OVERSIGHT COMMITTEE MINUTES

Wednesday, January 27, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

LAURA PARISI
Chair

DR. WILLIAM "ANDY" DUNN Vice Chair	**FRANK KIM** Member	**DR. AL MIJARES** Member
GARY CAPATA Member	**RICHARD ROHM** Member	**ERIC WOOLERY** Member

- **Call to Order**
  - Chair Parisi called the meeting to order at 3:05 p.m.

- **Welcome**
  - **Members Present:** Laura Parisi, Dr. Andy Dunn, Eric Woolery, Richard Rohm, and Gary Capata
  - **Alternates Present:** Michelle Aguirre, Wendy Benkert
  - **Members Absent:** Frank Kim, Dr. Al Mijares
  - **Liaison Present:** Treasurer-Tax Collector Shari Freidenrich

- **Public Comments**
  - There were no public comments made.

- **Minutes**
  - Member Dunn moved to approve the minutes of the October 28, 2015 Treasury Oversight Committee (TOC) meeting. Alternate Aguirre seconded the motion. **Approved 7-0.**

- **Old Business**
  - **Receive and File the Treasury Oversight Committee (TOC) Bylaws and Rules of Procedures.** Alternate Benkert moved to receive and file the report. Member Woolery seconded the motion. **Approved 7-0.**

- **New Business**
  - **Review and Approve the 2015 Treasury Oversight Committee (TOC) Annual Report.** Treasurer Freidenrich explained Government Code requires an oral and written report by the TOC. Mr. Vargas discussed the points identified in the report, and the major activities of the TOC in the past year. The report will be presented as a discussion item to the BOS for approval at the February 9, 2016 meeting. Member Dunn moved to approve the report. Member Capata seconded the motion with one amendment to first paragraph on page two, second sentence to say **public** members. **Approved 7-0.**

  - **Receive and File Treasurer's Monthly Investment Report for October, November and December:** Treasurer Freidenrich presented the highlights of these reports, there were no compliance exceptions or changes to the Approved Issuer List in October, November and December. In December, the County was upgraded to AA+ Stable by Standard & Poor's and we issued new Pension Obligation (PO) Bonds under credit rating of AA Stable. Alternate Benkert moved to receive and file these reports. Member Capata seconded the motion. **Approved 7-0.**

- **Receive and File the Report on Review of the Schedule of Assets Held by the County Treasury as of September 31, 2015:** Mr. Gorman explained this is an annual audit mandated by Government Code. There were no material modifications identified. Member Dunn moved to receive and file this report. Member Rohm seconded the motion. **Approved 7-0.**

- **Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended September 30, 2015:** Mr. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance deficiencies identified. Member Capata moved to receive and file this report. Alternate Benkert seconded the motion. **Approved 7-0.**

- **Receive and File December 2015 TOC Compliance Summary:** M. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance incidents. The Auditor-Controller is working on an audit plan for 2016 and will make a recommendation to the TOC. Member Dunn moved to receive and file this report. Member Rohm seconded the motion. **Approved 7-0.**

- **Review Form 700 Filing:** Treasurer Freidenrich explained the requirements of the Form 700, which pertain directly to the TOC. The Clerk of the Board will send an email to all TOC members with the logon instructions for filing. Form 700 is due by April 1, 2016. Ms. Daftary reported that the Board of Supervisors approved the establishment of an Ethics commission and it will be going on the June ballot this year.

- **Discuss Annual Audit Request for Proposal Process (RFP):** Mr. Gorman explained that the 2015 calendar year audit will be issued in the coming months. The timeline for soliciting bids for the 2016 calendar year for the auditor to accomplish the audit per Government Code is:
    - The TOC will pick the auditor by the end of this year
    - April meeting - discuss the selection criteria
    - Issue the RFP in May
    - October meeting - make recommendation to TOC of new auditor

  Action Items: ***April TOC meeting - Discuss Audit selection criteria***
  October TOC Meeting - Make recommendation to TOC of new auditor

- **Election of Chair:** Member Dunn moved to nominated Member Capata as Chair. Alternate Benkert seconded the motion. **Approved 7-0.**

- **Election of Vice Chair:** Member Rohm moved to nominated Chair Parisi as Vice Chair. Member Dunn seconded the motion. **Approved 6-0 (Chair Parisi abstained).**

Member Dunn thanked Chair Parisi for her hard work this past year.

- **Chair's Report:**
    - Chair Parisi invited TOC Board to attend the 2/9/16 Board of Directors' Meeting for TOC annual Report presentation.

      Action Item: Contact BOS Chairwoman to move TOC Annual Report to first item on Discussion calendar

- **Treasurer's Report:**
    - Treasurer Freidenrich reported on the following topics:
        a. Added TOC Bio page to website
        b. Update TOC calendar to reflect October 2016 meeting changed to October 19
        c. Update PFM recommendations
        d. Update on training recommendations for TOC members
        e. Update on Training for TOC Members
        f. Update on County PO Bonds

g. Update on new investments
h. Update on Pool Participant list
i. Update on 2016-2017 forecast
j. Update on Tax Auction
k. Update on Secured Property Tax bills

- **Public Comments:**
  - There were no public comments made.

- **Committee Member Comments:**
  - Member Woolery presented the new CAFR to Treasurer Freidenrich and handed out the new 2014-15 OC Citizen's Report to the committee.

- **Adjournment:**
  - Chair Parisi adjourned the meeting at 4:15 p.m. to Wednesday, April 27, 2016, Auditor-Controller's Conference Room #300.

TREASURY OVERSIGHT COMMITTEE (TOC) AGENDA

Wednesday, January 27, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

LAURA PARISI, Chair **WILLIAM "ANDY" DUNN,** Vice Chair **GARY CAPATA,** Member

FRANK KIM, Member **DR. AL MIJARES,** Member **RICHARD ROHM,** Member

ERIC WOOLERY, Member

1. Call to Order

2. Welcome

3. Public Comments

At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee, provided that, NO action may be taken on off-agenda items unless authorized by law.

4. Minutes

- Approve October 28, 2015 Minutes

5. Old Business

- Receive and File TOC Bylaws and Rules of Procedures (BOS approved 12-15-15)

6. New Business

- Review and Approve 2015 TOC Annual Report
- Receive and File Treasurer's Monthly Investment Report for October, November and December
- Receive and File Report on Review of the Schedule of Assets Held by the County Treasury as of September 30, 2015
- Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended September 30, 2015
- Receive and File December 2015 TOC Compliance Summary
- Review Form 700 Filing
- Discuss Annual Audit Request for Proposal Process
- Elect Chair and Vice Chair

7. Chair's Report

8. Treasurer's Report

9. Public Comments

At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee provided that, NO action may be taken on off-agenda items unless authorized by law.

10. Committee Member Comments

At this time, members of the Treasury Oversight Committee may comment on agenda or non-agenda matters and ask questions of or give directions to staff, provide travel or member committee reports provided that, NO action may be taken on off-agenda items unless authorized by law.

11. Adjournment to Wednesday, April 27, 2016 at 3:00 P.M., Auditor/Controller's Conf. Room #300

TREASURY OVERSIGHT COMMITTEE MINUTES

Wednesday, April 27, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

GARY CAPATA
Chair

LAURA PARISI
Vice Chair

DR. WILLIAM "ANDY" DUNN
Member

FRANK KIM
Member

DR. AL MIJARES
Member

RICHARD ROHM
Member

ERIC WOOLERY
Member

- **Call to Order**
  - Chair Capata called the meeting to order at 3:03 p.m.

- **Welcome**
  - **Members Present:** Gary Capata, Laura Parisi, Richard Rohm and Eric Woolery
  - **Alternates Present:** Michelle Aguirre, Wendy Benkert
  - **Members Absent:** Frank Kim, Dr. Al Mijares and Dr. Andy Dunn
  - **Liaison Present:** Treasurer-Tax Collector Shari Freidenrich

- **Public Comments**
  - There were no public comments made.

- **Minutes**
  - Member Parisi moved to approve the minutes of the January 27, 2016 Treasury Oversight Committee (TOC) meeting. Member Rohm seconded the motion. **Approved 4-0.**

- **New Business**
  - **Receive and File Treasurer's Monthly Investment Report for January, February and March:** Treasurer Freidenrich presented the highlights of these reports. There were no compliance exceptions in January, February or March. During January, there were two changes to the Treasurer's Approved Issuer List. The Credit Investment Committee approved the addition of Orange County Taxable Pension Obligation Bonds Series 2016 A and placed Chevron Corporation on hold. During February, there were no changes to the Treasurer's Approved Issuer List. During March, there were two changes to the Treasurer's Approved Issuer List. The Credit Investment Committee completed their review of Berkshire Hathaway Inc. and Berkshire Hathaway Finance and removed both companies from being on hold. Alternate Benkert moved to receive and file these reports. Member Parisi seconded the motion. **Approved 6-0.**

  - **Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended December 31, 2015:** Mr. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance deficiencies identified. The Auditor-Controller and the Internal Audit Department proposed to reduce the number of days reviewed in the quarter from 10/month to 5/month, thus reducing the cost to pool participants. Alternate Aguirre moved to receive and file this report. Member Rohm seconded the motion. **Approved 6-0.**

    Action Item: New Business for discussion for the July TOC meeting

  - **Receive and File March 2016 TOC Compliance Summary:** Mr. Gorman explained the purpose of the summary and the type of information that can be found in it. There were no compliance incidents. Alternate Benkert moved to receive and file this report. Member Parisi seconded the motion. **Approved 6-0.**

- **Receive and File 2015 Audit Management Representation Letter:** Member Rohm moved to receive and file the letter. Alternate Aguirre seconded the motion. **Approved 6-0.**

- **Discuss Annual Audit Request for Proposal Process (RFP) Selection Criteria for auditing firms to conduct the Treasury Oversight Committee's Mandatory Annual Compliance Audit:** Mr. Gorman summarized the selection criteria document and primary areas.
  - Company background and experience
  - Understanding the scope of work
  - Has performed County audits and how many years preformed
  - Familiarity with investments and investment pools
  - Record of sub-standard work
  - We are requesting a fixed price bid

    Action Items: ***Send BidSync link to TOC***
    Reach out to other peer county Treasurers for RFP samples
    RFP top candidate to attend TOC October meeting to answer questions

- **Discuss Permitted Investments provided in the County's Investment Policy Statement for Possible Investment Purchases.** Treasurer Freidenrich handed out IPS sections for discussion. We are working on breaking out short-term and long-term issuers, and looking at using the following approved investments types:
  - Commercial paper, by adding high quality paper we could better meet liquidity needs of pool participants. Most peer counties use commercial paper.
  - Negotiable Securities
  - Money Market Mutual Funds
  - LAIF
  - Pre-refunded municipal debt
  - Medium term notes
  - JPA's
  - Investment Pools
  - Supranationals

- **Chair's Report:**
  - Vice Chair Parisi attended the CMTA Conference. The State Treasurer was the keynote speaker whose mission is:
    - Modernizing public financing
    - Developing LAIF software
  - Treasurer Freidenrich added that CMTA is changing the certification program to a smaller program and will forward the information to the TOC.

    Action Item: ***Send CMTA certification program information to TOC***

- **Treasurer's Report:**
  - Treasurer Freidenrich reported on the following topics:
    a. Update on first and second installments
    b. Update on eCheck and electronic payments received
    c. Update on Staffing changes
    d. Update on open Broker-Dealer application period
    e. Update on tax auction
    f. Update on bankruptcy
    g. Update on City of Placentia embezzlement

    Action Item: ***Send Press Release to TOC on County approved Plan B payoff from landfill proceeds***

- **Public Comments:**
    - There were no public comments.

      Action Item: ***Update Bylaws to remove public comments from the end of the TOC meeting***

- **Committee Member Comments:**
    - There were no Member comments.

- **Adjournment:**
    - Chair Capata adjourned the meeting at 4:20 p.m. to Wednesday, July 27, 2016, Auditor-Controller's Conference Room #300.

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

TREASURY OVERSIGHT COMMITTEE (TOC) AGENDA

Wednesday, April 27, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

GARY CAPATA, Chair | **LAURA PARISI,** Vice Chair | **DR. ANDY DUNN,** Member

FRANK KIM, Member | **DR. AL MIJARES,** Member | **RICHARD ROHM,** Member

ERIC WOOLERY, Member

1. Call to Order

2. Welcome

3. Public Comments

At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee, provided that, NO action may be taken on off-agenda items unless authorized by law.

4. Minutes

- Approve January 27, 2016 Minutes

6. New Business

- Receive and File Treasurer's Monthly Investment Report for January, February and March
- Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended December 31, 2015
- Receive and File March 2016 TOC Compliance Summary
- Receive and File 2015 Audit Management Representation Letter
- Discuss the Request For Proposal Selection Criteria for auditing firms to conduct the Treasury Oversight Committee's Mandatory Annual Compliance Audit
- Discuss Permitted Investments provided in the County's Investment Policy Statement for Possible Investment Purchases

7. Chair's Report

8. Treasurer's Report

9. Public Comments

At this time, members of the public may address the Committee regarding any item within the subject matter jurisdiction of the Committee provided that, NO action may be taken on off-agenda items unless authorized by law.

10. Committee Member Comments

At this time, members of the Treasury Oversight Committee may comment on agenda or non-agenda matters and ask questions of or give directions to staff, provide travel or member committee reports provided that, NO action may be taken on off-agenda items unless authorized by law.

11. Adjournment to Wednesday, July 27, 2016 at 3:00 P.M., Auditor/Controller's Conf. Room #300

OFFICE OF THE TREASURER-TAX COLLECTOR
SHARI L. FREIDENRICH, CPA, CCMT, CPFA, ACPFIM

TREASURY OVERSIGHT COMMITTEE MINUTES

Wednesday, July 27, 2016 at 3:00 p.m.
12 Civic Center Plaza, Conference Room 300, Santa Ana

GARY CAPATA Chair	**LAURA PARISI** Vice Chair	**DR. WILLIAM "ANDY" DUNN** Member
FRANK KIM Member	**DR. AL MIJARES** Member	**RICHARD ROHM** Member
ERIC WOOLERY Member		

- **Call to Order**
  - Chair Capata called the meeting to order at 3:00 p.m.

- **Welcome**
  - **Members Present:** Gary Capata, Laura Parisi, Richard Rohm and Eric Woolery, Dr. Al Mijares
  - **Alternates Present:** Michelle Aguirre, Wendy Benkert
  - **Members Absent:** Frank Kim and Dr. Andy Dunn
  - **Liaison Present:** Treasurer-Tax Collector Shari Freidenrich

- **Public Comments**
  - There were no public comments made.

- **Minutes**
  - Member Parisi moved to approve the minutes of the April 27, 2016 Treasury Oversight Committee (TOC) meeting. Member Rohm seconded the motion. **Approved 6-0.**

- **New Business**

  - **CMTA Certification Program** – Treasurer Freidenrich handed out CMTA program information as requested at the April 27, 2016 TOC meeting.

  - **Press Release on Landfill Proceeds** – Treasurer Freidenrich handed out the County Press Release regarding County approved Plan B payoffs from landfill proceeds as requested at the April 27, 2016 TOC meeting.

  - **RFP Process** – The audit RFP has not been processed yet. Reaching out to other peer counties for their RFP samples.

  - **Receive and File Treasurer's Monthly Investment Report for April, May and June:** Treasurer Freidenrich presented the highlights of these reports. There were no compliance exceptions in April, May or June. During April, May and June there were no changes to the Treasurer's Approved Issuer List. The Investment Pool Financial Statement Disclosures are posted to our website at ocgov.com/ocinvestments and emailed to pool participants. Member Mijares moved to receive and file these reports. Member Parisi seconded the motion. **Approved 7-0.**

  - **Receive and File Report of the Schedule of Assets Held by the County Treasury as of June 30, 2015**: Treasurer Freidenrich introduced Mr. Squires, Financial Manager. Mr. Squires explained this is an annual audit mandated by Government Code. There were no deficiencies in internal controls and no instances of non-compliance. Member Rohm moved to receive and file this report. Alternate Aguirre seconded the motion. **Approved 7-0.**

- **Receive and File 2015 County of Orange, California Management Letter for the Year Ended June 30, 2015:** Mr. Squires explained that this letter is part of the County's financial statement audit. There was one deficiency identified under internal controls in management review and approval. Procedures have been reviewed with staff stressing the importance of these items. Member Parisi moved to receive and file this report. Member Mijares seconded the motion. **Approved 7-0.**

- **Receive and File Continuous Compliance Auditing of the Treasury Investment Portfolio for the Quarter ended March 31, 2016:** Mr. Squires explained the purpose of the summary and the type of information that can be found in it. There were no compliance deficiencies identified. Alternate Aguirre moved to receive and file this report. Member Parisi seconded the motion. **Approved 7-0.**

- **Receive and File June 2016 TOC Compliance Summary:** Treasurer Freidenrich explained the purpose of the summary and the type of information that can be found in it. There were no compliance incidents. Member Parisi moved to receive and file this report. Member Rohm seconded the motion. **Approved 7-0.**

- **Review and Approve Revised Engagement Letter with Auditor-Controller Internal Audit Division to Provide Quarterly Compliance Review Services:** Treasurer Freidenrich explained the purpose of the letter. Mr. Suzuki (Internal Audit Division) explained the purpose of the report. Only five compliance issues have been self-identified since the beginning of this report in 2011. We recommend the scope of revisions be reduced from the current 30/quarter to 15/quarter which will be a great cost savings to pool participants. The five days per month are randomly selected. The TOC directed Internal Audit to present an annual report to the TOC with the findings, and at any time the TOC can make a change to require more or less samples. Alternate Aguirre moved to approve the engagement letter. Member Mijares seconded the motion. **Approved 7-0.**

- **Chair's Report:**
  - Chair Capata reported that he went to the Laguna Hills City Council meeting to speak and is honored to say he was appointed to the council for the next five months.

- **Treasurer's Report:**
  - Treasurer Freidenrich reported on the following topics:
    a. Update on training for TOC members
    b. Update on recruitment and staffing changes
    c. Update on compliance exceptions
    d. Update on OC Fire Authority presentation
    e. Update on annual report to City of Lake Forest and OCWD
    f. Update on audit
    g. Updated on tax collection and the reduction of incoming tax related phone calls
    h. Update on use of eCheck
    i. Update on average assessed value
    j. Update on Secured Property tax bill mailing
    k. Update on 6th Annual OC Financial Planning Day

- **Public Comments:**
  - There were no public comments made.

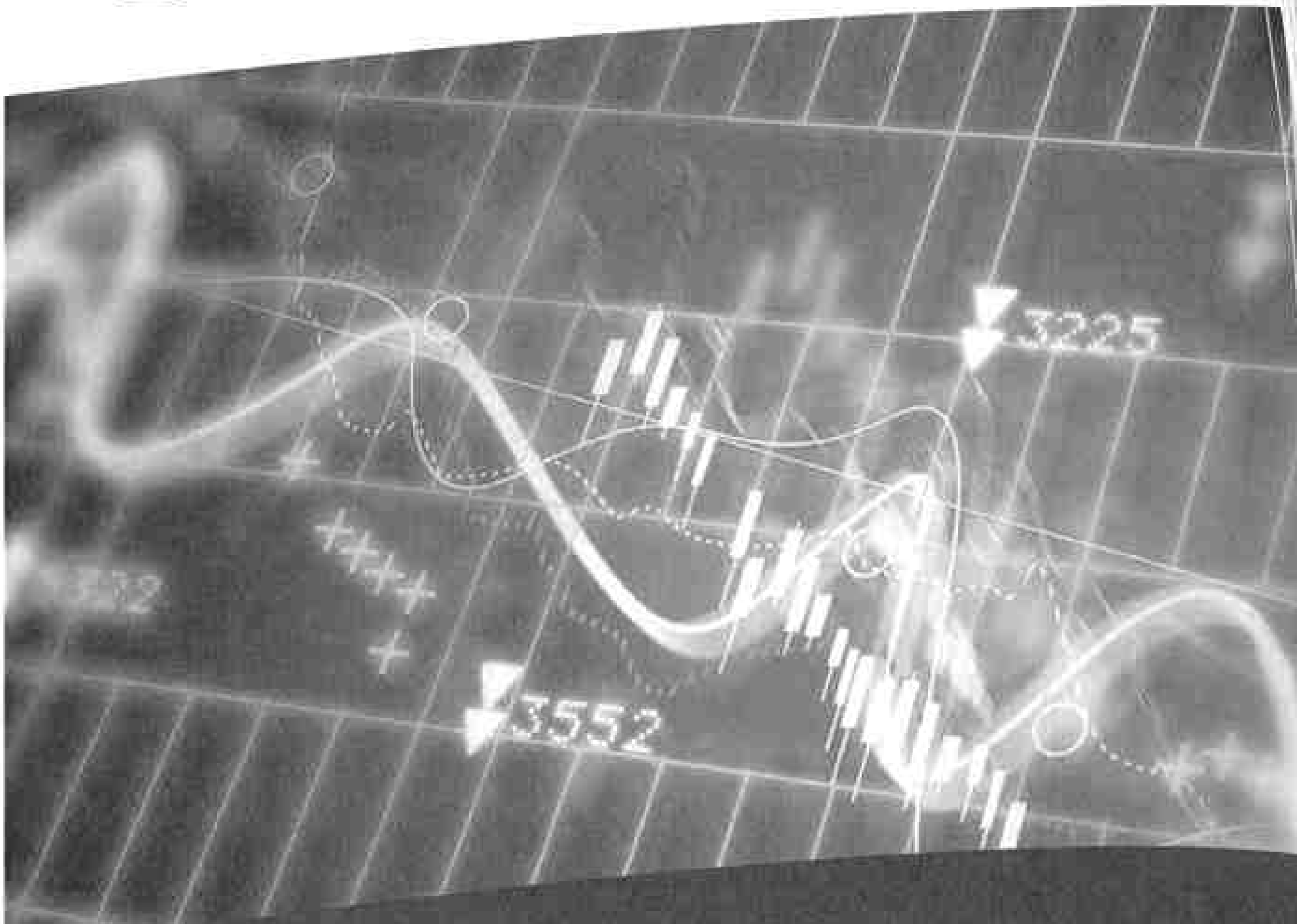
- **Committee Member Comments:**
  - Member Benkert discussed adding an alternate for Dr. Dunn. The TOC asked Treasurer Freidenrich to provide options to adding an alternate for Public Members.

- **Adjournment:**
  - Chair Capata adjourned the meeting at 3:50 p.m. to Wednesday, October 19, 2016, Auditor-Controller's Conference Room #300.

OC TREASURER'S RESPONSE TO QUESTION #21

Orange County Auditor-Controller

Internal Audit



Office of the Orange County Treasurer
Compliance Audit
For the Year Ended December 31, 2015

Audit Number 1513
Report Date: November 1, 2016

ORANGE COUNTY
AUDITOR-CONTROLLER
INTERNAL AUDIT

Eric H. Woolery, CPA

Orange County Auditor-Controller

Toni Smart, CPA	**Director, Internal Audit**
Scott Suzuki, CPA, CIA, CISA	**Assistant Director**
Carol Swe, CPA, CIA, CISA	**Senior Audit Manager**
Michael Steinhaus, CPA, CGMA	**Audit Manager I**
Scott Kim, CPA	**Senior Auditor**

12 Civic Center Plaza, Room 200
Santa Ana, CA 92701

Auditor-Controller Web Site
www.ac.ocgov.com

ERIC H. WOOLERY, CPA
AUDITOR-CONTROLLER

Transmittal Letter

November 1, 2016

Audit No. 1513

TO: Members, Treasury Oversight Committee

SUBJECT: Office of the Orange County Treasurer Compliance Audit
For the Year Ended December 31, 2015

At the direction of the Orange County Treasury Oversight Committee, we have completed our examination of the Office of the Orange County Treasurer's compliance with California Government Code Sections 27130 through 27137 and the Orange County Treasurer Investment Policy Statement during the year ended December 31, 2015. This annual examination is required by Government Code Section 27134. Our final report is attached for your review.

I submit an **Audit Status Report** quarterly to the Audit Oversight Committee (AOC) and a monthly report to the Board of Supervisors (BOS) where I detail any critical and significant audit findings released in reports during the prior month and the implementation status of audit recommendations as disclosed by our Follow-Up Audits. The results of this engagement will be included in future status reports to the AOC and BOS.

Please feel free to call me should you wish to discuss any aspect of our audit report. Additionally, we will request the department complete a **Customer Survey** of Audit Services. The Office of the Orange County Treasurer will receive the survey shortly after the distribution of our final report.

Toni Smart, CPA, Director
Auditor-Controller Internal Audit Division

Attachments

Other recipients of this report are listed on the Independent Accountant's Report on pages 1 and 2.

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Office of the Orange County Treasurer
Compliance Audit
Audit No. 1513

For the Year Ended December 31, 2015

Independent Accountant's Report

Independent Accountant's Report

Gary G. Capata, CPA, Chair, Public Member
Treasury Oversight Committee
625 North Ross Street, Building 11
Santa Ana, California 92701

We have examined the Office of the Orange County Treasurer's (Treasurer) compliance with the Treasury Oversight Committee provisions contained in California Government Code, Article 6, Sections 27130 through 27137 and the Orange County Treasurer Investment Policy Statement for the year ended December 31, 2015. The Treasurer's management is responsible for compliance with those requirements. Our responsibility is to express an opinion on the Treasurer's compliance based on our examination.

Our examination was conducted in accordance with attestation standards established by the American Institute of Certified Public Accountants and, accordingly, included examining, on a test basis, evidence about the Treasurer's compliance with those requirements and performing such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion. Our examination does not provide a legal determination on the Treasurer's compliance with specified requirements.

In our opinion, the Treasurer complied, in all material respects, with the aforementioned requirements for the year ended December 31, 2015.

This report is intended solely for the information and use of the County Treasury Oversight Committee, the management of the Office of the Orange County Treasurer, and the Board of Supervisors and is not intended to be and should not be used by anyone other than these specified parties.

Respectfully Submitted,

Toni Smart, CPA, Director
Auditor-Controller Internal Audit Division
Santa Ana, California

November 1, 2016

Members, Treasury Oversight Committee Distribution:

Gary G. Capata, Public Member (Chair)
Laura Parisi, Public Member (Vice-Chair)
Hon. Dr. Al Mijares, County Superintendent, OC Department of Education
Eric Woolery, Auditor-Controller
Frank Kim, County Executive Officer
William "Andy" Dunn, Public Member
Richard A. Rohm, Public Member

Independent Accountant's Report

Distribution Pursuant to Audit Oversight Committee Procedure No. 1:

Members, Board of Supervisors
Members, Audit Oversight Committee
Shari L. Freidenrich, Treasurer-Tax Collector
Paul C. Gorman, Chief Assistant Treasurer-Tax Collector – Treasury
JC Squires, Financial Manager, Treasurer-Tax Collector
Michelle Aguirre, Chief Financial Officer
Claire Moynihan, Director, Central Accounting Operations, Auditor-Controller
Foreperson, Grand Jury
Robin Stieler, Clerk of the Board of Supervisors
Macias Gini & O'Connell LLP, County External Auditor

Supplemental Information

Office of the Orange County Treasurer
Compliance Audit
For the Year Ended December 31, 2015

Background and General

In 1995, the California legislature passed provisions requiring each county to establish an oversight committee of from 3 to 11 members representing various organizations, where the pool of organizations was also specified in the legislation. The purpose of this committee was to oversee the policies that guide the investment of public funds. The committee was not to impinge on the day-to-day operations of the County Treasurer, but rather to review and monitor the Treasurer's investment policy and reporting. In 2005, the law changed to make the committee optional at the discretion of a California county. The County of Orange has elected to continue its Treasury Oversight Committee (TOC).

Establishment and Composition of Committee

The TOC was established by the Board of Supervisors (BOS) on December 19, 1995 by Resolution No. 95-946 in accordance with the California Government Code Article 6 of Division 2 of Title 3, Sections 27130 through 27137. The TOC structure approved by the BOS consists of seven members: the County Auditor-Controller or designee, the County Executive Officer or designee, the County Superintendent of Schools or designee, and four members of the public. The members of the TOC as of December 31, 2015 were as follows:

Name	Member Type
Laura Parisi (Chair)	Public Member
William "Andy" Dunn (Vice Chair)	Public Member
Gary Capata	Public Member
Frank Kim	County Executive Officer
Al Mijares	County Superintendent of Schools
Richard Rohm	Public Member
Eric Woolery	Auditor-Controller

Compliance Audit Requirement

The oversight legislation included many specific requirements such as the required contents of the Treasurer's Investment Policy. California Government Code Section 27134 requires an annual audit to determine compliance with the provisions. This audit serves to comply with that requirement.

Committee Operation

During 2015, five TOC meetings were held on the following dates: January 28, April 22, July 29, September 28, and October 28. We reviewed the minutes and believe that the meetings were properly conducted in order to provide oversight.

Investment Policy Statement Requirement

California Government Code Section 27133 requires the County Treasurer to annually prepare an investment policy statement. The Orange County Treasurer Investment Policy Statement (IPS) is reviewed by the TOC and submitted to the BOS for approval on an annual basis. We found that this was properly done and a policy was submitted to and approved by the Orange County Board of Supervisors on December 16, 2014.

Supplemental Information

Investment Policy Review

We reviewed the requirement specified in Government Code Section 27133, subsections (a) through (h). We believe the policy addressed all the required provisions as follows:

Requirement	Policy Section	Deemed Compliant
(a) Authorized securities	VI	Yes
Maximum percentage by type	VIII	Yes
(b) Maximum terms	VIII	Yes
(c) Criteria for selection of brokers	XI	Yes
Prohibition of political donations	XI	Yes
(d) Limits on gifts	X	Yes
(e) Reporting to Oversight Committee	XXI	Yes
(f) Calculation of treasurer's costs	XVI	Yes
(g) Voluntary depositors	XVII	Yes
(h) Requests to withdrawal	XVIII	Yes

As shown above, we believe the policy adopted contained all the provisions specified in the oversight legislation.

Investment Compliance Requirements

The investment compliance requirements presented in Government Code Sections 27130 through 27137 are summarized as follows:

Government Code 27130

The Legislature finds and declares that local agencies, including school districts, should participate in reviewing the policies that guide the investment of those funds.

Government Code 27131

The board of supervisors in each county may, if the county is investing surplus funds, establish a county treasury oversight committee consisting of from three to eleven members. Members shall be nominated by the treasurer and confirmed by the board of supervisors.

Government Code 27132

The county treasury oversight committee shall consist of members appointed from the following: county treasurer; county auditor, auditor-controller, or finance director; a representative appointed by the county board of supervisors; the county superintendent of schools or designee; a representative selected by a majority of the presiding officers of the governing bodies of the school districts and community college districts in the county; a representative selected by a majority of the presiding officers of the legislative bodies of the special districts; up to five other members of the public who either have expertise or an academic background in public finance and are economically diverse and bipartisan in political registration.

Supplemental Information

Investment Compliance Requirements, continued

Government Code 27132.1
Committee members may not be employed by an entity that has contributed to the campaign of a candidate for the office of local treasurer, or contributed to the campaign of a candidate to be a member of a legislative body of any local agency that has deposited funds in the county treasury, in the previous three years or during the period that the employee is a member of the committee.

Government Code 27132.2
Committee members may not directly or indirectly raise money for a candidate for local treasurer or a member of the governing board of any local agency that has deposited funds in the county treasury while a member of the committee.

Government Code 27132.3
Committee members may not secure employment with, or be employed by, bond underwriters, bond counsel, security brokerages or dealers, or financial services firms with whom the treasurer is doing business during the period that the person is a member of the committee or for one year after leaving the committee.

Government Code 27132.4
Committee meetings shall be open to the public and subject to the Ralph M. Brown Act.

Government Code 27133
The county treasurer shall annually prepare an investment policy that will be reviewed and monitored by the county treasury oversight committee. The investment policy shall include subsections (a) through (h) noted in the Investment Policy Review Section on page 4.

Government Code 27134
The county treasury oversight committee shall cause an annual audit to be conducted to determine the county treasury's compliance with this article [Government Code Sections 27130 through 27137].

Government Code 27135
The costs of complying with this article shall be county charges and may be included with those charges enumerated under Section 27013.

Government Code 27136
Notwithstanding any other provision of law, any local agency, public agency, public entity, or public official that has funds on deposit in the county treasury pool and that seeks to withdraw funds for the purpose of investing or depositing those funds outside the county treasury pool, shall first submit the request for withdrawal to the county treasurer before withdrawing funds from the county treasury pool.

The county treasurer shall evaluate each proposed withdrawal for its consistency with the criteria adopted pursuant to subdivision (h) of Section 27133. Prior to approving a withdrawal, the county treasurer shall find that the proposed withdrawal will not adversely affect the interests of the other depositors in the county treasury pool.

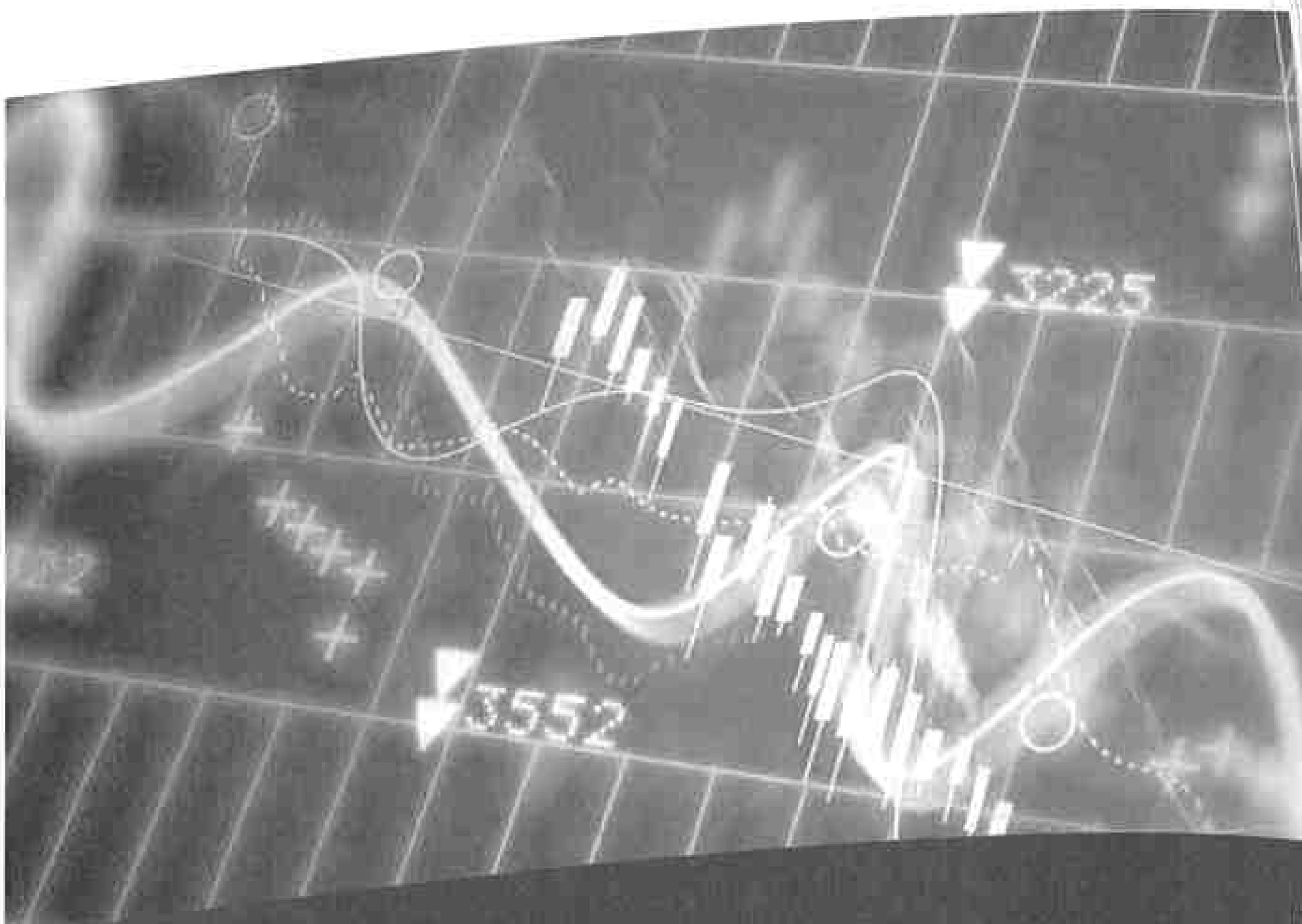
Government Code 27137
Nothing in this article shall be construed to allow the county treasury oversight committee to direct individual investment decisions, select individual investment advisors, brokers, or dealers, or impinge on the day-to-day operations of the county treasury.

Supplemental Information

Conclusion

We reviewed the Office of the Orange County Treasurer's actual practices during 2015 to determine compliance with California Government Code Sections 27130 through 27137 and the Orange County Treasurer Investment Policy Statement. In our opinion, the Orange County Treasurer complied, in all material respects, with the aforementioned requirements for the year ended December 31, 2015.

Orange County Auditor-Controller
Internal Audit



Continuous Compliance Monitoring of the Treasurer's Investment Portfolio for the Quarter Ended September 30, 2016

Audit Number 1615
Report Date: December 6, 2016

ORANGE COUNTY
AUDITOR-CONTROLLER
INTERNAL AUDIT

Eric H. Woolery, CPA
Orange County Auditor-Controller

Toni Smart, CPA	Director, Internal Audit
Scott Suzuki, CPA, CIA, CISA	Assistant Director
Carol Swe, CPA, CIA, CISA	Senior Audit Manager
Scott Kim, CPA	Senior Auditor

12 Civic Center Plaza, Room 200
Santa Ana, CA 92701

Auditor-Controller Web Site
www.ac.ocgov.com

ERIC H. WOOLERY, CPA
AUDITOR-CONTROLLER

Transmittal Letter

December 6, 2016

Audit No. 1615

TO: Members, Treasury Oversight Committee

SUBJECT: Continuous Compliance Monitoring of the Treasurer's Investment Portfolio For the Quarter Ended September 30, 2016

At the request of the Treasury Oversight Committee, we have completed the Continuous Compliance Monitoring of the Treasurer's Investment Portfolio for the Quarter Ended September 30, 2016.

I submit an **Audit Status Report** quarterly to the Audit Oversight Committee (AOC) and a monthly report to the Board of Supervisors (BOS) where I detail any critical or significant findings released in reports during the prior month and the implementation status of recommendations as disclosed by our Follow-Up Audits. Although there were no findings noted during this engagement, the results will be included in future status reports to the AOC and BOS.

Please feel free to call me should you wish to discuss any aspect of our report. Additionally, we will request the department complete a **Customer Survey** of Audit Services. The Treasurer-Tax Collector will receive the survey shortly after the distribution of our final report.

Toni Smart, CPA, Director
Auditor-Controller Internal Audit Division

Attachment

Other recipients of this report:
- Members, Board of Supervisors
- Members, Audit Oversight Committee
- Shari L. Freidenrich, Treasurer-Tax Collector
- Eric H. Woolery, Auditor-Controller
- Frank Kim, County Executive Officer
- Paul C. Gorman, Chief Assistant Treasurer-Tax Collector - Treasury
- JC Squires, Financial Manager, Treasurer-Tax Collector
- Robin Stieler, Clerk of the Board of Supervisors
- Foreperson, Grand Jury
- Macias Gini & O'Connell LLP, County External Auditor

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Continuous Compliance Monitoring of the
Treasurer's Investment Portfolio
For the Quarter Ended September 30, 2016
Audit No. 1615

Internal Auditor's Report

Audit No. 1615 **December 6, 2016**

Gary G. Capata, CPA, Chair, Public Member
Treasury Oversight Committee
625 North Ross Street, Building 11
Santa Ana, California 92701

We have completed the continuous compliance monitoring of the Treasurer's Investment Portfolio for the quarter ended September 30, 2016. The purpose of our engagement was to determine whether the Orange County Money Market Fund, Educational Money Market Fund, John Wayne Airport Fund (all collectively referred to as Money Market Funds), and Extended Fund managed by the Orange County Treasurer were in compliance with specific provisions of the Investment Policy Statement (IPS) and that portfolio non-compliance, including technical incidents, were properly reported in the Treasurer's Monthly Investment Reports for July, August, and September 2016.

We perform our continuous compliance monitoring of the Treasurer's investment portfolio at the request of the Treasury Oversight Committee. Our continuous monitoring is designed to provide limited assurance to the Treasury Oversight Committee and the Office of the Treasurer-Tax Collector that the Treasurer's investment portfolio is in compliance with specific provisions of the IPS and that compliance deficiencies or technical incidents and required disclosures are properly reported.

Our compliance procedures included judgmentally selecting five (5) business days for testing from each month and importing the selected electronic file downloads from the Treasurer's Quantum System into ACL, a computer-assisted audit technique software, for purposes of performing calculations and validating that investment purchases were in compliance with the IPS by reviewing and testing supporting documentation.

Based on our continuous compliance monitoring for the selected dates, **no compliance deficiencies were identified**. When applicable, our report also includes information regarding the Treasurer's reporting of technical incidents in the Monthly Investment Reports. The Treasurer defines a technical incident as an event, other than the purchase of a security, which causes an IPS limit to be exceeded. The most common cause of a technical incident is when the total investment pool holdings decrease causing the relative percentage of holdings to increase.

The following lists the procedures performed and results achieved from the continuous compliance monitoring procedures:

1. **Authorized Investments (IPS Section VI, VII, VIII, IX, XI):** We judgmentally selected a sample of 28 investments representing each pool. These were selected from investments purchased on the 15 business days selected for review from July to September 2016. For the sample selected, we independently confirmed that the investments conform to authorized investment requirements in accordance with the IPS. We also confirmed for the Pooled Funds that the Treasurer used issuers and brokers who were on the Treasurer's authorized lists.

   Results: We found no exceptions.

2. **Diversification Compliance (IPS Section VIII.1):** We performed calculations to determine that the Money Market and Extended Fund portfolios met the diversification limits for investment types in accordance with the IPS.

   Results: We found no exceptions.

3. **Weighted Average Maturity (WAM) Limitations (IPS Section VIII.2):** We performed calculations to determine that WAM did not exceed 60 days for the Money Market Funds in accordance with the IPS.

   Results: We found no exceptions.

4. **Maximum Maturity Limitations (IPS Section VIII.2):** We confirmed that the maximum maturity of any portfolio instrument purchased did not exceed 13 months (397 days) for the Money Market Fund and 5 years (1,826 days) for the Extended Fund in accordance with the IPS.

   Results: We found no exceptions.

5. **Investment Type Maximum Maturity Limitations (IPS Section VIII.1):** We confirmed that the maximum maturity of investments purchased for commercial paper, bankers' acceptances, and repurchase agreements did not exceed 270 days for commercial paper, 180 days for bankers' acceptances, or one-year (365 days) for repurchase agreements in accordance with the IPS.

   Results: We found no exceptions.

6. **Issuer Limitations (IPS Section VIII.1):** We performed calculations to determine that the Money Market and Extended Fund portfolios did not exceed the investment limits for issuers in accordance with the IPS.

   Results: We found no exceptions.

7. **Financial Reporting (IPS Section XXI):** We reviewed the investment portfolio for a sample of 15 business days to determine whether there were any instances of non-compliance or technical incidents that should be reported in accordance with the IPS. We also reviewed the Treasurer's Monthly Investment Reports for the months of July, August, and September 2016 to determine whether instances of portfolio non-compliance or technical incidents, if any, were properly reported.

   Results: We found no exceptions. No compliance deficiencies or technical incidents were noted in the Treasurer's Monthly Investment Reports for the months of July, August, and September 2016. In addition, no compliance deficiencies or technical incidents were identified in our sample of 15 business days selected for review.

This report is intended solely for the information and use of the Treasury Oversight Committee and the Office of the Treasurer-Tax Collector; however, this report is a matter of public record and its distribution is not limited.

Respectfully Submitted,

Toni Smart, CPA, Director
Auditor-Controller Internal Audit Division

OC TREASURER'S RESPONSE TO QUESTION #22

COUNTY OF ORANGE
OFFICE OF THE TREASURER-TAX COLLECTOR

Responses to Findings and Recommendations

2012-2013 Orange County Grand Jury Report

"An Investment and Compliance Review of the Orange County Treasurer"

Summary Response Statement:

On June 24, 2013, the Grand Jury released a report entitled "*An Investment Compliance Review of the Orange County Treasurer*." This report directed responses to Findings and Recommendations from the Office of the Orange County Treasurer-Tax Collector.

The County Treasurer-Tax Collector appreciates the work of the Grand Jury and their comments in conjunction with this report.

County Treasurer-Tax Collector Response to Grand Jury Findings:

F1. The Treasurer does not have a securities representative (staff member). The Treasurer shall consider the benefits of having a member of the investment team equity licensed.

Response: Agrees with finding.

F2. Having a licensed securities representative on staff could be a conflict of interest.

Response: Agrees with finding.

F3. The Treasurer leverages several information systems for tax collection and investments. The majority are older legacy systems. These systems have limited flexibility and are expensive to change and enhance.

Response: Agrees with finding.

County Treasurer-Tax Collector Response to Grand Jury Recommendations:

R1. The Treasurer shall consider the benefits of having a current staff member licensed as a Securities representative. (Series 7, 51 and 63)

Response: The recommendation will not be implemented, as Financial Industry Regulatory Authority, Inc. (FINRA) rules do not permit an individual with a Series 7 (General Securities Representative), a Series 51 (Municipal Fund Securities Principal), or a Series 63 (Uniform Securities Agent State Law) license to maintain their registrations (licenses) while employed at a non-FINRA member firm. The County of Orange does not meet the qualifications to apply for FINRA membership.

As a condition for FINRA membership, an applicant must first be registered as a broker-dealer with the U.S. Securities and Exchange Commission (SEC); the County of Orange is not a registered broker-dealer with the

SEC. Therefore, members of the Treasurer's investment team cannot maintain a Series 7, Series 51, or Series 63 registration (license).

FINRA rules require that a candidate seeking FINRA registration (licensing) for a Series 7 or Series 51 must be employed by, or associated with, a FINRA member firm to be eligible to take these examinations and to maintain an active registration (license). A candidate for the Series 63, although not required to be employed by or associated with a FINRA member firm to take the examination, must be employed by a FINRA member firm within two years after passing the examination in order to become registered (licensed).

Finally, if a registered (licensed) Series 7, Series 51, or Series 63 individual leaves their existing FINRA member firm, their registrations (licenses) are immediately terminated. That individual generally has two years to be re-employed and re-registered (licensed) with a FINRA member firm without having to take the examinations again.

R2. The Treasurer shall address the conflict of interest issues with having a securities licensed staff member.

Response: The recommendation will not be implemented, as a conflict exists in that the FINRA rules do not permit an individual with a Series 7, Series 51, or Series 63 license to maintain their registrations (licenses) while employed at a non-FINRA member firm. The County of Orange does not meet the qualifications to apply for FINRA membership.

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R3. The Treasurer shall address the expense, time restraints, and expectations related to improving the information systems.

Response: The recommendation has not been implemented, but will be in the future.

Subject to approval by the Board of Supervisors, the County has plans to replace its property tax system within the next five years, depending upon availability of feasible alternatives and funding. The Treasurer is actively working with the Auditor-Controller, Clerk of the Board, and the County Executive Office Information Technology Department to analyze such alternatives.

AN INVESTMENT AND COMPLIANCE REVIEW
OF THE ORANGE COUNTY TREASURER

SUMMARY

Orange County filed bankruptcy on December 6, 1994, and recorded a loss of $1.7 billion, the largest loss by a local County Government investment pool.

The bankruptcy was a result of the County Treasurer's wrong-way interest rate gamble with public funds, and a leveraged investment strategy ignoring the wisdom that high return investments are invariably high risk. The Treasurer circumvented its fiduciary responsibilities by manipulating the $7.6 billion investment pool with a strategy very few people in the County were aware of and even fewer understood. The Treasurer was risking funds belonging to the Orange County Government, Cities, Schools and Special Districts. Many of the approximate 200 Orange County agencies were required to invest their funds in the County Investment Pool. Other municipalities attracted by the high interest rates voluntarily joined.

The Treasurer's investment strategies stemmed from the loss of tax revenue that began with Proposition 13 and initiatives that severely limited the ability for local government to raise taxes. The pressure of these initiatives led to the State's decision to loosen municipal investment guidelines, clearing the way for the Treasurer to use pooled funds to borrow money, invest in derivatives and long- term bonds that paid high yields. The Treasurer freely pledged borrowed money as collateral.

The Investment Pool increased from $7.6 billion to $20.6 billion as the Treasurer borrowed $2 for every $1 on deposit increasing the investment pool by $13.0 billion. The Treasurer borrowed funds to invest in securities with yields inversely related to interest rates. In 1994, interest amounted to twelve percent of revenue for Orange County compared to three percent for all other California counties. The interest earned from this strategy was a major source of revenue to the general fund. The Treasurer projected a 35 percent contribution from interest earnings to the general fund for fiscal year 1995.[1]

In 1994, the Federal Reserve Board began a series of interest rate increases that negatively affected the bond market. In 1994, the Orange County Supervisors realized that the portfolio was sensitive to interest rate changes and future interest rate adjustments were difficult to predict. Orange County's heavily leveraged interest-rate portfolio suffered a huge impact from the sudden increase in interest rates. The County was unable to sell off the risky securities as lenders threatened to seize pooled assets held as collateral. The County did not have the capital to withstand a "run on the investment pool" by local government depositors and soon after the first lender decided to take action, the County government declared bankruptcy. The bankruptcy prevented pooled participants from withdrawing funds, resulting in $7.6 billion of frozen assets belonging to Orange County cities, school districts, transportation, water, and sanitation agencies.

[1] The second annual California forum report dated March 18, 1998

The bankruptcy forced the Board of Supervisors and State officials to respond to this crisis by enacting legislation directing local government to invest based on the principals of safety, liquidity and then yield. The legislators in 1995 introduced and enacted systems of checks and balances requiring the County to establish oversight committees with certain reporting responsibilities. In accordance with California Government Code Section 53600 and the Orange County resolution, the Treasurer has been charged with the authority to invest and re-invest county funds. The Treasurer retains the authority to amend the investment policy guidelines and procedures in order to comply with its responsibilities as chief investment officer and banker of county funds. The Treasurer annually prepares an Investment Policy and delegates the investment authority which is then reviewed by the Oversight Committee and approved by the Board of Supervisors.

The Treasurer plays a major role in the financial infrastructure of local government and is the custodian of county funds. While the changes may restrict some investment choices and require greater oversight, the Treasurer still maintains flexibility for making prudent investment choices within the investment policy guidelines. This freedom of choice allows the Treasurer to select investments that are best suited for the individual pooled participants.

REASON FOR STUDY

The most recent Grand Jury review of the office of the Treasurer was in 2008. The Grand Jury, in 2008-2009, was concerned with the Treasurer's investment position in the Structured Investment Vehicles market. Structured Investment Vehicles are pooled investment assets that attempt to profit from credit spreads between short-term debt and long-term structured products such as asset backed securities.

Asset backed securities are the buying and bundling of loans consisting of mortgages, student debt and commercial loans and sold to investors. Often, a bundle of loans is divided into separate securities with different levels of risk, liquidity and transparency. Funding for these investments comes from the issuance of commercial paper that is continuously renewed or rolled over. This type of investment carries a very slim margin for error. One source of risk comes from the fact that the long-term security might lose value when compared to short-term investments. If this happens, one is essentially paying a higher rate of interest than the asset is earning. This is disastrous for a pooled investment portfolio.

In 2009, the Whistlejacket Structured Investment Vehicle defaulted as investors stopped buying hard to value securities as losses on subprime mortgages mounted.

The Structured Investment Vehicle could not sell short-term debt to finance high-yielding assets, forcing the County to liquidate its position for a loss of $7.6 million on August 19, 2010. The Comprehensive Financial Annual Reports as (CAFR) as of June

30, 2012, reported that the current Orange County Investment Pool does not include investments in derivatives and prohibited Structured Investment Vehicles.

The 2008-2009 Grand Jury also cited a breakdown in the oversight process related to the pooled investment selections and compliance.

METHOD OF INVESTIGATION

Penal Code 925-933.6 provides the Grand Jury with the authority to access all required documents necessary to investigate the financial stewardship responsibilities of the Orange County Treasurer. The focus of this study was to evaluate the current investment practices and responsibilities of the Orange County Treasurer. For each discipline evaluated, the Grand Jury collected policies, state statutes, and directives related to the issues under study. The reports and documents collected demonstrate the approved investment and procedural choices made available to the Treasurer /Tax Collector. The analysis evaluates the systems the Treasurer employed to assess the relative safety, liquidity and yield. The Grand Jury researched the following resources for this study:

- ***Treasurer and staff education and experience***
- ***Weighted average to maturity and restrictions***
- ***Portfolio yields and market values***
- ***Credit quality portfolio allocation and restrictions***
- ***Internal Audit Reports and recommendations***
- ***Bylaws and statutes***
- ***Investment goals, conditions and restrictions***
- ***Investment choices and asset allocation requirements***
- ***Compliance reports***
- ***Follow-up audit reports***
- ***Investment composition summary***
- ***Approved Issuer list***
- ***Information systems***
- ***Standard and Poor's investment pool ratings***
- ***Investment evaluation platform and external investment support***
- ***Interviews with the Treasurer, staff and auditors***

BACKGROUND AND FACTS

The Treasurer is a major principal in County financing. The Treasurer is an elected official and the Orange County banker in charge of receiving and investing County, City, School District and Special Districts funds. Pool participants deposit cash receipts and revenues with the County Treasurer, which are managed in pooled accounts under the auspices of the Treasurer's staff. The Treasurer is also responsible for the collection of taxes and revenues in order to satisfy the mandates imposed by the State of California.

This examination of the Treasurer provided the Grand Jury with an overview of the County Investment Policy, and the process used to determine if the investment choices are compliant. The review also provided an understanding of the methods used by the Treasurer to measure the risks and rewards associated with investment strategies that ideally work toward achieving and maintaining appropriate levels of success.

The investment requirements and strategies for the $6 billion portfolio are extremely conservative and are required to conform to all State statutes and County resolutions. The Treasurer manages the County's investments by combining certain County funds and funds of other participating members into pooled accounts. The Treasurer invests and manages public funds in a manner that will provide security of principal as well as achieve yield to meet the cash requirements and liquidity schedules of pool members. The Treasurer also oversees a number of functions related to bonds issued by approved local entities.

Orange County government provides many essential services that affect every county resident while continuing to manage the many challenges of shrinking revenues. As with other Counties and jurisdictions, the state of the recent economy, and past experience have prompted the Treasurer to reassess its operations and consider cost saving measures for doing business while managing its many diverse responsibilities.

THE TREASURERS MISSION STATEMENT

IMPLEMENT BEST BUSINESS PRACTICES AND FISCAL ACCOUNTABILITY WHICH MAXIMIZE VALUE, MINIMIZE COSTS AND PROVIDE EXCELLENT TAXPAYER/CUSTOMER SERVICES TO EXTERNAL CUSTOMERS

TREASURER/STAFF EXPERIENCE AND EDUCATION

The Treasurer is a Certified Public Accountant with 16 years of public service experience in managing city finances and investment portfolios. The Treasurer earned a degree in Business Administration with an emphasis in Accounting from Washington State University and has achieved numerous industry Certifications. Industry related certifications serve as a benchmark of competency and signify that the designee has demonstrated the knowledge and skills required to execute critical functions related to their position.

Certification is the process by which an association or industry grants recognition to an individual who has met specific work qualifications or performance standards. Performance standards identify the knowledge an individual needs to advance, and is the basis for assessment and certification. The Treasurer has achieved, and maintains the following certifications:

- Certified California Municipal Treasurer (CCMT)

This certification was established for current financial professionals working in the field of public finance in an appointed or elected capacity. Municipal finance, like other professions, requires special knowledge and skills. This certification recognizes professional attainment, and insures that continuing education requirements are completed. The CCMT program is designed to advance the professionalism of a municipal treasurer, finance officer, or chief financial officer of municipalities.

- Certified Public Finance Administrator (CPFA)

This certification is awarded by the Association of Public Treasurers. The individual awarded this certification is an elected or appointed treasurer, deputy or assistant treasurer, responsible for the performance and supervision of investment, debt and treasury activities. The Treasurer also completed the requirements for the advanced certification for the CPFA. The advanced program focused on risk analysis, investment duration and the quantification of risk in a portfolio. The Treasurer is the current president of the Association of Public Treasurer of the United States and Canada, and the past President of the California Municipal Treasurers Association.

- Certified Public Funds Investment Manager (CPFIM)

The CPFIM program is provided by the Association of Public Treasurers of the United States and Canada. This certification recognizes the designees experience in investment policies, internal controls and mitigating risk. The Treasurer has also completed the required curriculum for the advanced ACPFIM certification.

The Chief Assistant Treasurer/Tax Collector is a Certified Public Accountant with 17 years of public service with the County of Orange. The Chief Assistant Treasurer earned a degree in Business Administration with an option in accounting from California State Long Beach and attained the following industry certifications:

- Certified Treasury Professional (CTP)

This certification recognizes a professional with a background in finance. The holder of this certification is disciplined in the following:

  - Revenue collection and obligation payments
  - Cash processing, reconciliation and analyzing financial statements
  - Forecasting and monitoring cash flow requirements

- Certified Public Funds Investment Manager (CPFIM)

The CPFIM manager program is nationally recognized and offered by the Association of Public Treasurers of the United States and Canada. This certification recognizes the designees experience in investment policies, internal control, identifying and mitigating risk, investment options and characteristics.

- Certified Fixed Income Practitioner (CFIP)

  The holder of this certification has demonstrated their commitment to financial literacy, transparency and excellence in fixed income investing. This designation is designed for public agencies, institutional bond investors and fiduciaries. As with all certifications, the CFIP has continuing education requirements in order to maintain its use and promotion by the designee.

The Assistant Treasurer/Tax Collector has earned an MBA and a degree in Business Economics from USC-Marshall School of Business and has served the County of Orange for 6 years. The Assistant Treasurer holds the following certification:

- CHARTERED FINANCIAL ANALYST (CFA)

  The CFA charter holder is required to pass exams covering areas of accounting, economics, ethics, money management and security analysis. The CFA certification is considered the gold standard in the field of investment analysis. An advance degree (MBA) is a prerequisite for achieving this certification. The CFA is a specialized credential that is structured for candidates working in the areas of investment management and as an analysis/portfolio manager.

The Assistant Treasurer/Tax Collector Investments has a Bachelor of Arts degree in Business Economics from Chapman University. The portfolio manager is responsible for staying current with market trends, and assisting the staff members with strategic decisions.

2011- 2012 TREASURER AND STAFF ACCOMPLISHMENTS

The Grand Jury reviewed the following published summary of accomplishments related to this review of the Orange County Treasurer.

- *Held user conferences to streamline procedures*
- *Revamped investment credit process to focus on safety*
- *Increased use of cost effective payment options*
- *Held cash handling class for pool participants*
- *Reduced fees by implementing a temporary transfer program*
- *Implemented a "Follow the Money" training program*
- *Reduced expenses by $2.3 million*
- *Reduced credit card fees and charge on property tax payments*

In addition to the above, the Treasurer has published a complete list of accomplishments at **www.ttc.ocgov.com.**

INVESTMENT GUIDANCE AND SUPPORT SYSTEMS

The Grand Jury is aware that all investments involve some form of risk, and that efficient financial management combines safety of principal alongside opportunities for growth. Equally important is that a diversified investment portfolio is designed to neutralize economic volatility and provide for steady returns amidst numerous economic scenarios, and yet still carry distinct risks. Diversification strategies are dynamic, and vary according to risk tolerance and particular goals and requirements. For example, liquidity requirements must ensure that pooled participants have sufficient funds available to meet required expenses.

As mandated by the Orange County Treasurer Investment Policy Statement, the Treasurer has the authority under California Government Code Section 53600, to invest in specific types of securities.

The Treasurer may execute an authorized investment transaction with or through broker/dealers, banks or counterparties. The broker-dealer partnership provides the Treasurer and staff support with specific categories of investments. Investments may not be made for speculation, but for considering first the safety and liquidity of capital and finally yield. Investments are made with the same judgment, care, prudence, discretion, and intelligence that a person would use managing their own financial affairs.

The Treasurer annually reviews the financial conditions, services provided, and registration status of current broker-dealers authorized to provide financial services to the County. Financial Institutions and broker-dealers who desire to become qualified for investment transactions within the County must provide the following for consideration:

* *Broker Dealer Questionnaire*
* *The Firms' Audited Annual Report*
* *Broker-Dealer Status Reports*
* *Wiring and Delivery Instructions*
* *Municipal Securities Rulemaking Board G-37 filing for the past two years*

THE BLOOMBERG INVESTMENT SYSTEMS AND GUIDANCE

The Grand Jury understands that prudent financial decisions depend on a sound financial platform and resources. It is not enough to know how to determine success or make prudent investment selections without an infrastructure of checks and balances.

The Bloomberg investment platform utilized by the Treasurer provides guidance and measures a portfolio's performance and compliance on a daily basis. Bloomberg is globally recognized and has more than 300,000 subscribers. The Bloomberg membership provides 24-hour access seven days a week, and is a reliable and consistent resource used by the Treasurer and staff. The Treasurer also has access for support in the areas of market surveillance, fundamental analysis valuation, statistical analysis, and portfolio and risk analytics. The Treasurer is one of only a few California county Treasurers using the Bloomberg support system to manage and evaluate pooled funds on a daily basis.

INVESTMENT POOL RATINGS

Standard and Poor's rates the Orange County Money Market Fund and the Educational Money Market Fund on a regular basis. The rating service assigned its highest rating of AAA for the two Investment Pooled Portfolios. The rating is determined by the fund's high credit quality, low market price exposure, and prudent asset management. This rating reflects the fund's extremely strong capacity to maintain principal stability and to limit exposure to principal losses due to credit, market, and/or liquidity risks.

Standard and Poor's reviews pertinent information weekly as a part of the rating process. The Treasurer's investment staff is responsible for the pool's day-to-day management. The Treasurer's staff also includes an Investment Credit Analyst who focuses entirely on credit and provides the investment team with ongoing updates. The Chief Assistant Treasurer/Tax Collector is responsible for establishing and maintaining an internal control structure and is responsible for monitoring the portfolio daily. [2]

CREDIT QUALITY FOR APPROVED INVESTMENTS

One of the principal criteria for judging the investment quality of a portfolio is the credit quality rating. Credit quality informs the Treasurer of the investments' credit worthiness or risk default. The credit quality is determined by a private rating agency such as Standard & Poor's, Moody's or Fitch. The credit quality designations range from a high (AAA to AA), to a medium (A to BBB), and a low (BB,B,CCC,CC,C) The following is an analysis from the credit quality report for the Orange County Investment Pools dated January 31, 2013.

[2] Standard and Poor's

	Analysis By Fund			
	County Money Market Fund	Educational Money Market Fund	Extended Fund	John Wayne Airport
AAA Total	8.47%	6.80%	N/A	2.42%
AA Total	9.19%	6.50%	1.56%	12.70%
A Total	3.41%	2.43%	7.71%	4.63%
A-1 Total	0.69%	0.82%	N/A	N/A
US GOV	78.24%	83.45%	90.73%	80.25%
Total	100.00%	100.00%	100.00%	100.00%

	Analysis By Pool	
	Orange County Investment Pool	Orange County Educational Investment Pool
AAA Total	3.94%	3.91%
AA Total	5.11%	4.40%
A Total	5.71%	4.67%
A-1 Total	0.32%	0.47%
US GOV	84.92%	86.55%
Total	100.00%	100.00%

AA Includes AA+, AA- and AA
A Includes A+, A- and A
A-1 Includes A-1+, F1+, A-2 and F2
US GOV Includes Agency & Treasury Debt

THE INFLOW OF CASH FOR INVESTMENT POOLS

The inflow of cash rarely matches the timing of expenditures. For example, property tax revenues are generally derived from semi-annual installments, while local agency obligations and spending commitments occur more frequently throughout the year. The Treasurer may also receive lump sum proceeds from the sale of bonds issued to pay for capital improvements. Under most conditions, bond proceeds are not spent immediately. Without the ability to invest cash balances, pending the need to make expenditures, the Treasurer might accumulate large amounts of liquid cash.

The following chart (Column #4 Cumulative Available Cash) for January 2013-July 2013 illustrates the importance of investing pooled funds. The projected cumulative available cash column represents how much cash would be idle if not invested, resulting in a loss of yield (income) to the portfolio. By investing cumulative cash balances, the invested balance generates a return until the funds are required for expenditures.

ORANGE COUNTY INVESTMENT POOL				
Month	Investment Maturities	Projected Deposits	Projected Disbursements	Cumulative Available Cash
January 2013 - Ending Cash				$ 11,280,252
February	$ 385,507,644	$ 390,573,820	$ 344,984,675	442,376,841
March	747,982,780	832,870,332	510,353,155	1,512,876,797
April	304,590,486	1,607,830,826	1,565,565,138	1,859,732,972
May	143,732,843	267,558,142	599,186,257	1,671,837,700
June	166,982,268	298,503,631	465,943,415	1,671,380,184
July	160,643,853	365,452,383	564,808,444	1,632,667,976

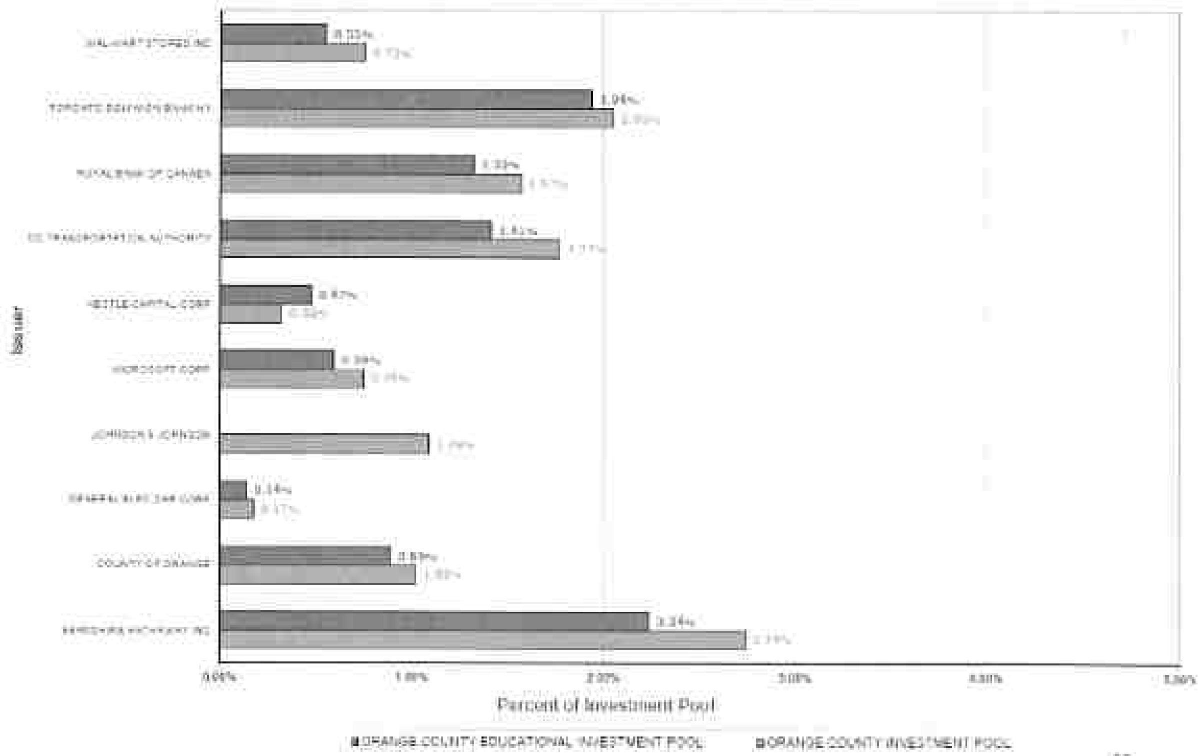
ORANGE COUNTY EDUCATIONAL INVESTMENT POOL				
Month	Investment Maturities	Projected Deposits	Projected Disbursements	Cumulative Available Cash
January 2013 - Ending Cash				$ 4,064,583
February	$ 539,412,657	$ 163,478,039	$ 500,254,576	206,700,704
March	424,952,588	303,852,913	516,166,999	419,339,206
April	278,876,046	941,804,226	606,770,940	1,033,248,539
May	93,636,426	189,231,045	509,189,323	806,926,688
June	54,778,238	227,241,615	496,117,424	592,829,116
July	61,476,844	649,573,413	424,925,367	878,954,006

ISSUER CONCENTRATION

The County Treasurer will diversify the investment portfolio to minimize the risk of loss resulting from an over concentration of assets. Over concentration of assets results from investing a large portion of assets into one security, one sector, industry, or maturity duration. Over concentration of assets is not suitable for most investment portfolios and undermines the principles of prudent asset management. Under the Investment Policy Statement the Treasurer is generally not authorized to invest more than five percent with any approved issuer.

Diversification of investments cannot, by itself, guarantee a profit or protect against loss, it can reduce the effects of volatility within the portfolio and mitigate the issue of over concentration. The Grand Jury reviewed the following published issuer concentration dated January 31, 2013.

ORANGE COUNTY TREASURER - TAX COLLECTOR
ISSUER CONCENTRATION-By Investment Pool
January 31, 2013



AUTHORIZED INVESTMENTS AND MATURITY RESTRICTIONS

In addition to the concentration requirements, the Grand Jury also recognizes that maturity durations are an important indicator of a portfolio's ability to maintain a stable net-asset-value (NAV), and that shorter maturities generally sacrifice yield to obtain greater liquidity and stability. It is also clear that having a long position related to maturity duration is not ideal with a low interest rate environment, and interest rate increases cause bond prices to decline. Treasury Bills and bonds move in the opposite direction of interest rates, which may reduce the value of treasuries and bonds.

With interest rates in 2013 at an historic low, keeping allocations in proper balance becomes a greater challenge. The Grand Jury understands the compromises associated with liquidity and yield, and that market conditions and cash flow requirements are vital when determining the term of an investment maturity. Each of the investments described below carry varying degrees of risk.

Under the Government Code Section 53601-53635, securities may not be held for a period exceeding five years. The Code also regulates the risk level of the portfolio. To mitigate risk, the securities in the extended fun generally must be listed between the top two categories of a national rating agency. The Grand Jury reviewed the following Treasurer's Investment Report dated January 31, 2013, outlining the current authorized investment composition and compliance restrictions.

Authorized Investments and Maturities

Type of Investments	Cal Gov. Code[3] (% of Funds Permitted)	Orange County IPS	Cal Gov. Code[4] (Maximum Final Maturity)	Orange County IPS Maximum Final Maturity	
				Long-Term Extended Fund	Short-Term Money Market Fund
U.S. Treasury Securities	100%	100%	5 years	5 years	397 days
U.S. Gov. Agency Securities	100%	100% Total >| 30% in one issuer	5 years	5 years	397 days
Municipal Debt	100%	30% Total >| 5% in one issuer except 10%-County of Orange	5 years	5 years	397 days
Medium-Term Notes	30%	30% Total >| 5% in one issuer	5 years	5 years	397 days
Bankers Acceptance	40% 30% of a single issuer	40% Total >| 5% in one issuer	180 days	180 days	180 days
Commercial Paper	40% 10% of a single issuer	40% Total >| 5% in one issuer	270 days	270 days	270 days
Negotiable Certificates of Deposits	30%	30% Total >| 5% in one issuer	5 years	5 years	397 days
Repurchase Agreements	100%	20% Total >| 10% in one issuer	1 year	1 year	1 year
Investment Pools/Mutual Funds	20% 10% of a single issuer	20% Total >| 10% in one issuer	N/A	N/A	N/A

DESCRIPTION OF AUTHORIZED INVESTMENTS

United States Treasury Securities

The United States government is the world's largest issuer of debt, making Treasury Securities the primary instrument in the fixed income market. Treasuries are guaranteed by the full faith and credit of the U.S. Government. The California Code prohibits a Local County Treasurer from investing in Treasuries with a maturity of more than five years. Maturity levels can be extended with the approval of the Orange

[3] Source: California State Code Sections 53601-53635
[4] Source: California State Code Sections 27000.1, 53607, and 53608

County Board of Supervisors. There are no concentration limits or minimum rating restrictions for this equity.

United States Government Agency Securities

Federal agency securities are issued by government sponsored entities. The Federal Farm Credit Bank and the Federal Home Loan Bank are examples of federal agencies. Unlike Treasuries, most Government Agency securities are not guaranteed, but are considered a moral obligation of the United States Government.

The exceptions are the Federal National Mortgage Association and the Federal Home Loan Mortgages Corporation which are under conservatorship and currently guaranteed by the Federal Government.

Commercial Paper

Commercial paper is a short-term unsecured promissory note issued for a specified maturity and is a financing process primarily used by corporations. Public entities may purchase commercial paper only from corporations that are organized and operating in the United Sates. As outlined in the Treasurers 2013 Investment Report the following are approved issuers for commercial paper:

* Wal-Mart Stores
* Net Jets Inc.
* Chevron Corp.
* Johnson & Johnson
* Microsoft Corp
* Nestle Capital Corp
* Automatic Data Processing
* Berkshire Hathaway Incorporated
* Berkshire Hathaway Finance

Repurchase Agreements

Repurchase agreements are utilized as a cash management tool within the confines of the County banking system. Securities, as they relate to a repurchase agreement, mean securities from the same issuer, description, issue date and maturity. Repurchase agreements are collateralized by authorized securities and must comply with delivery requirements and maturity provisions.

Bankers Acceptance

Also known as time drafts, these are drawn and guaranteed by a commercial bank. (Purchase of banker's acceptance shall not exceed a maturity of 180 days and limited to 40 percent of the fund's portfolio).

Money Market Mutual Funds And Issuers

Mutual Fund shares are issued by diversified management companies that are mutual fund registered with the Securities and Exchange Commission. This fund only invests in direct obligations in United States Treasury bills, notes and bonds, United

States Government Agencies, and repurchase agreements with a weighted average of 60 days or less. Money Market Funds are limited to 20 percent of the portfolio with a 10 percent limit in a single Money Market Fund. The following are approved issuers in this category of investments:

* *Invesco Government & Agency*
* *Goldman Sachs Financial Square Government Fund*
* *Morgan Stanley Liquidity Government Fund*
* *Northern Institutional Treasury Portfolio*

Municipal Debt

Municipal bonds are debt securities issued by municipal government agencies. Issuers of municipal bonds include cities, counties, school districts, publicly owned airports and any other government entity or group below the state level. Municipal bonds are guaranteed by a local government or a group of local governments and are assessed for risk. Municipal Bonds Issued for certain purposes may not be tax exempt.

Medium Term Notes

Medium term notes are debt instruments that are issued through financial institutions or government obligations. Medium term bonds are offered through agents or dealers on a best effort basis, rather than a firm's commitment (underwriting) basis. For the benefit of diversification, medium term notes provide a broad range of investment across industry sectors and are as liquid as the traditional bond market.

INELIGIBLE INVESTMENTS

* Principal or interest only strips (securities with cash flows based entirely on the monthly interest payment received from mortgage pools)
* Securities that result in zero interest accrual if held to maturity
* Common stock
* Financial futures and options (the agreement to buy or sell at a certain date or price)
* Structured Investment Vehicles

ECONOMIES OF SCALE AND THE POTENTIAL FOR GROWTH

The wealth of staff education, experience and success in managing investment pools, affords the Treasurer the opportunity to extend its best practices to non-participating entities. The benefits of becoming a member participant in the County Investment Pool are ease of administration, access to otherwise unavailable investment for small investors, diversification, liquidity and a highly educated experienced staff.

Economies of scale, also called increasing returns to scale, is a term used by economists to refer to situations in which the cost of producing an additional unit of service output (marginal cost) decreases as the volume of output (services) increases.

A simple meaning of economies of scale is achieving more efficiently as the size of operation increases. Costs may decrease as the volume of output increases for a number of reasons. An advantage for the County is that a greater number of pooled participants allow fixed costs to spread over a larger base. Fixed costs are those that do not change regardless of the number of pooled agencies participating.

INFORMATION SYSTEMS

For security reasons, the Grand Jury will not provide specifics regarding the Treasurer's information systems. The data stored in the current system is highly sensitive, confidential and includes a significant amount of proprietary financial data.

The County Treasurer leverages several information system solutions to support the billing, collection and investment of County tax revenues. The majority of the information systems are older legacy systems. These systems have limited flexibility and are expensive and difficult to change and enhance. The one exception is the information system used by the Investment and Treasury Divisions.

The Investment Division utilizes Bloomberg and Sun Guard Quantum information systems software to execute and monitor investment strategies. Bloomberg software is recognized as one of the premiere portfolio management platforms in the industry and the level of data security, and flexibility inherent in this web-based tool is unequaled.

FINDINGS

In accordance with California Penal Code Sections §933 and §933.05, the 2012 - 2013 Grand Jury requests responses from each agency affected by the recommendations presented in this section. The responses are submitted to the Presiding Judge of the Superior Court.

Based on this study of the Orange County Treasurer/Tax Collector, the 2012-2013 Orange County Grand Jury has arrived at the following four findings:

F1. The Treasurer does not have a securities representative (staff member). The Treasurer shall consider the benefits of having a member of the investment team equity licensed.

F2. Having a licensed securities representative on staff could be a conflict of interest.

F3. The Treasurer leverages several information systems for tax collection and investments. The majority are older legacy systems. These systems have limited flexibility and are expensive to change and enhance.

RECOMMENDATIONS

Based on this study of the Orange County Treasurer, the 2012-2013 Orange County Grand Jury has arrived at the following four recommendations:

R1. The Treasurer shall consider the benefits of having a current staff member licensed as a Securities representative. (series 7, 51 and 63)

R2. The Treasurer shall address the conflict of interest issues with having a securities licensed staff member.

R3. The Treasurer shall address the expense, time restraints and expectations related to improving the information systems.

The California Penal Code §933 requires any public agency which the Grand Jury has reviewed, and about which it has issued a final report, to comment to the Presiding Judge of the Superior Court on the findings and recommendations pertaining to matters under the control of the agency. Such comment shall be made *no later than 90 days* after the Grand Jury publishes its report (filed with the Clerk of the Court); except that in the case of a report containing findings and recommendations pertaining to a department or agency headed by an elected County official (e.g. District Attorney, Sheriff, etc.), such comment shall be made *within 60 days* to the Presiding Judge with an information copy sent to the Board of Supervisors.

Furthermore, California Penal Code Section §933.05 (a), (b), (c), details, as follows, the manner in which such comment(s) are to be made:

(a) As to each Grand Jury finding, the responding person or entity shall indicate one of the following:

(1) The respondent agrees with the finding

(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefore.

(b) As to each Grand Jury recommendation, the responding person or entity shall report one of the following actions:

(1) The recommendation has been implemented, with a summary regarding the implemented action.

(2) The recommendation has not yet been implemented, but will be implemented in the future, with a time frame for implementation.

(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a time frame for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This time frame shall not exceed six months from the date of publication of the Grand Jury report.

(4) The recommendation will not be implemented because or is not reasonable it is not warranted, with an explanation therefore.

(c) If a finding or recommendation of the Grand Jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department head and the Board of Supervisors shall respond if requested by the Grand Jury, but the response of the Board of Supervisors shall address only those budgetary /or personnel matters over which it has some decision making aspects of the findings or recommendations affecting his or her agency or department.

Comments to the Presiding Judge of the Superior Court in compliance with Penal Code section §933.05 are required.

Responses are required from Office of the Treasurer-Tax Collector County of Orange for **F1, F2, F3, R1, R2, R3.**