

# Orange County Employees Retirement System

Actuarial Valuation and Review as of  
December 31, 2016



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

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*June 2, 2017*

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

*Dear Board Members:*

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

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

*The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.*

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

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

*Sincerely,*

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

By:

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

MYM/jl

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

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### Purpose

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

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

One of the general goals of an actuarial valuation is to establish contributions that fully fund the System's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

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

The contribution requirements are determined as a percentage of payroll. The System's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the Board's funding policy adopted in 2014 to combine and re-amortize the outstanding balance of the unfunded actuarial accrued liability (UAAL) from the December 31, 2012 valuation over a declining 20-year period effective with the December 31, 2013 valuation. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to 5 years.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2018 through June 30, 2019 (the rates will go into effect during the pay period which includes July 1, 2018).

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

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### Significant Issues in Valuation Year

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

- O.C. Law Library was separated from O.C. Sanitation District in Rate Group #3 and put into their own Rate Group (Rate Group #12) after the last valuation as of December 31, 2015.
- In this valuation, there were changes made to the membership data and valuation process. There were two changes to the membership data provided by OCERS: (a) a leap year salary adjustment to include an additional eight hours of salary earned during 2016 and (b) revised benefit and eligibility service credits from the new V3 pension administration system. For the leap year salary, we changed our valuation process to include an average two hours of additional salary annually during a four-year period. We also changed our valuation process to no longer value an automatic continuance benefit for a child beneficiary reported for a current retiree if that child is already over age 22.
- The ratio of the valuation value of assets to the actuarial accrued liabilities has increased from 71.7% to 73.1%. For informational purposes only, we have also prepared in Appendix C the funded ratio for each Rate Group. The System's funded ratio measured on a market value basis increased from 67.7% to 70.6%. The System's Unfunded Actuarial Accrued Liability (UAAL), measured using the valuation value of assets, has increased from \$4,822.3 million as of December 31, 2015 to \$4,830.5 million as of December 31, 2016. The increase in UAAL is mainly due to (a) higher than expected salary increases, (b) unfavorable investment return (after smoothing), (c) actual contributions less than expected, and (d) other actuarial losses, offset somewhat by (e) lower than expected COLA increases, (f) changes in valuation data and process, and (g) additional UAAL payments made by certain employers. A reconciliation of the System's UAAL is provided in Section 3, Exhibit H. A schedule showing the reconciliation of the UAAL by Rate Group is provided in Appendix E.
- The Board approved a three-year phase-in of the employer cost impact due to assumption changes for the Safety Rate Groups starting with the December 31, 2014 valuation. This is the final year of the phase-in. The employer contribution rates for Safety Rate Groups shown in this report as of December 31, 2015 are those with two-thirds of the phase-in, as in the prior valuation.
- The aggregate employer rate calculated in this valuation has decreased from 36.97% of payroll to 36.56% of payroll. The 36.97% rate was calculated after adjusting for the additional UAAL contributions made by O.C. Sanitation District and Law Library during 2016 and the phase-in adjustment for Safety Rate Groups. The December 31, 2015 contribution rate without adjustment for the additional UAAL contributions and the phase-in adjustment was 37.47% of payroll.

*Ref: Pgs. 35 and 131*

*Ref: Pgs. 66 and 135*

*Ref: Pgs. 32 and 132 - 134*

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

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

*Ref: Pg. 15*

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

*Ref: Pg. 99*

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

*Ref: Pg. 33*

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

*Ref: Pg. 5*

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

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

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

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

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

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

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

- The actuarial valuation report as of December 31, 2016 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.
- This report reflects the \$5.6 million additional contributions made by O.C. Sanitation District to pay off their UAAL. The \$5.6 million<sup>1</sup> of additional contributions made by O.C. Sanitation District has been used to eliminate their UAAL rates starting 2017/2018. In addition, O.C. Sanitation District made a \$33.5 million additional contribution to go towards paying their deferred investment losses as they arise in future valuations to continue to eliminate their UAAL rate in those valuations. Those additional contributions are maintained in a new O.C. Sanitation District UAAL Deferred Account. As of December 31, 2016, no transfer was required from this account to pay off their UAAL as the District remained over 100% funded. The balance in the O.C. Sanitation District UAAL Deferred Account as of December 31, 2016 is \$34.1 million.

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

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

<sup>2</sup> \$1.5 million in additional contributions were made by Law Library on December 16, 2016. After adjusting with interest, those contributions have a value of \$1.5 million as of December 31, 2016.

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

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

### Impact of Future Experience on Contribution Rates

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

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

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

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

### Summary of Key Valuation Results (Dollar Amounts in Thousands)

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

<sup>(1)</sup> Based on December 31, 2016 projected annual compensation.

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

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

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

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

**Summary of Key Valuation Results (Dollar Amounts in Thousands)**

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

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

<sup>(2)</sup> Based on the preliminary unaudited financial statement provided by OCERS for this valuation.

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

### Summary of Key Valuation Demographic and Financial Data

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

<sup>(1)</sup> Excludes monthly benefits payable from the STAR COLA.

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

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

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

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

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### 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

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

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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.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### A. MEMBER DATA

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

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

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

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

#### CHART 1

##### Member Population: 2007 – 2016

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

<sup>(1)</sup> Includes terminated members due a refund of member contributions.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**Active Members**

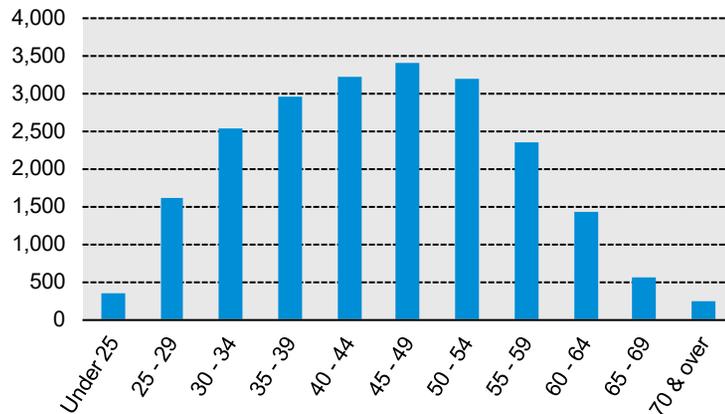
Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 21,746 active members with an average age of 45.4, average years of service of 12.9 years, and average compensation of \$80,927. The 21,525 active members in the prior valuation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

**Inactive Members**

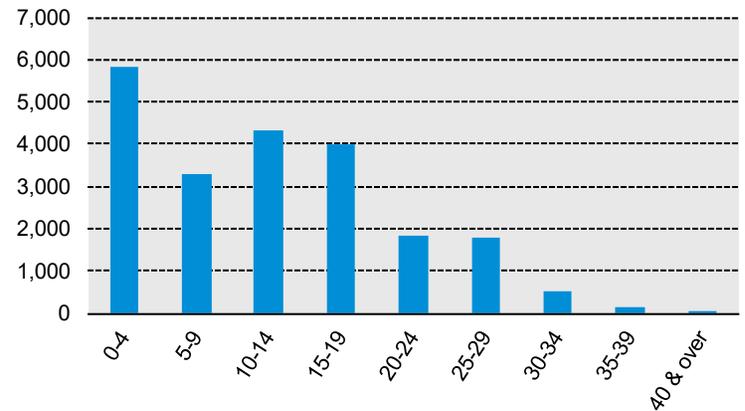
In this year's valuation, there were 5,370 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 5,091 in the prior valuation.

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

**CHART 2**  
**Distribution of Active Members by Age as of December 31, 2016**



**CHART 3**  
**Distribution of Active Members by Years of Service as of December 31, 2016**



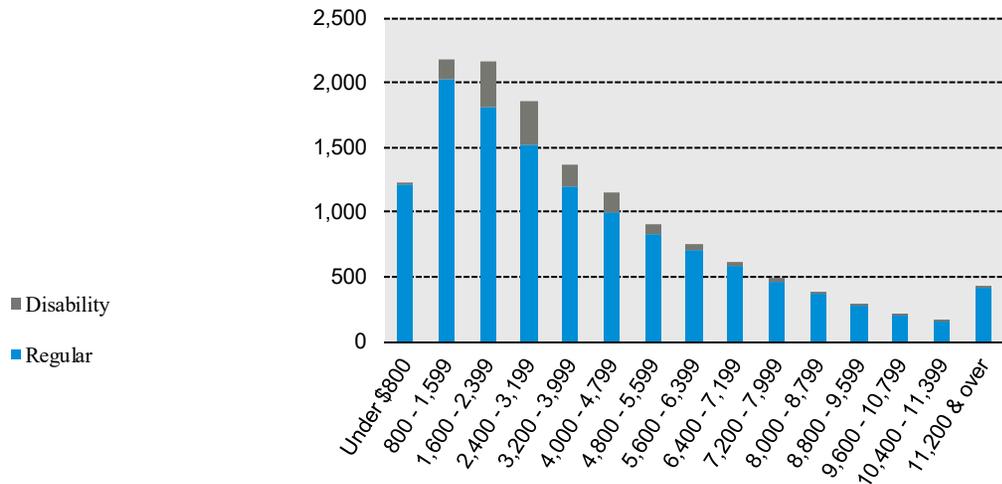
**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**Retired Members and Beneficiaries**

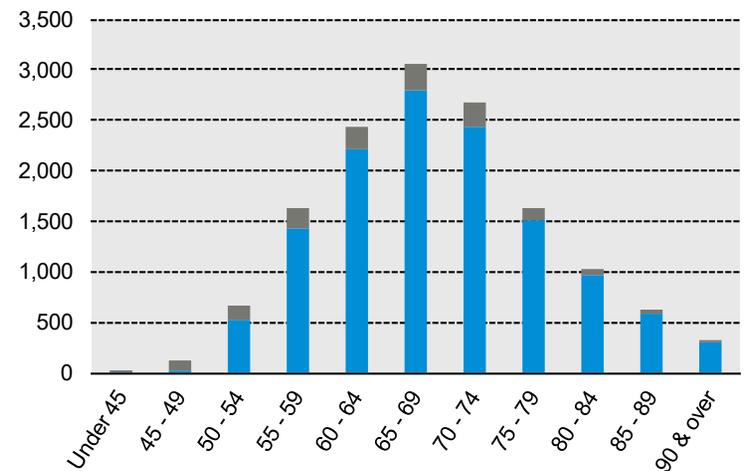
As of December 31, 2016, 14,186 retired members and 2,183 beneficiaries were receiving total monthly benefits of \$59,529,794. For comparison, in the previous valuation, there were 13,675 retired members and 2,135 beneficiaries receiving total monthly benefits of \$56,291,151. These monthly benefits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

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

**CHART 4**  
**Distribution of Retired Members (Excl. Beneficiaries) by Type and by Monthly Amount as of December 31, 2016**



**CHART 5**  
**Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of December 31, 2016**



**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

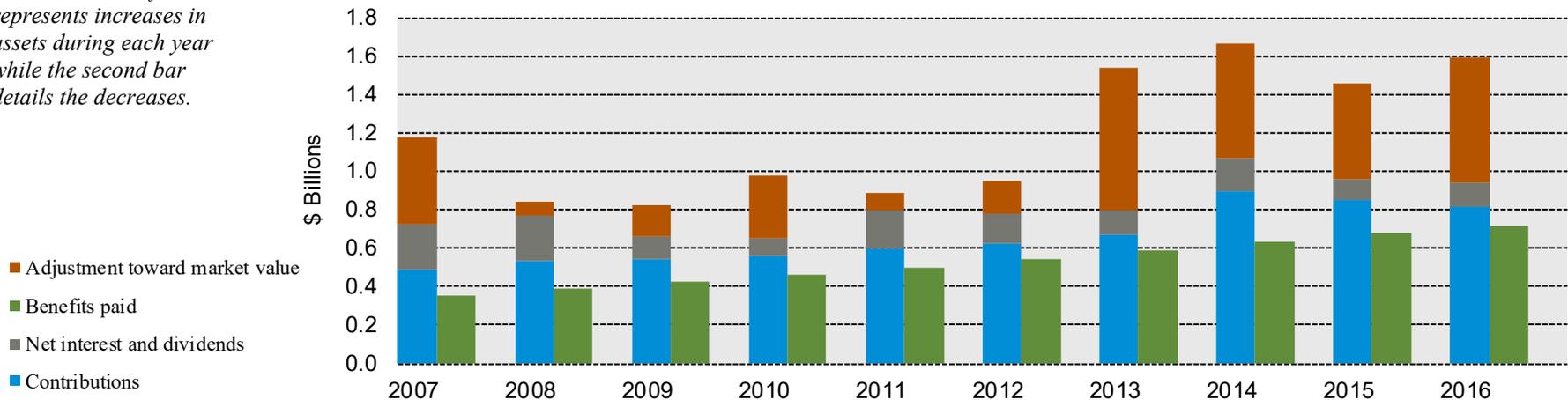
**B. FINANCIAL INFORMATION**

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

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

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

**CHART 6**  
**Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 – 2016**



## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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.

### CHART 7

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

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

Plan Year Ending	Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain / (Loss)	Deferred Factor	Deferred Return
2012	\$1,014,471,000	\$659,447,000	\$355,024,000	0.0	\$0
2013	1,031,118,000	696,553,000	334,565,000	0.2	66,913,000
2014	487,104,000	780,627,000	(293,523,000)	0.4	(117,409,000)
2015	(51,601,000)	833,757,000	(885,358,000)	0.6	(531,215,000)
2016	1,010,548,000	840,469,000	170,079,000	0.8	<u>136,063,000</u>
1. Total Deferred Return					\$(445,648,000)
2. Net Market Value Of Assets (Excludes \$117,723,000 in County Investment Account (funded by pension obligation bond proceeds held by OCERS), \$222,524,000 in Prepaid Employer Contributions and \$34,067,000 in O.C. Sanitation District UAAL Deferred Account)					\$12,657,418,000 <sup>(1)</sup>
3. Actuarial Value of Assets (2) – (1)					\$13,103,066,000
4. Ratio of Actuarial Value To Market Value (3) / (2)					103.5%
5. Non-valuation Reserves					
(a) Unclaimed member deposit					\$0
(b) Medicare medical insurance reserve					<u>88,000</u>
(c) Subtotal					\$88,000
6. Valuation value of assets (3) – (5)(c)					\$13,102,978,000
7. Deferred Return Recognized in Each of the Next 4 years					
(a) Amount recognized on 12/31/2017					\$(134,848,000)
(b) Amount recognized on 12/31/2018					(201,760,000)
(c) Amount recognized on 12/31/2019					(143,056,000)
(d) Amount recognized on 12/31/2020					<u>34,016,000</u>
(e) Subtotal (may not total exactly due to rounding)					\$(445,648,000)

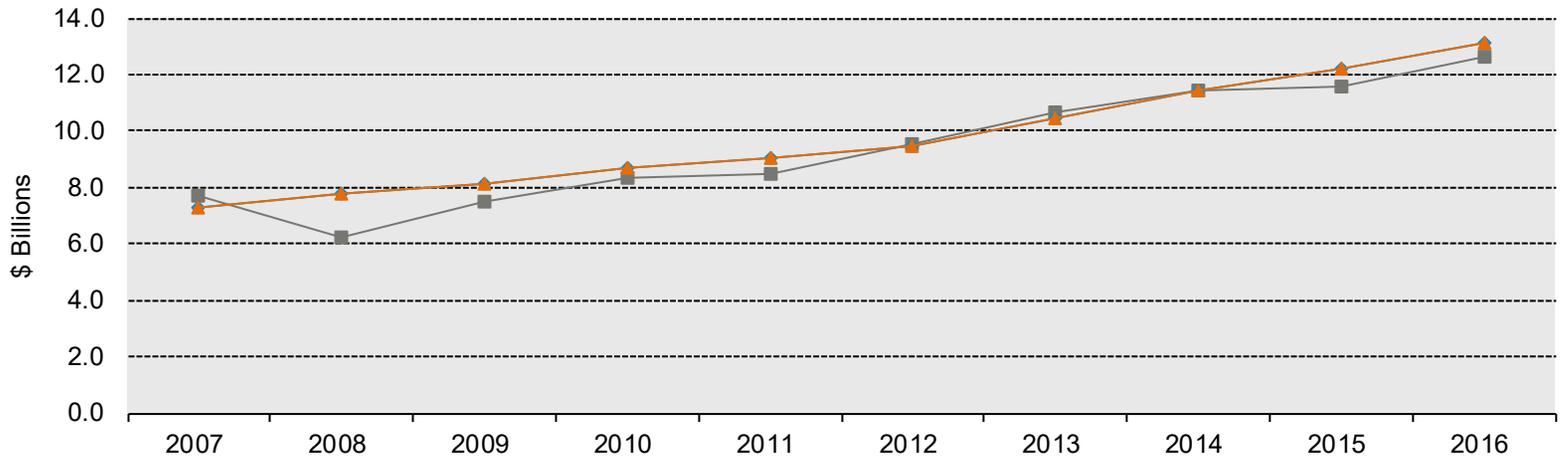
<sup>(1)</sup> Based on the preliminary unaudited financial statement provided by OCERS for this valuation.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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

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

**CHART 8**  
**Market Value, Actuarial Value and Valuation Value of Assets as of December 31, 2007 – 2016**



## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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### C. ACTUARIAL EXPERIENCE

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

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will

return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

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

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

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

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### CHART 9

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

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

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<sup>(1)</sup> Details in Chart 10.

<sup>(2)</sup> See Section 3, Exhibit H.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**Investment Rate of Return**

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

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

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

**CHART 10  
Investment Experience for Year Ended December 31, 2016 – Valuation Value, Actuarial Value and Market Value of Assets**

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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

**CHART 11**  
**Investment Return – Valuation Value, Actuarial Value and Market Value: 2007 - 2016 (Dollar Amounts in Thousands)**

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

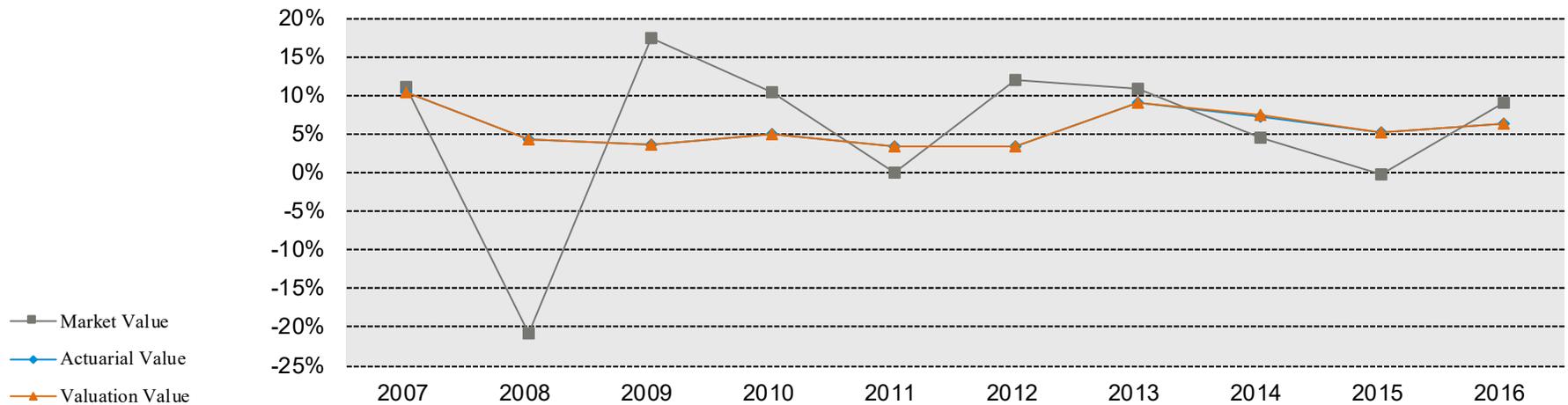
*Note: The dollar amount of return on market value is net of the return on the County Investment Account (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions account and O.C. Sanitation District UAAL Deferred Account. Furthermore, due to differences in how returns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

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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

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

**CHART 12**  
**Market, Actuarial, and Valuation Value Rates of Return for Years Ended December 31, 2007 – 2016**



## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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### **Other Experience**

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

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

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

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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### D. EMPLOYER AND MEMBER CONTRIBUTIONS

Employer contributions consist of two components:

#### *Normal Cost*

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

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

#### *Contribution to the Unfunded*

#### *Actuarial Accrued Liability (UAAL)*

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative unfunded actuarial accrued liability) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the System) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.50% (i.e., 3.00% inflation plus 0.50% across-the-board salary increase). The outstanding balance of the December 31, 2012 UAAL was combined and re-amortized over a declining 20-year period effective with the December 31, 2013 valuation. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to 5 years.

The recommended employer contributions are provided in Chart 13.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

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### Member Contributions

#### *Non-CalPEPRA Members*

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

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

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

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

#### *CalPEPRA Members*

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

## **SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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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.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

<sup>(4)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 13 (Continued)

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

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

<sup>(5)</sup> 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).

<sup>(6)</sup> No active members yet as the plan became effective on January 1, 2017.

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2016.

<sup>(4)</sup> These rates are after adjustment to the contribution rates for the FY 17-18 for additional UAAL contributions made during calendar year 2016.

<sup>(5)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> Applicable for members hired on or after January 1, 2015.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

<sup>(3)</sup> UAAL rate has been adjusted to reflect future service only benefit improvement under 2.7% @ 55.

<sup>(4)</sup> These rates are after adjustment to the contribution rates for the FY 18-19 for additional UAAL contributions made during calendar year 2016.

<sup>(5)</sup> These rates are after adjustment to the contribution rates for the FY 17-18 for additional UAAL contributions made during calendar year 2016.

<sup>(6)</sup> Applicable for members hired on or after January 1, 2013.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 13 (Continued)**

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

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

<sup>(5)</sup> Applicable for members hired on or after January 1, 2013.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 13 (Continued)

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

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

<sup>(5)</sup> Applicable for members hired on or after January 1, 2013.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 13 (Continued)

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

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

<sup>(1)</sup> See page 27 for projected annual compensation.

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

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

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

<sup>(5)</sup> Applicable for members hired on or after January 1, 2013.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 13 (Continued)

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

General and Safety Combined	December 31, 2016 Valuation		December 31, 2015 Valuation	
	Rate	Estimated Annual Amount <sup>(1)</sup>	Rate	Estimated Annual Amount <sup>(1)</sup>
<b>Rate Groups #1 – #12</b>				
Total Contribution	36.56%	\$643,458	36.97%	\$650,439

<sup>(1)</sup> Based on December 31, 2016 projected annual compensation (also in thousands):

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

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 13 (Continued)

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

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

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

<sup>(1)</sup> These rates are after reflecting future service only benefit improvements under 2.7% @ 55.

<sup>(2)</sup> These rates are before reflecting future service only benefit improvements under 2.7% @ 55.

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

<sup>(4)</sup> Applicable for Local Agency Formation Commission members hired on or after July 1, 2010 but before January 1, 2013.

<sup>(5)</sup> Applicable for Local Agency Formation Commission members hired on or after January 1, 2013.

<sup>(6)</sup> Applicable for Orange County Retirement System and Children and Families Commission members hired on or after January 1, 2013.

## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### CHART 14

#### “Pick – Up” - Discount Percentages for Non-PEPRA Tier Members

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

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 14 (Continued)**

**“Pick – Up” - Discount Percentages**

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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**CHART 14 (Continued)**  
**“Pick – Up” - Average Entry Age**

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

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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

**Reconciliation of Recommended Contribution**

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

**CHART 15**

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

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

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

<sup>(1)</sup> Based on December 31, 2016 projected annual compensation of \$1,759,831,000.

<sup>(2)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

<sup>(3)</sup> Net of an adjustment of -0.06% to reflect 18-month delay between date of valuation and date of rate implementation for the rate impact of all actuarial experience.

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

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

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

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

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

	Contribution Rate	Estimated Amount <sup>(1)</sup>
Average Recommended Contribution Rate as of December 31, 2015 <sup>(2)</sup>	12.01%	\$211,407
Effect of change in demographics	0.00%	\$9
Average Recommended Contribution Rate as of December 31, 2016	12.01%	\$211,416

<sup>(1)</sup> Based on December 31, 2016 projected annual compensation of \$1,759,831,000.

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

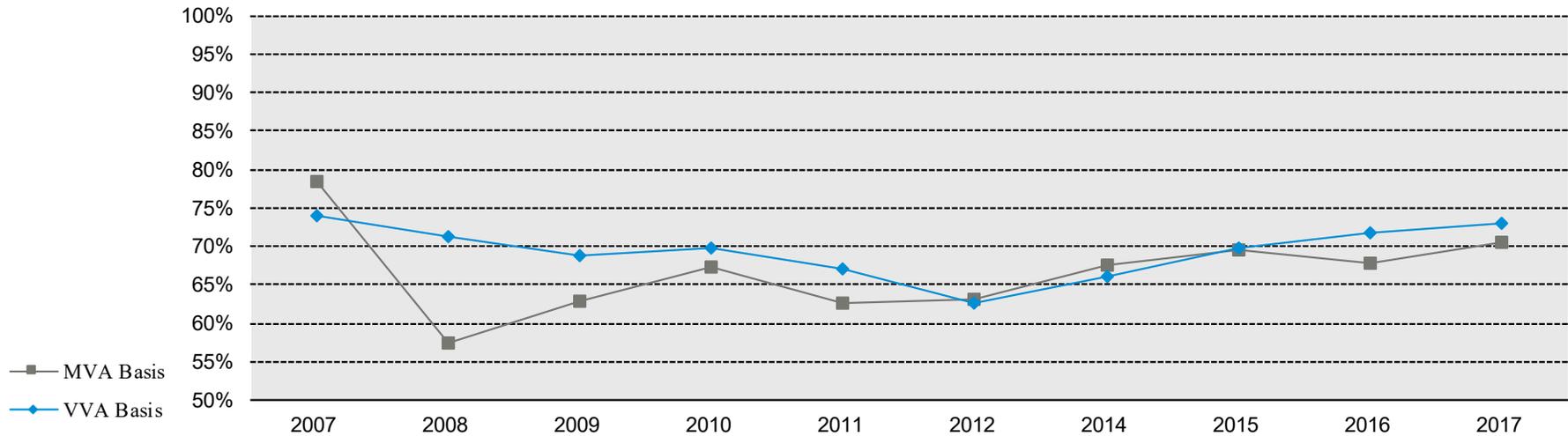
## SECTION 2: Valuation Results for the Orange County Employees Retirement System

### E. FUNDED RATIO

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

performance, or a variety of other factors. The chart below depicts a history of the funded ratio for this plan.

**CHART 17**  
**Funded Ratio for Plan Years Ending December 31, 2007 - 2016**



**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**CHART 18**  
**Schedule of Funding Progress**

<b>Actuarial Valuation Date December 31</b>	<b>Valuation Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio (a) / (b)</b>	<b>Projected Covered Payroll (c)</b>	<b>UAAL as a Percentage of Projected Covered Payroll [(b) - (a)] / (c)</b>
2007	\$7,288,900,000	\$9,838,686,000	\$2,549,786,000	74.08%	\$1,457,159,000	174.98%
2008	7,748,380,000	10,860,715,000	3,112,335,000	71.34%	1,569,764,000	198.27%
2009	8,154,687,000	11,858,578,000	3,703,891,000	68.77%	1,618,491,000	228.85%
2010	8,672,592,000	12,425,873,000	3,753,281,000	69.79%	1,579,239,000	237.66%
2011	9,064,355,000	13,522,978,000	4,458,623,000	67.03%	1,619,474,000	275.31%
2012	9,469,208,000	15,144,888,000	5,675,680,000	62.52%	1,609,600,000	352.55%
2013	10,417,125,000	15,785,042,000	5,367,917,000	65.99%	1,604,496,000	334.55%
2014	11,449,911,000	16,413,124,000	4,963,213,000	69.76%	1,648,160,000	301.14%
2015	12,228,009,000	17,050,357,000	4,822,348,000	71.72%	1,633,112,000	295.29%
2016	13,102,978,000	17,933,461,000	4,830,483,000	73.06%	1,759,831,000	274.49%

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

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

**SECTION 2: Valuation Results for the Orange County Employees Retirement System**

**F. VOLATILITY RATIOS**

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

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

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

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

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

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

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

**CHART 19**  
**Volatility Ratios for Years Ended December 31, 2009 - 2016**

Year Ended December 31	Asset Volatility Ratios			Liability Volatility Ratios		
	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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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**EXHIBIT A**

**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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**EXHIBIT A**

**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

<sup>(3)</sup> Membership information as of December 31, 2015 has been restated to exclude members from Law Library that are now reported in Rate Group #12.

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**EXHIBIT A**

**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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

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

<sup>(1)</sup> 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.

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

<sup>(3)</sup> Excludes monthly benefits payable from the STAR COLA.

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**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

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

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

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

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

<sup>(1)</sup> 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.

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

<sup>(3)</sup> Excludes monthly benefits payable from the STAR COLA.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT A**

**Table of Plan Coverage**

**xii. Total**

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

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

<sup>(2)</sup> Excludes monthly benefits payable from the STAR COLA.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

Age	Years of Service									
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	6	6	--	--	--	--	--	--	--	--
	\$52,776	\$52,776	--	--	--	--	--	--	--	--
25-29	22	21	--	1	--	--	--	--	--	--
	57,606	57,961	--	\$50,163	--	--	--	--	--	--
30-34	64	11	22	31	--	--	--	--	--	--
	67,693	53,358	\$66,044	73,949	--	--	--	--	--	--
35-39	171	4	20	114	33	--	--	--	--	--
	75,769	52,751	63,832	78,003	\$78,076	--	--	--	--	--
40-44	207	2	11	50	132	12	--	--	--	--
	81,144	51,605	56,157	75,046	84,916	\$92,890	--	--	--	--
45-49	183	1	1	30	74	65	12	--	--	--
	85,719	53,142	70,492	73,652	83,797	91,516	\$100,312	--	--	--
50-54	90	1	1	6	28	17	30	7	--	--
	92,763	51,508	49,948	76,402	81,780	94,071	96,257	\$144,581	--	--
55-59	41	1	1	1	8	11	10	9	--	--
	88,245	88,407	70,837	69,101	74,549	83,335	89,836	108,696	--	--
60-64	18	--	--	3	5	5	2	3	--	--
	84,951	--	--	83,011	74,177	93,694	97,593	81,850	--	--
65-69	4	--	--	--	3	--	1	--	--	--
	70,801	--	--	--	63,277	--	93,373	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
<b>Total</b>	806	47	56	236	283	110	55	19	--	--
	\$80,813	\$55,916	\$63,190	\$76,158	\$82,803	\$91,342	\$95,971	\$117,678	--	--

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	34	33	1	--	--	--	--	--	--	--
	\$73,319	\$73,009	\$83,559	--	--	--	--	--	--	--
25-29	209	149	58	2	--	--	--	--	--	--
	87,641	84,031	96,231	\$107,520	--	--	--	--	--	--
30-34	316	125	151	40	--	--	--	--	--	--
	100,580	90,817	105,964	110,765	--	--	--	--	--	--
35-39	266	46	75	100	45	--	--	--	--	--
	110,372	94,375	107,017	115,423	\$121,092	--	--	--	--	--
40-44	315	18	31	79	145	42	--	--	--	--
	119,724	105,956	110,331	115,164	122,426	\$131,806	--	--	--	--
45-49	368	11	15	51	108	137	46	--	--	--
	127,864	124,589	116,928	127,996	121,721	132,669	\$132,179	--	--	--
50-54	264	31	7	17	42	52	93	22	--	--
	132,873	129,778	123,682	124,863	125,090	127,428	138,575	\$149,974	--	--
55-59	101	26	11	5	9	13	23	14	--	--
	129,993	135,789	132,231	116,999	122,716	138,827	121,453	132,619	--	--
60-64	28	2	5	8	--	1	5	7	--	--
	135,404	114,850	157,037	140,086	--	114,764	126,056	130,098	--	--
65-69	5	1	1	2	1	--	--	--	--	--
	130,374	130,022	136,359	137,529	110,428	--	--	--	--	--
70 & over	1	--	--	--	1	--	--	--	--	--
	135,346	--	--	--	135,346	--	--	--	--	--
<b>Total</b>	<b>1,907</b>	<b>442</b>	<b>355</b>	<b>304</b>	<b>351</b>	<b>245</b>	<b>167</b>	<b>43</b>	<b>--</b>	<b>--</b>
	<b>\$115,105</b>	<b>\$94,603</b>	<b>\$107,346</b>	<b>\$118,148</b>	<b>\$122,367</b>	<b>\$131,663</b>	<b>\$134,081</b>	<b>\$141,088</b>	<b>--</b>	<b>--</b>

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

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

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
<b>Under 25</b>	5	5	--	--	--	--	--	--	--	--
	\$94,183	\$94,183	--	--	--	--	--	--	--	--
<b>25-29</b>	61	55	6	--	--	--	--	--	--	--
	96,277	95,616	\$102,336	--	--	--	--	--	--	--
<b>30-34</b>	122	64	47	11	--	--	--	--	--	--
	109,309	100,766	118,462	\$119,902	--	--	--	--	--	--
<b>35-39</b>	179	61	55	55	8	--	--	--	--	--
	123,292	114,647	124,669	128,765	\$142,110	--	--	--	--	--
<b>40-44</b>	155	36	35	50	28	6	--	--	--	--
	128,601	118,617	128,189	133,265	128,853	\$150,860	--	--	--	--
<b>45-49</b>	137	25	9	30	28	29	16	--	--	--
	140,056	141,706	125,054	129,491	135,962	147,769	\$158,914	--	--	--
<b>50-54</b>	152	33	2	11	28	25	37	16	--	--
	141,449	144,388	115,473	130,182	136,124	137,487	147,713	\$147,404	--	--
<b>55-59</b>	109	38	2	3	9	19	26	8	4	--
	130,338	130,816	116,878	127,277	120,474	129,701	133,615	130,039	\$139,337	--
<b>60-64</b>	34	16	--	--	2	1	3	5	7	--
	129,725	127,402	--	--	114,057	118,192	125,852	139,855	135,583	--
<b>65-69</b>	6	2	--	--	--	1	2	--	1	--
	118,267	131,833	--	--	--	118,666	112,658	--	101,957	--
<b>70 &amp; over</b>	1	--	--	--	1	--	--	--	--	--
	132,706	--	--	--	132,706	--	--	--	--	--
<b>Total</b>	961	335	156	160	104	81	84	29	12	--
	\$126,774	\$116,487	\$122,534	\$129,768	\$132,772	\$139,862	\$143,868	\$141,312	\$134,032	--

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT B**

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

**xii. Total**

Age	Total	Years of Service								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	334	333	1	--	--	--	--	--	--	--
	\$53,739	\$53,650	\$83,559	--	--	--	--	--	--	--
25-29	1,598	1,423	165	10	--	--	--	--	--	--
	60,567	58,892	74,623	\$66,967	--	--	--	--	--	--
30-34	2,525	1,380	753	383	9	--	--	--	--	--
	70,684	66,528	78,565	70,201	\$69,106	--	--	--	--	--
35-39	2,944	805	753	1,034	350	2	--	--	--	--
	79,561	73,153	84,406	81,845	77,166	\$72,117	--	--	--	--
40-44	3,213	572	506	929	1,018	176	12	--	--	--
	83,502	73,963	83,013	84,002	86,955	94,008	\$73,127	--	--	--
45-49	3,387	430	381	674	930	633	333	6	--	--
	88,827	77,853	83,333	87,046	90,455	96,794	93,402	\$77,323	--	--
50-54	3,175	380	288	525	679	449	659	185	10	--
	89,946	85,920	85,534	81,008	87,138	95,090	98,515	97,476	\$94,889	--
55-59	2,351	293	243	368	456	307	456	178	49	1
	85,629	88,412	83,791	82,912	78,533	90,098	90,754	88,624	78,284	\$69,898
60-64	1,434	158	127	253	315	184	235	101	55	6
	81,423	81,496	83,330	74,767	79,267	80,969	84,127	93,713	87,173	81,546
65-69	556	42	57	105	164	67	79	24	14	4
	78,191	93,518	75,213	80,184	77,833	69,094	80,515	66,840	84,378	74,968
70 & over	229	13	14	43	65	36	34	12	5	7
	70,396	57,433	68,361	78,552	72,653	65,579	66,759	71,638	49,780	82,527
Total	21,746	5,829	3,288	4,324	3,986	1,854	1,808	506	133	18
	\$80,927	\$69,352	\$82,022	\$81,555	\$84,723	\$91,804	\$92,194	\$91,306	\$82,778	\$79,818

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT C**

**Reconciliation of Member Data – December 31, 2015 to December 31, 2016**

	<b>Active Members</b>	<b>Vested Former Members*</b>	<b>Pensioners</b>	<b>Disableds</b>	<b>Beneficiaries</b>	<b>Total</b>
Number as of December 31, 2015	21,525	5,091	12,271	1,404	2,135	42,426
New members	1,514	123	0	0	162	1,799
Terminations – with vested rights	-464	464	0	0	0	0
Contributions refunds	-148	-105	0	0	0	-253
Retirements	-675	-128	803	0	0	0
New disabilities	-21	-2	-30	53	0	0
Return to work	50	-47	-3	0	0	0
Deaths	-33	-25	-273	-37	-107	-475
Data adjustments	<u>-2</u>	<u>-1</u>	<u>-1</u>	<u>-1</u>	<u>-7</u>	<u>-12</u>
Number as of December 31, 2016	21,746	5,370	12,767	1,419	2,183	43,485

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

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT D**

**Summary Statement of Income and Expenses on an Actuarial Value Basis**

	Year Ended December 31, 2016	Year Ended December 31, 2015
<b>Contribution income:</b>		
Employer contributions <sup>(1)</sup>	\$533,667,000	\$571,298,000
Member contributions	258,297,000	249,271,000
Discount for prepaid contributions	24,353,000	27,301,000
Transfer from County Investment Account <sup>(2)</sup>	<u>0</u>	<u>0</u>
Contribution income	\$816,317,000	\$847,870,000
<b>Investment income:</b>		
Interest, dividends and other income	\$220,524,000	\$171,671,000
Recognition of capital appreciation	653,783,000	501,572,000
Less investment and administrative fees	<u>-97,680,000</u>	<u>-67,053,000</u>
Net investment income	<u>\$776,627,000</u>	<u>\$606,190,000</u>
<b>Total income available for benefits</b>	<b>\$1,592,944,000</b>	<b>\$1,454,060,000</b>
<b>Less benefit payments</b>	<b>-\$717,976,000</b>	<b>-\$675,963,000</b>
<b>Change in reserve for future benefits</b>	<b>\$874,968,000</b>	<b>\$778,097,000</b>

<sup>(1)</sup> Excludes contributions towards O.C. Sanitation District UAAL Deferred Account.

<sup>(2)</sup> Funded by pension obligation bond proceeds held by OCERS.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT E**

**Summary Statement of Assets**

	Year Ended December 31, 2016	Year Ended December 31, 2015
<b>Cash equivalents</b>	\$456,545,000	\$360,180,000
<b>Accounts receivable:</b>		
Contributions	\$19,206,000	\$17,730,000
Investment income	15,880,000	15,520,000
Securities settlements	85,263,000	48,568,000
Other	<u>56,019,000</u>	<u>7,722,000</u>
Total accounts receivable	\$176,368,000	\$89,540,000
<b>Investments:</b>		
Fixed income investments	\$2,051,276,000	\$1,760,617,000
Equities	4,774,008,000	4,329,171,000
Real estate	1,096,693,000	1,109,260,000
Alternative investments and diversified credit	4,692,664,000	4,335,000,000
Security lending collateral	165,455,000	106,142,000
Fixed assets net of accumulated depreciation	<u>22,620,000</u>	<u>24,935,000</u>
Total investments at market value	<u>\$12,802,716,000</u>	<u>\$11,665,125,000</u>
<b>Total assets</b>	<b>\$13,435,629,000</b>	<b>\$12,114,845,000</b>
<b>Less accounts payable:</b>		
Securities settlements	-\$157,867,000	-\$50,506,000
Security lending liability	-165,455,000	-106,142,000
All other	<u>-80,575,000</u>	<u>-73,713,000</u>
Total accounts payable	-\$403,897,000	-\$230,361,000
<b>Net assets at market value<sup>(1)</sup></b>	<b><u>\$12,657,418,000</u></b>	<b><u>\$11,548,529,000</u></b>
<b>Net assets at actuarial value</b>	<b><u>\$13,103,066,000</u></b>	<b><u>\$12,228,098,000</u></b>
<b>Net assets at valuation value</b>	<b><u>\$13,102,978,000</u></b>	<b><u>\$12,228,009,000</u></b>

<sup>(1)</sup> The market value excludes \$117,723,000 and \$108,789,000 as of December 31, 2016 and December 31, 2015, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS), \$222,524,000 and \$227,166,000 as of December 31, 2016 and December 31, 2015, respectively, in the prepaid employer contributions account and \$34,067,000 as of December 31, 2016 in the O.C. Sanitation District UAAL Deferred Account.

Note: Results may not total exactly due to rounding.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

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**EXHIBIT F**

**Actuarial Balance Sheet**

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An overview of the Plan’s funding is given by an Actuarial Balance Sheet. In this approach, we first determine the amount and timing of all future payments that will be made by the Plan for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. In this Exhibit only, we refer to this present value as the “liability” of the Plan.

Second, we determine how this liability will be met. These actuarial “assets” include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments.

Assets

1. Total valuation value of assets	\$13,102,978,000
2. Present value of future contributions by members	1,848,090,000
3. Present value of future employer contributions for:	
a. entry age normal cost	2,073,675,000
b. unfunded actuarial accrued liability	<u>4,830,483,000</u>
4. Total current and future assets	\$21,855,226,000

Liabilities

5. Present value of retirement allowance for retirees and beneficiaries	\$9,716,031,000
6. Present value of retirement allowance for inactive members with vested rights <sup>(1)</sup>	393,497,000
7. Present value of retirement allowances for active members	<u>11,745,698,000</u>
8. Total liabilities	\$21,855,226,000

<sup>(1)</sup> This includes members who chose to leave their contributions on deposit even though they have less than five years of service.

### SECTION 3: Supplemental Information for the Orange County Employees Retirement System

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#### EXHIBIT G

#### Summary of Reported Asset Information as of December 31, 2016

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##### Reserves

##### Included in Valuation Value of Assets

Active Members Reserve (Book Value)	\$2,893,408,000
Retired Members Reserve (Book Value)	9,384,630,000
Employer Advanced Reserve (Book Value)	2,076,384,000
ERI Contribution Reserve	9,447,000
STAR COLA Contribution Reserve	0
Unrealized Appreciation/(Depreciation) Included in Valuation Value of Assets	<u>-1,260,891,000</u>
Subtotal: Valuation Value of Assets	\$13,102,978,000

##### Not Included in Valuation Value of Assets

RMBR	\$0
Unclaimed Member Deposit	0
Medicare Medical Insurance Reserve	<u>88,000</u>
Total	\$88,000
Subtotal: Actuarial Value of Assets	\$13,103,066,000
Unrecognized Investment Income	<u>-445,648,000</u>
Subtotal: Market Value of Assets (Net of County Investment Account <sup>(1)</sup> and Prepaid Employer Contributions)	\$12,657,418,000
County Investment Account <sup>(1)</sup>	117,723,000
Prepaid Employer Contributions	222,524,000
O.C. Sanitation District UAAL Deferred Account	<u>34,067,000</u>
Total: Gross Market Value of Assets	\$13,031,732,000

<sup>(1)</sup> Funded by pension obligation bond proceeds held by OCERS.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

**EXHIBIT H**

**Development of Unfunded/(Overfunded) Actuarial Accrued Liability for Year Ended December 31, 2016**

1.	Unfunded actuarial accrued liability at beginning of year		\$4,822,348,000
2.	Adjustment for future service improvement for Law Library		<u>-510,000</u>
3.	Unfunded actuarial accrued liability at beginning of year after adjustment for future service improvement for Law Library		\$4,821,838,000
4.	Total normal cost at middle of year		442,698,000
5.	Expected employer and member contributions		-807,753,000
6.	Interest		<u>330,501,000</u>
7.	Expected unfunded actuarial accrued liability		\$4,787,284,000
8.	Actuarial (gain)/loss and other changes:		
	(a) Gain from additional UAAL contributions	-\$13,654,000	
	(b) Loss from actual contributions less than expected	5,142,000	
	(c) Loss from investment return	113,103,000	
	(d) Gain from lower than expected COLA increases	-186,039,000	
	(e) Loss from higher than expected salary increases	204,603,000	
	(f) Change in data and process <sup>(1)</sup>	-92,587,000	
	(g) Other experience loss	<u>12,631,000</u>	
	Total changes		<u>\$43,199,000</u>
9.	Unfunded actuarial accrued liability at end of year		<u>\$4,830,483,000</u>

Note: The sum of 8(d) through 8(g) is equal to the “other experience” gain of \$61,392,000 provided on page 7.

<sup>(1)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

### SECTION 3: Supplemental Information for the Orange County Employees Retirement System

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#### EXHIBIT I

#### Section 415 Limitations

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Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar indexed for inflation. That limit is \$215,000 for 2017. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Benefits for non-CalPEPRA plans that are in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contributions rates for non-CalPEPRA plans determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.

**SECTION 3: Supplemental Information for the Orange County Employees Retirement System**

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**EXHIBIT J**

**Definitions of Pension Terms**

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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.

### SECTION 3: Supplemental Information for the Orange County Employees Retirement System

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**Unfunded Actuarial Accrued Liability:**

The extent to which the actuarial accrued liability of the Plan exceeds (or is exceeded by) the assets of the Plan. There are many approaches to paying off the unfunded or overfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

**Amortization of the Unfunded (Overfunded) Actuarial Accrued Liability:**

Payments made over a period of years equal in value to the Plan's unfunded or overfunded actuarial accrued liability.

**Investment Return:**

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the market gains and losses to avoid significant swings in the value of assets from one year to the next.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**EXHIBIT I  
Summary of Actuarial Valuation Results**

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The valuation was made with respect to the following data supplied to us:

1. Retired members as of the valuation date (including 2,183 beneficiaries in pay status)	16,369
2. Members inactive during year ended December 31, 2016 with vested rights <sup>(1)</sup>	5,370
3. Members active during the year ended December 31, 2016	21,746

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

1. Normal cost	\$468,525
2. Present value of future benefits	21,855,226
3. Present value of future normal costs	3,921,765
4. Actuarial accrued liability <sup>(2)</sup>	17,933,461
Retired members and beneficiaries	\$9,716,031
Inactive members with vested rights <sup>(1)</sup>	393,497
Active members	7,823,933
5. Valuation value of assets <sup>(3)</sup> (\$12,657,418 at market value as reported by Retirement System)	13,102,978
6. Unfunded actuarial accrued liability	\$4,830,483

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<sup>(1)</sup> This includes members who chose to leave their contributions on deposit even though they have less than five years of service.

<sup>(2)</sup> Excludes liabilities held for STAR COLA.

<sup>(3)</sup> Excludes assets held for Medicare medical insurance reserve.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**EXHIBIT I (continued)**  
**Summary of Actuarial Valuation Results**

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The determination of the recommended average employer contribution is as follows (amounts in 000s):

	<b>Dollar Amount</b>	<b>% of Payroll</b>
1. Total normal cost	\$468,525	26.62%
2. Expected member contributions	<u>-211,416</u>	<u>-12.01%</u>
3. Employer normal cost: (1) + (2)	\$257,109	14.61%
4. Amortization of unfunded actuarial accrued liability	<u>386,349</u>	<u>21.95%</u>
5. Total recommended average employer contribution: (3) + (4)	\$643,458	36.56%
6. Projected compensation	\$1,759,831	

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## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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### EXHIBIT II

#### Actuarial Assumptions and Actuarial Cost Method

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**Rationale for Assumptions:** The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2011 through December 31, 2013 Actuarial Experience Study and December 31, 2014 Economic Actuarial Assumptions Report both dated July 10, 2014. Unless otherwise noted, all actuarial assumptions and methods shown below apply to members for all tiers.

#### Economic Assumptions

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

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

**Consumer Price Index:** Increase of 3.00% per year, retiree COLA increases due to CPI subject to a 3.0% maximum change per year.

**Payroll Growth:** Inflation of 3.00% per year plus “across the board” real salary increases of 0.50% per year.

#### Demographic Assumptions

##### **Post – Retirement Mortality Rates:**

*Healthy:* For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.  
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years.

*Disabled:* For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set forward six years for males and set forward three years for females.  
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020.

*Beneficiaries:* Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who is receiving a service (non-disability) retirement.

The mortality tables shown above were determined to contain about a 10% margin to reflect future mortality improvement, based on a review of the mortality experience as of the measurement date.

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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- Member Contribution Rates:* For General Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 40% male and 60% female.  
For Safety Members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years weighted 80% male and 20% female.
- Optional Forms of Benefits:* For General Service Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 40% male and 60% female.  
For Safety Service Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set back two years weighted 80% male and 20% female.  
For General Disabled Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 with ages set forward six years for males and set forward three years for females weighted 40% male and 60% female.  
For Safety Disabled Retirees: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 80% male and 20% female.  
For General Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 60% male and 40% female.  
For Safety Beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020 weighted 20% male and 80% female.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Termination Rates Before Retirement:**

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

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Termination Rates Before Retirement (Continued):**

Age	Rate (%)			
	Disability			
	General All Other <sup>(1)</sup>	General OCTA <sup>(2)</sup>	Safety - Law & Fire <sup>(3)</sup>	Safety - Probation <sup>(3)</sup>
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

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

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

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Termination Rates Before Retirement (Continued):**

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

#### SECTION 4: Reporting Information for the Orange County Employees Retirement System

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- (1) *40% of all terminated members with less than 5 years of service and 25% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (2) *45% of all terminated members with less than 5 years of service and 35% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (3) *20% of all terminated members with less than 5 years of service and 20% of all terminated members with 5 or more years of service will choose a refund of contributions.*
- (4) *40% of all terminated members with less than 5 years of service and 30% of all terminated members with 5 or more years of service will choose a refund of contributions.*

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Retirement Rates:**

Age	Rate (%)							
	General - Enhanced	General - Non-Enhanced <sup>(1)</sup>	General - SJC (31676.12)	Safety - Law (31664.1) <sup>(2)</sup>	Safety - Law (31664.2) <sup>(2)</sup>	Safety - Fire (31664.1) <sup>(2)</sup>	Safety - Fire (31664.2) <sup>(2)</sup>	Safety - Probation <sup>(2)</sup>
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

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

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Retirement Rates (Continued):**

Age	Rate (%)			
	CalPEPRA 2.5% @ 67 General Formula	CalPEPRA Safety - Probation Formula <sup>(1)</sup>	CalPEPRA Safety - Law Formula <sup>(1)</sup>	CalPEPRA Safety - Fire Formula <sup>(1)</sup>
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

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Retirement Age and Benefit for Deferred Vested Members:**

For current deferred vested members, we make the following retirement age assumptions:

General Age: 58

Safety Age: 53

We assume that 20% of future General and 30% of future Safety deferred vested members will continue to work for a reciprocal employer. For these members, we assume 4.25% compensation increases for General and 5.00% for Safety per annum.

**Liability Calculation for Current Deferred Vested Members:**

Liability for a current deferred vested member is calculated based on salary, service, and eligibility for reciprocal benefit as provided by the Retirement System. For those members without salary information that have 3 or more years of service, we used an average salary. For those members without salary information that have less than 3 years of service or for those members without service information, we assumed a refund of account balance.

**Future Benefit Accruals:**

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

**Unknown Data for Members:**

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

**Percent Married:**

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

**Age of Spouse:**

Female (or male) three years younger (or older) than spouse.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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:

<b>Years of Service</b>	<b>General</b>	<b>Safety</b>
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.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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:

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

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

*CalPEPRA Formulas*

None

**Increase in Section 7522.10  
Compensation Limit:**

Increase of 3.00% per year from the valuation date.

**Actuarial Value of Assets:**

Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual and the expected return on a market value basis, and is recognized over a five-year period.

**Valuation Value of Assets:**

The Valuation Value of Assets is the Actuarial Value of Assets reduced by the value of the non-valuation reserves.

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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### **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.

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### **Changes in Actuarial Assumptions and Methods:**

None.

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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### EXHIBIT III

#### Summary of Plan Provisions

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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.

<b>Membership Eligibility:</b>	Membership with OCERS begins with the day of employment in an eligible position by the County or a participating employer.
<b>Non-CalPEPRA General Plans</b>	
<i>2.5% @ 55 Plans (Orange County Sanitation District and Law Library<sup>(1)</sup>)</i>	
<i>Plan G</i>	General members hired before September 21, 1979.
<i>Plan H</i>	General members hired on or after September 21, 1979 (Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010 are in Plan B)
<i>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<sup>(1)</sup>, Orange County Employees Retirement System<sup>(2)</sup>, Children and Families Commission<sup>(3)</sup> and Orange County Fire Authority)</i>	
<i>Plan I</i>	General members hired before September 21, 1979.
<i>Plan J</i>	General members hired on or after September 21, 1979.
<sup>(1)</sup> Improvement is prospective only for service after June 23, 2005.	
<sup>(2)</sup> Improvement for management members is prospective only for service after June 30, 2005.	
<sup>(3)</sup> Improvement is prospective only for service after December 22, 2005.	
<i>2.0% @ 55 Plans (Transportation Corridor Agency, Cemetery District – future service effective December 7, 2007 and General OCFA members effective July 1, 2011)</i>	
<i>Plan M</i>	General members hired before September 21, 1979.
<i>Plan N</i>	General members hired on or after September 21, 1979.

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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*1.62% @ 65 Plans (Orange County Members, Orange County Superior Court, Local Agency Formation Commission and County Managers unit)*

*Plan O* County OCEA members and Superior Court members rehired on or after May 7, 2010, LAFCO members rehired on or after July 1, 2010 and County Managers unit members rehired on or after August 17, 2010 and not electing to rejoin Plan I.

*Plan P* County OCEA members and Superior Court members hired on or after May 7, 2010, LAFCO members hired on or after July 1, 2010 and County Managers unit members hired on or after August 17, 2010 and not electing Plan J.

*2.0% @ 57 Plan (City of San Juan Capistrano)*

*Plan S* General members hired on or after July 1, 2012.

*All Other General Employers*

*Plan A* General members hired before September 21, 1979.

*Plan B* General members hired on or after September 21, 1979 and Sanitation District members within Supervisors and Professional unit hired on or after October 1, 2010

### **Non-CalPEPRA Safety Plans**

*3% @ 50 Plans (Law Enforcement, Fire Authority and Probation Members)*

*Plan E* Safety members hired before September 21, 1979.

*Plan F* Safety members hired on or after September 21, 1979 and before April 9, 2010 for Law Enforcement, before July 1, 2011 for Safety members of OCFA Executive Management, and before July 1, 2012 for other OCFA Safety members.

*3% @ 55 Plans (Law Enforcement, Fire Authority)*

*Plan Q* Safety Law Enforcement members rehired on or after April 9, 2010, Safety members of OCFA Executive Management rehired on or after July 1, 2011, and other OCFA Safety members rehired on or after July 1, 2012 and previously in Plan E.

*Plan R* Safety Law Enforcement members hired on or after April 9, 2010, Safety members of OCFA Executive Management hired on or after July 1, 2011, and other OCFA Safety members hired on or after July 1, 2012.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**CalPEPRA General Plans**

*1.62% @ 65 Plan (Orange County Members except County Attorneys, Orange County Employees Retirement System except Management Members, Children and Families Commission, Local Agency Formation Commission, and Orange County Superior Court)*

*Plan T* General members with membership dates on or after January 1, 2013.

*2.5% @ 67 Plan (All Other General Employers, Orange County Attorneys, Orange County Employees Retirement System Management Members)*

*Plan U* General Non-Orange County Transportation Authority members with membership dates on or after January 1, 2013 and Orange County Transportation Authority members with membership dates on or after January 1, 2015.

*1.62% @ 65 Plan (City of San Juan Capistrano)*

*Plan W* General members with membership dates on or after January 1, 2016 would be allowed to elect the alternative benefit under Plan W.

**CalPEPRA Safety Plans**

*2.7% @ 57 Plan (Law Enforcement, Fire Authority and Probation Members)*

*Plan V* Safety members with membership dates on or after January 1, 2013.

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**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)

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**Service:** Years of service. (Yrs)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Service Retirement Eligibility:**

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

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**Benefit Formula:**

**General Plans**

<i>2.5% @ 55</i>	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>Plan G (§31676.18)</i>	50	(2.00% x FAS1 x Yrs)
	55	(2.50% x FAS1 x Yrs)
	60	(2.50% x FAS1 x Yrs)
	62	(2.62% x FAS1 x Yrs)*
	65 or later	(2.62% x FAS1 x Yrs)*
<i>Plan H (§31676.18)</i>	50	(2.00% x FAS3 x Yrs)
	55	(2.50% x FAS3 x Yrs)
	60	(2.50% x FAS3 x Yrs)
	62	(2.50% x FAS3 x Yrs)
	65 or later	(2.50% x FAS3 x Yrs)

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>2.7% @ 55</i>		
<i>Plan I (§31676.19)</i>	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)
<i>Plan J (§31676.19)</i>	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)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

<i>2.0% @ 55</i>	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>Plan M (§31676.16)</i>	50	(1.43% x FAS1 x Yrs)
	55	(2.00% x FAS1 x Yrs)
	60	(2.34% x FAS1 x Yrs)**
	62	(2.62% x FAS1 x Yrs)**
	65 or later	(2.62% x FAS1 x Yrs)**
 <i>Plan N (§31676.16)</i>	 50	 (1.43% x FAS3 x Yrs)
	55	(2.00% x FAS3 x Yrs)
	60	(2.26% x FAS3 x Yrs)
	62	(2.37% x FAS3 x Yrs)
	65 or later	(2.43% x FAS3 x Yrs)***

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

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>1.62% @ 65 Plan O (§31676.01)</i>	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)
<i>Plan P, Plan T and Plan W (§31676.01)</i>	50	(0.79% x FAS3 x Yrs)
	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)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

<i>2.0% @ 57 Plan S (§31676.12)</i>	<b>Retirement Age</b>	<b>Benefit Formula</b>
	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)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>Plan A (§31676.12)</i>	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)
<i>Plan B (§31676.1)</i>	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)
<i>Plan U (§7522.20(a))</i>	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)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Benefit Formula (continued):**

**Safety Plans**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>3% @ 50</i>		
<i>Plan E (§31664.1)</i>	50	(3.00% x FAS1 x Yrs)
	55	(3.00% x FAS1 x Yrs)
	60 or later	(3.00% x FAS1 x Yrs)
<i>Plan F (§31664.1)</i>		
	50	(3.00% x FAS3 x Yrs)
	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
<i>3% @ 55</i>		
<i>Plan Q (§31664.2)</i>		
	50	(2.29% x FAS1 x Yrs)
	55	(3.00% x FAS1 x Yrs)
	60 or later	(3.00% x FAS1 x Yrs)
<i>Plan R (§31664.2)</i>		
	50	(2.29% x FAS3 x Yrs)
	55	(3.00% x FAS3 x Yrs)
	60 or later	(3.00% x FAS3 x Yrs)
<i>Plan V (§7522.25(d))</i>		
	50	(2.00% x FAS3 x Yrs)
	55	(2.50% x FAS3 x Yrs)
	57 or later	(2.70% x FAS3 x Yrs)

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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.

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**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.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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)

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**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.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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)

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**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)

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**Post-retirement**

**Cost-of-Living Benefits:**

Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked." (§31870.1)

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**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.

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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<b>Member Contributions:</b>	Please refer to Appendix B for the specific rates.
<b>Non-CalPEPRA General Plans</b>	
<i>Plan A</i>	
<i>Basic</i>	Provide for an average annuity payable at age 60 equal to 1/200 of FAS1. (§31621.5)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.
<i>Plan B</i>	
<i>Basic</i>	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3. (§31621)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.
<i>Plans G, H, I and J</i>	
<i>Basic</i>	Provide for an average annuity payable at age 55 equal to 1/100 of FAS3 (FAS1 for Plans G and I). (§31621.8)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.
<i>Plan M, N, O and P</i>	
<i>Basic</i>	Provide for an average annuity payable at age 60 equal to 1/120 of FAS3 (FAS1 for Plans M and O). (§31621)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.
<i>Plan S</i>	
<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/100 of FAS3. (§31621.2)
<i>Cost-of-Living</i>	Provide for 50% of future Cost-of-Living costs.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**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.

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**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.

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**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.*



**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #2 – Plans I, J, O, P, S, T, U and W						
	12/31/2012	Restart amortization	\$3,438,555,000	17	\$3,403,412,000	\$272,259,000
	12/31/2013	Actuarial (gain) or loss	(173,790,000)	17	(172,014,000)	(13,760,000)
	12/31/2014	Actuarial (gain) or loss	(78,001,000)	18	(77,616,000)	(5,958,000)
	12/31/2014	Assumption changes	(246,714,000)	18	(245,496,000)	(18,846,000)
	12/31/2015	Actuarial (gain) or loss	(65,063,000)	19	(64,989,000)	(4,802,000)
	12/31/2016	Actuarial (gain) or loss	39,445,000	20	<u>39,445,000</u>	<u>2,813,000</u>
Subtotal					\$2,882,742,000	\$231,706,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

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<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #3 – Plans B, G, H and U (OCSD)						
Subtotal					\$(2,522,000)	\$0

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #5 – Plans A, B and U (OCTA)						
	12/31/2012	Restart amortization	\$232,513,000	17	\$230,137,000	\$18,410,000
	12/31/2013	Actuarial (gain) or loss	(13,471,000)	17	(13,333,000)	(1,067,000)
	12/31/2014	Actuarial (gain) or loss	4,522,000	18	4,500,000	345,000
	12/31/2014	Assumption changes	(19,944,000)	18	(19,846,000)	(1,524,000)
	12/31/2015	Actuarial (gain) or loss	(933,000)	19	(932,000)	(69,000)
	12/31/2016	Actuarial (gain) or loss	(9,743,000)	20	<u>(9,743,000)</u>	<u>(695,000)</u>
Subtotal					\$190,783,000	\$15,400,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #9 – Plans M, N and U (TCA)						
	12/31/2012	Restart amortization	\$11,906,000	17	\$11,784,000	\$943,000
	12/31/2013	Actuarial (gain) or loss	(684,000)	17	(677,000)	(54,000)
	12/31/2014	Actuarial (gain) or loss	496,000	18	494,000	38,000
	12/31/2014	Assumption changes	(1,032,000)	18	(1,027,000)	(79,000)
	12/31/2015	Actuarial (gain) or loss	778,000	19	777,000	57,000
	12/31/2016	Actuarial (gain) or loss	(1,535,000)	20	<u>(1,535,000)</u>	<u>(109,000)</u>
Subtotal					\$9,816,000	\$796,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #10 – Plans I, J, M, N and U (OCFA)						
	12/31/2012	Restart amortization	\$72,750,000	17	\$72,006,000	\$5,760,000
	12/31/2013	Actuarial (gain) or loss	(2,659,000)	17	(2,632,000)	(211,000)
	12/31/2014	Actuarial (gain) or loss	(3,755,000)	18	(3,736,000)	(287,000)
	12/31/2014	Assumption changes	(4,489,000)	18	(4,467,000)	(343,000)
	12/31/2015	Actuarial (gain) or loss	626,000	19	625,000	46,000
	12/31/2016	Actuarial (gain) or loss	134,000	20	<u>134,000</u>	<u>10,000</u>
Subtotal					\$61,930,000	\$4,975,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #11 – Plans M and N, future service, and U (Cemetery)						
Subtotal					\$(289,000)	\$0

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #12 – Plans G, H, future service, and U (Law Library)						
	12/31/2015	Restart amortization <sup>(1)</sup>	\$1,543,000	17	\$1,533,000	\$123,000
	12/31/2016	Actuarial (gain) or loss	(95,000)	20	<u>(95,000)</u>	<u>(7,000)</u>
Subtotal					\$1,438,000	\$116,000

**Note:**

<sup>(1)</sup> Reflects \$1.5 million in additional contributions made by Law Library towards their UAAL. The \$1.5 million of additional contributions has been amortized as a level percent of pay over a period of twenty years effective on December 31, 2015 and used to reduce their UAAL rates starting 2017/2018. Law Library's amortization bases established prior to December 31, 2016 were combined and reamortized over a single equivalent 17-year period. The single 17-year period is chosen to essentially replicate the total UAAL rate paid by Law Library for 2017/2018 (which was made up of the various UAAL layers allocated to Law Library when they were included in Rate Group #3 plus the UAAL credit they received from making the \$1.5 million additional contributions).

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
<i>Safety Members</i>						
Rate Group #6 – Plans E, F and V (Probation)						
	12/31/2012	Restart amortization	\$192,912,000	17	\$190,940,000	\$15,274,000
	12/31/2013	Actuarial (gain) or loss	(14,039,000)	17	(13,896,000)	(1,112,000)
	12/31/2014	Actuarial (gain) or loss	(2,596,000)	18	(2,583,000)	(198,000)
	12/31/2014	Assumption changes	36,260,000	18	36,081,000	2,770,000
	12/31/2015	Actuarial (gain) or loss	(10,703,000)	19	(10,691,000)	(790,000)
	12/31/2016	Actuarial (gain) or loss	13,799,000	20	<u>13,799,000</u>	<u>984,000</u>
Subtotal					\$213,650,000	\$16,928,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)						
	12/31/2012	Restart amortization	\$988,833,000	17	\$978,727,000	\$78,294,000
	12/31/2013	Actuarial (gain) or loss	(51,652,000)	17	(51,124,000)	(4,090,000)
	12/31/2014	Actuarial (gain) or loss	(34,729,000)	18	(34,558,000)	(2,653,000)
	12/31/2014	Assumption changes	102,262,000	18	101,757,000	7,812,000
	12/31/2015	Actuarial (gain) or loss	23,666,000	19	23,639,000	1,747,000
	12/31/2016	Actuarial (gain) or loss	39,724,000	20	<u>39,724,000</u>	<u>2,833,000</u>
Subtotal					\$1,058,165,000	\$83,943,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)						
	12/31/2012	Restart amortization	\$399,947,000	17	\$395,859,000	\$31,667,000
	12/31/2013	Actuarial (gain) or loss	(20,177,000)	17	(19,971,000)	(1,598,000)
	12/31/2014	Actuarial (gain) or loss	(35,400,000)	18	(35,225,000)	(2,704,000)
	12/31/2014	Assumption changes	35,957,000	18	35,780,000	2,747,000
	12/31/2015	Actuarial (gain) or loss	(22,228,000)	19	(22,203,000)	(1,641,000)
	12/31/2016	Actuarial (gain) or loss	(15,736,000)	20	<u>(15,736,000)</u>	<u>(1,122,000)</u>
Subtotal					\$338,504,000	\$27,349,000

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix A (Continued)**

**UAAL Amortization Schedule as of December 31, 2016**

<b>Rate Groups</b>	<b>Date Established</b>	<b>Source</b>	<b>Initial Base</b>	<b>Years Remaining</b>	<b>Remaining Base</b>	<b>Amortization Amount</b>
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	<u>56,161,000</u>	<u>4,006,000</u>
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	

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix B  
Member Contribution Rates**

**General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan I (2.7% @ 55 Non-OCFA)</u>		<u>Plan G (2.5% @ 55)</u>		<u>Plan M (2.0% @ 55)*</u>		<u>Plan A (OCTA)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	6.99%	9.67%	6.99%	9.51%	5.01%	7.23%	3.00%	4.90%
16	6.99%	9.67%	6.99%	9.51%	5.01%	7.23%	3.00%	4.90%
17	7.12%	9.84%	7.12%	9.68%	5.09%	7.36%	3.06%	4.99%
18	7.24%	10.01%	7.24%	9.85%	5.18%	7.49%	3.11%	5.08%
19	7.37%	10.19%	7.37%	10.02%	5.28%	7.62%	3.17%	5.17%
20	7.50%	10.37%	7.50%	10.20%	5.37%	7.75%	3.22%	5.26%
21	7.63%	10.55%	7.63%	10.38%	5.46%	7.89%	3.28%	5.35%
22	7.77%	10.73%	7.77%	10.56%	5.56%	8.03%	3.34%	5.45%
23	7.90%	10.92%	7.90%	10.75%	5.66%	8.17%	3.40%	5.54%
24	8.04%	11.12%	8.04%	10.94%	5.76%	8.31%	3.46%	5.64%
25	8.18%	11.31%	8.18%	11.13%	5.86%	8.46%	3.52%	5.74%
26	8.33%	11.51%	8.33%	11.33%	5.96%	8.61%	3.58%	5.84%
27	8.48%	11.72%	8.48%	11.53%	6.07%	8.76%	3.64%	5.94%
28	8.63%	11.92%	8.63%	11.73%	6.17%	8.92%	3.70%	6.05%
29	8.78%	12.14%	8.78%	11.94%	6.28%	9.07%	3.77%	6.15%
30	8.94%	12.35%	8.94%	12.16%	6.39%	9.23%	3.84%	6.26%
31	9.10%	12.58%	9.10%	12.38%	6.51%	9.40%	3.90%	6.37%
32	9.26%	12.80%	9.26%	12.60%	6.62%	9.56%	3.97%	6.49%
33	9.43%	13.04%	9.43%	12.83%	6.74%	9.73%	4.04%	6.60%
34	9.61%	13.28%	9.61%	13.07%	6.86%	9.91%	4.12%	6.72%
35	9.79%	13.53%	9.79%	13.31%	6.98%	10.08%	4.19%	6.84%
36	9.97%	13.79%	9.97%	13.56%	7.11%	10.26%	4.27%	6.96%
37	10.17%	14.05%	10.17%	13.83%	7.24%	10.45%	4.34%	7.09%
38	10.37%	14.33%	10.37%	14.10%	7.37%	10.64%	4.42%	7.22%
39	10.53%	14.55%	10.53%	14.32%	7.51%	10.84%	4.50%	7.35%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan I (2.7% @ 55 Non-OCFA)</u>		<u>Plan G (2.5% @ 55)</u>		<u>Plan M (2.0% @ 55)*</u>		<u>Plan A (OCTA)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
40	10.69%	14.78%	10.69%	14.54%	7.65%	11.04%	4.59%	7.49%
41	10.86%	15.01%	10.86%	14.77%	7.79%	11.25%	4.68%	7.63%
42	11.04%	15.26%	11.04%	15.02%	7.94%	11.47%	4.77%	7.78%
43	11.23%	15.53%	11.23%	15.28%	8.10%	11.69%	4.86%	7.93%
44	11.44%	15.81%	11.44%	15.56%	8.22%	11.87%	4.93%	8.05%
45	11.66%	16.11%	11.66%	15.86%	8.35%	12.06%	5.01%	8.18%
46	11.87%	16.41%	11.87%	16.15%	8.49%	12.25%	5.09%	8.31%
47	12.06%	16.67%	12.06%	16.40%	8.63%	12.46%	5.18%	8.45%
48	12.24%	16.92%	12.24%	16.65%	8.78%	12.67%	5.27%	8.60%
49	12.35%	17.07%	12.35%	16.80%	8.94%	12.90%	5.36%	8.75%
50	12.40%	17.14%	12.40%	16.87%	9.11%	13.15%	5.47%	8.92%
51	12.40%	17.14%	12.40%	16.86%	9.28%	13.40%	5.57%	9.09%
52	12.30%	17.00%	12.30%	16.73%	9.42%	13.60%	5.65%	9.23%
53	12.08%	16.70%	12.08%	16.44%	9.57%	13.81%	5.74%	9.37%
54	11.56%	15.98%	11.56%	15.72%	9.65%	13.93%	5.79%	9.45%
55	11.56%	15.98%	11.56%	15.72%	9.69%	13.99%	5.81%	9.49%
56	11.56%	15.98%	11.56%	15.72%	9.69%	13.99%	5.81%	9.49%
57	11.56%	15.98%	11.56%	15.72%	9.61%	13.87%	5.76%	9.41%
58	11.56%	15.98%	11.56%	15.72%	9.44%	13.63%	5.67%	9.25%
59	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	5.42%	8.84%
60	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	5.42%	8.84%
<i>COLA Loading:</i>		38.22%		36.01%		44.38%		63.22%

*Interest:* 7.25%  
*Salary Increases:* See Exhibit II, page 81  
*Mortality:* See Exhibit II, page 72  
*Additional Cashouts:* See Exhibit II, page 82

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan A (Non-OCTA)</u>		<u>Plan I (2.7% @ 55 OCFA)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	3.00%	4.80%	6.99%	9.68%
16	3.00%	4.80%	6.99%	9.68%
17	3.06%	4.89%	7.12%	9.86%
18	3.11%	4.97%	7.24%	10.03%
19	3.17%	5.06%	7.37%	10.21%
20	3.22%	5.15%	7.50%	10.39%
21	3.28%	5.24%	7.63%	10.57%
22	3.34%	5.33%	7.77%	10.75%
23	3.40%	5.43%	7.90%	10.94%
24	3.46%	5.52%	8.04%	11.14%
25	3.52%	5.62%	8.18%	11.33%
26	3.58%	5.72%	8.33%	11.53%
27	3.64%	5.82%	8.48%	11.74%
28	3.70%	5.92%	8.63%	11.95%
29	3.77%	6.03%	8.78%	12.16%
30	3.84%	6.13%	8.94%	12.38%
31	3.90%	6.24%	9.10%	12.60%
32	3.97%	6.35%	9.26%	12.83%
33	4.04%	6.47%	9.43%	13.06%
34	4.12%	6.58%	9.61%	13.30%
35	4.19%	6.70%	9.79%	13.55%
36	4.27%	6.82%	9.97%	13.81%
37	4.34%	6.94%	10.17%	14.08%
38	4.42%	7.07%	10.37%	14.35%
39	4.50%	7.20%	10.53%	14.57%
40	4.59%	7.34%	10.69%	14.80%
41	4.68%	7.47%	10.86%	15.04%
42	4.77%	7.62%	11.04%	15.29%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan A (Non-OCTA)</u>		<u>Plan I (2.7% @ 55 OCFA)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
43	4.86%	7.77%	11.23%	15.56%
44	4.93%	7.89%	11.44%	15.84%
45	5.01%	8.01%	11.66%	16.14%
46	5.09%	8.14%	11.87%	16.44%
47	5.18%	8.28%	12.06%	16.70%
48	5.27%	8.42%	12.24%	16.95%
49	5.36%	8.57%	12.35%	17.10%
50	5.47%	8.74%	12.40%	17.17%
51	5.57%	8.90%	12.40%	17.17%
52	5.65%	9.04%	12.30%	17.03%
53	5.74%	9.18%	12.08%	16.73%
54	5.79%	9.25%	11.56%	16.01%
55	5.81%	9.29%	11.56%	16.01%
56	5.81%	9.29%	11.56%	16.01%
57	5.76%	9.22%	11.56%	16.01%
58	5.67%	9.06%	11.56%	16.01%
59	5.42%	8.66%	11.56%	16.01%
60	5.42%	8.66%	11.56%	16.01%
<i>COLA Loading:</i>		59.87%		38.47%
<i>Interest:</i>	7.25%			
<i>Salary Increases:</i>	See Exhibit II, page 81			
<i>Mortality:</i>	See Exhibit II, page 72			
<i>Additional Cashouts</i>	See Exhibit II, page 82			

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan J (2.7% @ 55 non-OCFA)</u>		<u>Plan H (2.5% @ 55 OCSD)</u>		<u>Plan N (2.0% @ 55)*</u>		<u>Plan B (OCTA)</u>		<u>Plan B (non-OCTA, non-OCSD)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	6.66%	9.21%	6.66%	9.06%	4.77%	6.89%	4.77%	6.58%	4.77%	6.48%
16	6.66%	9.21%	6.66%	9.06%	4.77%	6.89%	4.77%	6.58%	4.77%	6.48%
17	6.78%	9.37%	6.78%	9.22%	4.85%	7.01%	4.85%	6.69%	4.85%	6.60%
18	6.90%	9.54%	6.90%	9.38%	4.94%	7.13%	4.94%	6.81%	4.94%	6.71%
19	7.02%	9.70%	7.02%	9.55%	5.03%	7.26%	5.03%	6.93%	5.03%	6.83%
20	7.14%	9.87%	7.14%	9.72%	5.12%	7.39%	5.12%	7.06%	5.12%	6.95%
21	7.27%	10.05%	7.27%	9.89%	5.21%	7.52%	5.21%	7.18%	5.21%	7.08%
22	7.40%	10.22%	7.40%	10.06%	5.30%	7.65%	5.30%	7.31%	5.30%	7.20%
23	7.53%	10.40%	7.53%	10.24%	5.39%	7.78%	5.39%	7.43%	5.39%	7.33%
24	7.66%	10.59%	7.66%	10.42%	5.48%	7.92%	5.48%	7.57%	5.48%	7.46%
25	7.79%	10.77%	7.79%	10.60%	5.58%	8.06%	5.58%	7.70%	5.58%	7.59%
26	7.93%	10.96%	7.93%	10.79%	5.68%	8.20%	5.68%	7.83%	5.68%	7.72%
27	8.07%	11.15%	8.07%	10.98%	5.78%	8.34%	5.78%	7.97%	5.78%	7.85%
28	8.21%	11.35%	8.21%	11.17%	5.88%	8.49%	5.88%	8.11%	5.88%	7.99%
29	8.36%	11.55%	8.36%	11.37%	5.98%	8.64%	5.98%	8.25%	5.98%	8.13%
30	8.51%	11.76%	8.51%	11.57%	6.09%	8.79%	6.09%	8.40%	6.09%	8.28%
31	8.66%	11.97%	8.66%	11.78%	6.20%	8.95%	6.20%	8.55%	6.20%	8.42%
32	8.82%	12.19%	8.82%	11.99%	6.31%	9.10%	6.31%	8.70%	6.31%	8.57%
33	8.98%	12.41%	8.98%	12.21%	6.42%	9.26%	6.42%	8.85%	6.42%	8.72%
34	9.14%	12.64%	9.14%	12.43%	6.53%	9.43%	6.53%	9.01%	6.53%	8.88%
35	9.31%	12.87%	9.31%	12.66%	6.65%	9.60%	6.65%	9.17%	6.65%	9.03%
36	9.49%	13.11%	9.49%	12.90%	6.77%	9.77%	6.77%	9.33%	6.77%	9.20%
37	9.65%	13.34%	9.65%	13.13%	6.89%	9.95%	6.89%	9.50%	6.89%	9.36%
38	9.81%	13.56%	9.81%	13.34%	7.01%	10.13%	7.01%	9.67%	7.01%	9.53%
39	9.96%	13.77%	9.96%	13.55%	7.14%	10.31%	7.14%	9.85%	7.14%	9.71%
40	10.11%	13.98%	10.11%	13.76%	7.27%	10.50%	7.27%	10.03%	7.27%	9.89%
41	10.27%	14.20%	10.27%	13.97%	7.41%	10.70%	7.41%	10.22%	7.41%	10.07%
42	10.44%	14.43%	10.44%	14.20%	7.54%	10.89%	7.54%	10.40%	7.54%	10.25%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan J (2.7% @ 55 non-OCFA)</u>		<u>Plan H (2.5% @ 55 OCSD)</u>		<u>Plan N (2.0% @ 55)*</u>		<u>Plan B (OCTA)</u>		<u>Plan B (non-OCTA, non-OCSD)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
43	10.62%	14.68%	10.62%	14.44%	7.67%	11.07%	7.67%	10.57%	7.67%	10.42%
44	10.80%	14.92%	10.80%	14.69%	7.78%	11.24%	7.78%	10.73%	7.78%	10.58%
45	10.97%	15.16%	10.97%	14.92%	7.90%	11.41%	7.90%	10.90%	7.90%	10.74%
46	11.12%	15.37%	11.12%	15.12%	8.03%	11.59%	8.03%	11.07%	8.03%	10.91%
47	11.23%	15.53%	11.23%	15.28%	8.16%	11.78%	8.16%	11.25%	8.16%	11.09%
48	11.30%	15.62%	11.30%	15.37%	8.30%	11.98%	8.30%	11.44%	8.30%	11.28%
49	11.31%	15.63%	11.31%	15.38%	8.44%	12.18%	8.44%	11.64%	8.44%	11.47%
50	11.25%	15.55%	11.25%	15.30%	8.57%	12.37%	8.57%	11.82%	8.57%	11.65%
51	11.10%	15.35%	11.10%	15.10%	8.69%	12.54%	8.69%	11.98%	8.69%	11.81%
52	10.82%	14.95%	10.82%	14.71%	8.78%	12.67%	8.78%	12.11%	8.78%	11.93%
53	11.18%	15.45%	11.18%	15.20%	8.83%	12.75%	8.83%	12.18%	8.83%	12.00%
54	11.56%	15.98%	11.56%	15.72%	8.84%	12.76%	8.84%	12.19%	8.84%	12.01%
55	11.56%	15.98%	11.56%	15.72%	8.79%	12.69%	8.79%	12.12%	8.79%	11.95%
56	11.56%	15.98%	11.56%	15.72%	8.68%	12.53%	8.68%	11.97%	8.68%	11.79%
57	11.56%	15.98%	11.56%	15.72%	8.45%	12.20%	8.45%	11.66%	8.45%	11.49%
58	11.56%	15.98%	11.56%	15.72%	8.73%	12.61%	8.73%	12.05%	8.73%	11.87%
59	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	9.03%	12.46%	9.03%	12.28%
60	11.56%	15.98%	11.56%	15.72%	9.03%	13.04%	9.03%	12.46%	9.03%	12.28%
<i>COLA Loading:</i>		38.22%		36.01%		44.38%		37.93%		35.92%

*Interest:* 7.25%

*Salary Increases:* See Exhibit II, page 81

*Mortality:* See Exhibit II, page 72

*Additional Cashouts:* See Exhibit II, page 82

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan J (2.7% @ 55 OCFA)</u>		<u>Plan P (1.62% @ 65)</u>		<u>Plan B (OCSD)</u>		<u>Plan N (OCFA)</u>		<u>Plan S (City of SJC)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	6.66%	9.23%	4.77%	5.97%	4.77%	6.53%	4.77%	6.90%	5.72%	7.78%
16	6.66%	9.23%	4.77%	5.97%	4.77%	6.53%	4.77%	6.90%	5.72%	7.78%
17	6.78%	9.39%	4.85%	6.07%	4.85%	6.65%	4.85%	7.02%	5.82%	7.92%
18	6.90%	9.55%	4.94%	6.18%	4.94%	6.76%	4.94%	7.14%	5.93%	8.06%
19	7.02%	9.72%	5.03%	6.29%	5.03%	6.88%	5.03%	7.27%	6.03%	8.20%
20	7.14%	9.89%	5.12%	6.40%	5.12%	7.01%	5.12%	7.40%	6.14%	8.35%
21	7.27%	10.06%	5.21%	6.51%	5.21%	7.13%	5.21%	7.53%	6.25%	8.50%
22	7.40%	10.24%	5.30%	6.63%	5.30%	7.25%	5.30%	7.66%	6.36%	8.64%
23	7.53%	10.42%	5.39%	6.74%	5.39%	7.38%	5.39%	7.80%	6.47%	8.80%
24	7.66%	10.60%	5.48%	6.86%	5.48%	7.51%	5.48%	7.93%	6.58%	8.95%
25	7.79%	10.79%	5.58%	6.98%	5.58%	7.64%	5.58%	8.07%	6.70%	9.11%
26	7.93%	10.98%	5.68%	7.11%	5.68%	7.78%	5.68%	8.21%	6.82%	9.27%
27	8.07%	11.17%	5.78%	7.23%	5.78%	7.91%	5.78%	8.36%	6.93%	9.43%
28	8.21%	11.37%	5.88%	7.36%	5.88%	8.05%	5.88%	8.51%	7.06%	9.60%
29	8.36%	11.57%	5.98%	7.49%	5.98%	8.19%	5.98%	8.66%	7.18%	9.77%
30	8.51%	11.78%	6.09%	7.62%	6.09%	8.34%	6.09%	8.81%	7.31%	9.94%
31	8.66%	11.99%	6.20%	7.75%	6.20%	8.49%	6.20%	8.96%	7.44%	10.11%
32	8.82%	12.21%	6.31%	7.89%	6.31%	8.63%	6.31%	9.12%	7.57%	10.29%
33	8.98%	12.43%	6.42%	8.03%	6.42%	8.79%	6.42%	9.28%	7.70%	10.47%
34	9.14%	12.66%	6.53%	8.17%	6.53%	8.94%	6.53%	9.45%	7.84%	10.66%
35	9.31%	12.89%	6.65%	8.32%	6.65%	9.10%	6.65%	9.62%	7.98%	10.85%
36	9.49%	13.14%	6.77%	8.47%	6.77%	9.27%	6.77%	9.79%	8.12%	11.04%
37	9.65%	13.37%	6.89%	8.62%	6.89%	9.43%	6.89%	9.96%	8.27%	11.24%
38	9.81%	13.59%	7.01%	8.78%	7.01%	9.61%	7.01%	10.15%	8.42%	11.45%
39	9.96%	13.79%	7.14%	8.94%	7.14%	9.78%	7.14%	10.33%	8.57%	11.66%
40	10.11%	14.00%	7.27%	9.10%	7.27%	9.96%	7.27%	10.52%	8.73%	11.87%
41	10.27%	14.23%	7.41%	9.27%	7.41%	10.15%	7.41%	10.72%	8.89%	12.10%
42	10.44%	14.46%	7.54%	9.44%	7.54%	10.33%	7.54%	10.91%	9.05%	12.31%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan J (2.7% @ 55 OCFA)</u>		<u>Plan P (1.62% @ 65)</u>		<u>Plan B (OCSD)</u>		<u>Plan N (OCFA)</u>		<u>Plan S (City of SJC)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
43	10.62%	14.70%	7.67%	9.59%	7.67%	10.50%	7.67%	11.09%	9.20%	12.51%
44	10.80%	14.95%	7.78%	9.74%	7.78%	10.66%	7.78%	11.26%	9.34%	12.70%
45	10.97%	15.19%	7.90%	9.89%	7.90%	10.82%	7.90%	11.43%	9.48%	12.90%
46	11.12%	15.40%	8.03%	10.04%	8.03%	10.99%	8.03%	11.61%	9.63%	13.10%
47	11.23%	15.56%	8.16%	10.21%	8.16%	11.17%	8.16%	11.80%	9.79%	13.31%
48	11.30%	15.65%	8.30%	10.38%	8.30%	11.36%	8.30%	12.00%	9.95%	13.54%
49	11.31%	15.66%	8.44%	10.56%	8.44%	11.55%	8.44%	12.20%	10.12%	13.77%
50	11.25%	15.58%	8.57%	10.72%	8.57%	11.73%	8.57%	12.39%	10.28%	13.98%
51	11.10%	15.38%	8.69%	10.87%	8.69%	11.90%	8.69%	12.57%	10.43%	14.18%
52	10.82%	14.98%	8.78%	10.98%	8.78%	12.02%	8.78%	12.70%	10.53%	14.32%
53	11.18%	15.48%	8.83%	11.05%	8.83%	12.09%	8.83%	12.77%	10.60%	14.41%
54	11.56%	16.01%	8.84%	11.06%	8.84%	12.10%	8.84%	12.78%	10.60%	14.42%
55	11.56%	16.01%	8.79%	11.00%	8.79%	12.04%	8.79%	12.71%	10.55%	14.34%
56	11.56%	16.01%	8.68%	10.86%	8.68%	11.88%	8.68%	12.55%	10.41%	14.16%
57	11.56%	16.01%	8.45%	10.58%	8.45%	11.57%	8.45%	12.23%	10.14%	13.79%
58	11.56%	16.01%	8.73%	10.93%	8.73%	11.96%	8.73%	12.63%	10.48%	14.25%
59	11.56%	16.01%	9.03%	11.30%	9.03%	12.37%	9.03%	13.06%	10.84%	14.74%
60	11.56%	16.01%	9.03%	11.30%	9.03%	12.37%	9.03%	13.06%	10.84%	14.74%
<i>COLA Loading:</i>		38.47%		25.13%		36.95%		44.65%		36.00%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 81									
<i>Mortality:</i>	See Exhibit II, page 72									
<i>Additional Cashouts</i>	See Exhibit II, page 82									

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

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**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

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**Plan H (2.5% @ 55 Law Library)**

<u>Entry Age</u>	<u>Normal</u>	<u>Total</u>
15	6.66%	9.09%
16	6.66%	9.09%
17	6.78%	9.25%
18	6.90%	9.41%
19	7.02%	9.58%
20	7.14%	9.74%
21	7.27%	9.91%
22	7.40%	10.09%
23	7.53%	10.27%
24	7.66%	10.45%
25	7.79%	10.63%
26	7.93%	10.82%
27	8.07%	11.01%
28	8.21%	11.20%
29	8.36%	11.40%
30	8.51%	11.60%
31	8.66%	11.81%
32	8.82%	12.03%
33	8.98%	12.24%
34	9.14%	12.47%
35	9.31%	12.70%
36	9.49%	12.94%
37	9.65%	13.17%
38	9.81%	13.38%
39	9.96%	13.58%
40	10.11%	13.79%
41	10.27%	14.01%
42	10.44%	14.24%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

**Plan H (2.5% @ 55 Law Library)**

<u>Entry Age</u>	<u>Normal</u>	<u>Total</u>
43	10.62%	14.48%
44	10.80%	14.73%
45	10.97%	14.96%
46	11.12%	15.17%
47	11.23%	15.32%
48	11.30%	15.42%
49	11.31%	15.43%
50	11.25%	15.34%
51	11.10%	15.15%
52	10.82%	14.75%
53	11.18%	15.25%
54	11.56%	15.77%
55	11.56%	15.77%
56	11.56%	15.77%
57	11.56%	15.77%
58	11.56%	15.77%
59	11.56%	15.77%
60	11.56%	15.77%

*COLA Loading:* 36.40%

*Interest:* 7.25%

*Salary Increases:* See Exhibit II, page 81

*Mortality:* See Exhibit II, page 72

*Additional Cashouts* See Exhibit II, page 82

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation  
(Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Rate Group 1 – Plan U</u>		<u>Rate Group 2 – Plan T</u>		<u>Rate Group 2 – Plan U</u>		<u>Rate Group 2 – Plan W</u>		<u>Rate Group 3 – Plan U</u>	
	<u>Normal</u>	<u>Total</u>								
15	5.37%	7.29%	3.47%	4.64%	5.00%	6.79%	3.49%	4.69%	5.23%	7.09%
16	5.37%	7.29%	3.47%	4.64%	5.00%	6.79%	3.49%	4.69%	5.23%	7.09%
17	5.13%	6.96%	3.53%	4.73%	4.77%	6.48%	3.55%	4.78%	4.99%	6.77%
18	4.87%	6.60%	3.59%	4.81%	4.53%	6.15%	3.62%	4.86%	4.74%	6.42%
19	4.95%	6.72%	3.65%	4.90%	4.61%	6.26%	3.68%	4.95%	4.82%	6.54%
20	5.04%	6.84%	3.72%	4.98%	4.69%	6.37%	3.75%	5.04%	4.91%	6.66%
21	5.13%	6.96%	3.78%	5.07%	4.77%	6.48%	3.81%	5.13%	5.00%	6.78%
22	5.22%	7.09%	3.85%	5.16%	4.86%	6.60%	3.88%	5.22%	5.09%	6.90%
23	5.32%	7.22%	3.92%	5.25%	4.95%	6.72%	3.95%	5.31%	5.18%	7.02%
24	5.41%	7.34%	3.99%	5.34%	5.03%	6.84%	4.02%	5.40%	5.27%	7.14%
25	5.51%	7.47%	4.06%	5.44%	5.12%	6.96%	4.09%	5.50%	5.36%	7.27%
26	5.61%	7.61%	4.13%	5.53%	5.22%	7.08%	4.16%	5.59%	5.46%	7.40%
27	5.71%	7.74%	4.20%	5.63%	5.31%	7.21%	4.24%	5.69%	5.55%	7.53%
28	5.81%	7.88%	4.28%	5.73%	5.40%	7.33%	4.31%	5.79%	5.65%	7.66%
29	5.91%	8.02%	4.35%	5.83%	5.50%	7.46%	4.39%	5.90%	5.75%	7.80%
30	6.01%	8.16%	4.43%	5.94%	5.59%	7.59%	4.46%	6.00%	5.85%	7.94%
31	6.12%	8.30%	4.51%	6.04%	5.69%	7.73%	4.54%	6.11%	5.96%	8.08%
32	6.23%	8.45%	4.59%	6.15%	5.79%	7.87%	4.62%	6.21%	6.06%	8.22%
33	6.34%	8.60%	4.67%	6.26%	5.89%	8.00%	4.71%	6.32%	6.17%	8.36%
34	6.45%	8.75%	4.75%	6.37%	6.00%	8.14%	4.79%	6.44%	6.28%	8.51%
35	6.56%	8.90%	4.84%	6.48%	6.10%	8.29%	4.88%	6.55%	6.39%	8.66%
36	6.68%	9.06%	4.93%	6.60%	6.21%	8.43%	4.96%	6.67%	6.50%	8.81%
37	6.80%	9.22%	5.02%	6.72%	6.32%	8.58%	5.05%	6.79%	6.61%	8.97%
38	6.92%	9.38%	5.11%	6.84%	6.43%	8.74%	5.15%	6.92%	6.73%	9.13%
39	7.04%	9.55%	5.20%	6.97%	6.55%	8.89%	5.24%	7.05%	6.85%	9.29%
40	7.16%	9.72%	5.30%	7.10%	6.66%	9.05%	5.34%	7.18%	6.97%	9.46%
41	7.29%	9.90%	5.40%	7.24%	6.78%	9.21%	5.44%	7.32%	7.10%	9.63%
42	7.42%	10.07%	5.50%	7.37%	6.91%	9.38%	5.54%	7.45%	7.23%	9.80%
43	7.56%	10.26%	5.59%	7.49%	7.03%	9.55%	5.63%	7.57%	7.36%	9.98%
44	7.70%	10.44%	5.68%	7.61%	7.16%	9.72%	5.72%	7.69%	7.49%	10.16%

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

### General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll) Calculated Under Recommended Assumptions

<u>Entry Age</u>	<u>Rate Group 1 – Plan U</u>		<u>Rate Group 2 – Plan T</u>		<u>Rate Group 2 – Plan U</u>		<u>Rate Group 2 – Plan W</u>		<u>Rate Group 3 – Plan U</u>	
	<u>Normal</u>	<u>Total</u>								
45	7.84%	10.63%	5.77%	7.73%	7.29%	9.90%	5.81%	7.81%	7.63%	10.34%
46	7.98%	10.83%	5.86%	7.85%	7.43%	10.08%	5.91%	7.94%	7.77%	10.54%
47	8.13%	11.04%	5.96%	7.99%	7.57%	10.27%	6.01%	8.07%	7.92%	10.73%
48	8.29%	11.25%	6.06%	8.13%	7.71%	10.47%	6.11%	8.21%	8.07%	10.94%
49	8.44%	11.45%	6.17%	8.27%	7.85%	10.66%	6.22%	8.36%	8.21%	11.13%
50	8.58%	11.64%	6.27%	8.41%	7.98%	10.83%	6.32%	8.50%	8.35%	11.32%
51	8.71%	11.82%	6.37%	8.53%	8.10%	11.00%	6.42%	8.62%	8.48%	11.50%
52	8.85%	12.01%	6.44%	8.63%	8.23%	11.18%	6.49%	8.72%	8.61%	11.68%
53	8.99%	12.20%	6.49%	8.70%	8.36%	11.36%	6.54%	8.79%	8.75%	11.87%
54	9.14%	12.41%	6.51%	8.72%	8.51%	11.55%	6.56%	8.82%	8.90%	12.07%
55	9.30%	12.62%	6.49%	8.70%	8.65%	11.75%	6.54%	8.79%	9.06%	12.28%
56	9.47%	12.85%	6.43%	8.62%	8.81%	11.96%	6.48%	8.72%	9.22%	12.50%
57	9.63%	13.06%	6.31%	8.45%	8.95%	12.16%	6.36%	8.54%	9.37%	12.70%
58	9.77%	13.26%	6.52%	8.74%	9.09%	12.34%	6.57%	8.83%	9.51%	12.90%
59	9.88%	13.41%	6.74%	9.03%	9.19%	12.48%	6.79%	9.13%	9.62%	13.04%
60	9.96%	13.51%	6.74%	9.03%	9.26%	12.58%	6.79%	9.13%	9.69%	13.14%
61	9.99%	13.55%	6.74%	9.03%	9.29%	12.61%	6.79%	9.13%	9.72%	13.18%
62	9.96%	13.52%	6.74%	9.03%	9.27%	12.58%	6.79%	9.13%	9.70%	13.15%
63	9.87%	13.40%	6.74%	9.03%	9.18%	12.47%	6.79%	9.13%	9.61%	13.03%
64	9.68%	13.13%	6.74%	9.03%	9.00%	12.22%	6.79%	9.13%	9.42%	12.77%
65	10.00%	13.57%	6.74%	9.03%	9.30%	12.63%	6.79%	9.13%	9.74%	13.20%
66 and thereafter	10.34%	14.03%	6.74%	9.03%	9.62%	13.06%	6.79%	9.13%	10.07%	13.65%
COLA Loading:		35.68%		34.01%		35.78%		34.41%		35.60%
Interest:	7.25%									
Salary Increases:	See Exhibit II, page 81									
Mortality:	See Exhibit II, page 72									

*It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula and the Plan W 1.62% at 65 formula, the compensation that can be taken into account for 2017 is equal to \$142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).*

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation  
(Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Rate Group 5 – Plan U</u>		<u>Rate Group 9 – Plan U</u>		<u>Rate Group 10 – Plan U</u>		<u>Rate Group 11 – Plan U</u>		<u>Rate Group 12 – Plan U</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	5.69%	7.81%	5.27%	7.11%	5.30%	7.20%	5.57%	7.38%	5.16%	6.98%
16	5.69%	7.81%	5.27%	7.11%	5.30%	7.20%	5.57%	7.38%	5.16%	6.98%
17	5.43%	7.45%	5.03%	6.78%	5.06%	6.86%	5.31%	7.04%	4.92%	6.66%
18	5.15%	7.08%	4.77%	6.43%	4.80%	6.52%	5.04%	6.68%	4.67%	6.32%
19	5.25%	7.20%	4.86%	6.55%	4.89%	6.63%	5.13%	6.80%	4.76%	6.43%
20	5.34%	7.33%	4.95%	6.67%	4.98%	6.75%	5.23%	6.93%	4.84%	6.55%
21	5.44%	7.46%	5.03%	6.79%	5.07%	6.87%	5.32%	7.05%	4.93%	6.67%
22	5.53%	7.60%	5.12%	6.91%	5.16%	7.00%	5.41%	7.18%	5.02%	6.79%
23	5.63%	7.73%	5.22%	7.03%	5.25%	7.12%	5.51%	7.30%	5.11%	6.91%
24	5.73%	7.87%	5.31%	7.16%	5.34%	7.25%	5.61%	7.43%	5.20%	7.03%
25	5.83%	8.01%	5.40%	7.28%	5.44%	7.38%	5.71%	7.57%	5.29%	7.15%
26	5.94%	8.15%	5.50%	7.41%	5.53%	7.51%	5.81%	7.70%	5.38%	7.28%
27	6.04%	8.29%	5.60%	7.54%	5.63%	7.64%	5.91%	7.84%	5.48%	7.41%
28	6.15%	8.44%	5.69%	7.68%	5.73%	7.77%	6.02%	7.98%	5.58%	7.54%
29	6.26%	8.59%	5.79%	7.81%	5.83%	7.91%	6.12%	8.12%	5.67%	7.67%
30	6.37%	8.74%	5.90%	7.95%	5.93%	8.05%	6.23%	8.26%	5.78%	7.81%
31	6.48%	8.90%	6.00%	8.09%	6.04%	8.19%	6.34%	8.40%	5.88%	7.95%
32	6.59%	9.05%	6.11%	8.23%	6.14%	8.34%	6.45%	8.55%	5.98%	8.09%
33	6.71%	9.21%	6.21%	8.38%	6.25%	8.48%	6.57%	8.70%	6.09%	8.23%
34	6.83%	9.38%	6.32%	8.53%	6.36%	8.63%	6.68%	8.86%	6.19%	8.37%
35	6.95%	9.54%	6.44%	8.68%	6.48%	8.79%	6.80%	9.01%	6.30%	8.52%
36	7.07%	9.71%	6.55%	8.83%	6.59%	8.94%	6.92%	9.17%	6.41%	8.67%
37	7.20%	9.88%	6.66%	8.99%	6.71%	9.10%	7.04%	9.33%	6.53%	8.83%
38	7.32%	10.06%	6.78%	9.14%	6.83%	9.26%	7.17%	9.50%	6.64%	8.98%
39	7.45%	10.23%	6.90%	9.31%	6.95%	9.42%	7.29%	9.67%	6.76%	9.14%
40	7.59%	10.42%	7.03%	9.47%	7.07%	9.59%	7.42%	9.84%	6.88%	9.30%
41	7.72%	10.60%	7.15%	9.64%	7.20%	9.76%	7.56%	10.02%	7.00%	9.47%
42	7.86%	10.79%	7.28%	9.82%	7.33%	9.94%	7.69%	10.20%	7.13%	9.64%
43	8.00%	10.99%	7.41%	9.99%	7.46%	10.12%	7.83%	10.38%	7.26%	9.82%
44	8.15%	11.19%	7.55%	10.18%	7.59%	10.30%	7.97%	10.57%	7.39%	9.99%

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

### General CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll) Calculated Under Recommended Assumptions

<u>Entry Age</u>	<u>Rate Group 5 – Plan U</u>		<u>Rate Group 9 – Plan U</u>		<u>Rate Group 10 – Plan U</u>		<u>Rate Group 11 – Plan U</u>		<u>Rate Group 12 – Plan U</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
45	8.30%	11.39%	7.69%	10.36%	7.73%	10.49%	8.12%	10.76%	7.53%	10.18%
46	8.45%	11.61%	7.83%	10.55%	7.88%	10.69%	8.27%	10.96%	7.67%	10.37%
47	8.61%	11.82%	7.98%	10.75%	8.03%	10.89%	8.43%	11.17%	7.81%	10.56%
48	8.78%	12.05%	8.13%	10.96%	8.18%	11.10%	8.59%	11.38%	7.96%	10.76%
49	8.93%	12.27%	8.27%	11.15%	8.33%	11.29%	8.74%	11.59%	8.10%	10.96%
50	9.08%	12.47%	8.41%	11.34%	8.46%	11.48%	8.89%	11.78%	8.24%	11.14%
51	9.22%	12.66%	8.54%	11.52%	8.59%	11.66%	9.02%	11.96%	8.36%	11.31%
52	9.37%	12.86%	8.68%	11.70%	8.73%	11.85%	9.17%	12.15%	8.50%	11.49%
53	9.52%	13.07%	8.82%	11.89%	8.87%	12.04%	9.32%	12.35%	8.64%	11.68%
54	9.68%	13.29%	8.97%	12.09%	9.02%	12.24%	9.47%	12.56%	8.78%	11.87%
55	9.85%	13.53%	9.12%	12.30%	9.18%	12.46%	9.64%	12.78%	8.94%	12.08%
56	10.03%	13.77%	9.29%	12.52%	9.34%	12.68%	9.81%	13.00%	9.09%	12.30%
57	10.19%	13.99%	9.44%	12.73%	9.50%	12.89%	9.97%	13.22%	9.24%	12.50%
58	10.35%	14.20%	9.58%	12.92%	9.64%	13.08%	10.12%	13.42%	9.38%	12.69%
59	10.47%	14.37%	9.69%	13.07%	9.75%	13.23%	10.24%	13.57%	9.49%	12.83%
60	10.55%	14.48%	9.77%	13.17%	9.83%	13.33%	10.32%	13.68%	9.56%	12.93%
61	10.58%	14.52%	9.79%	13.20%	9.85%	13.37%	10.35%	13.72%	9.59%	12.97%
62	10.55%	14.48%	9.77%	13.17%	9.83%	13.34%	10.32%	13.68%	9.57%	12.94%
63	10.45%	14.35%	9.68%	13.05%	9.74%	13.22%	10.23%	13.56%	9.48%	12.82%
64	10.25%	14.07%	9.49%	12.80%	9.55%	12.96%	10.03%	13.29%	9.30%	12.57%
65	10.59%	14.54%	9.81%	13.23%	9.87%	13.39%	10.36%	13.74%	9.61%	12.99%
66 and thereafter	10.95%	15.04%	10.14%	13.67%	10.21%	13.85%	10.72%	14.20%	9.93%	13.43%
<i>COLA Loading:</i>		37.28%		34.82%		35.67%		32.56%		35.22%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 81									
<i>Mortality:</i>	See Exhibit II, page 72									

*It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula and the Plan W 1.62% at 65 formula, the compensation that can be taken into account for 2017 is equal to \$142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).*

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan E (Fire Authority)</u>		<u>Plan E (Law Enforcement)</u>		<u>Plan E (Probation)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	4.54%	10.53%	4.68%	11.02%	4.62%	10.21%
16	4.54%	10.53%	4.68%	11.02%	4.62%	10.21%
17	4.60%	10.67%	4.74%	11.17%	4.68%	10.34%
18	4.66%	10.81%	4.81%	11.31%	4.74%	10.48%
19	4.73%	10.95%	4.87%	11.46%	4.81%	10.62%
20	4.79%	11.09%	4.93%	11.61%	4.87%	10.76%
21	4.85%	11.24%	5.00%	11.77%	4.94%	10.90%
22	4.92%	11.39%	5.07%	11.92%	5.00%	11.04%
23	4.98%	11.55%	5.14%	12.08%	5.07%	11.19%
24	5.05%	11.70%	5.21%	12.25%	5.14%	11.35%
25	5.12%	11.86%	5.28%	12.42%	5.21%	11.50%
26	5.19%	12.03%	5.35%	12.59%	5.28%	11.66%
27	5.27%	12.20%	5.42%	12.76%	5.35%	11.82%
28	5.34%	12.37%	5.50%	12.95%	5.43%	11.99%
29	5.42%	12.55%	5.58%	13.13%	5.51%	12.17%
30	5.50%	12.74%	5.66%	13.32%	5.59%	12.34%
31	5.58%	12.93%	5.75%	13.52%	5.67%	12.53%
32	5.67%	13.13%	5.84%	13.73%	5.76%	12.72%
33	5.76%	13.34%	5.93%	13.95%	5.85%	12.93%
34	5.84%	13.53%	6.01%	14.15%	5.94%	13.11%
35	5.93%	13.73%	6.10%	14.35%	6.02%	13.30%
36	6.02%	13.94%	6.19%	14.57%	6.12%	13.50%
37	6.12%	14.17%	6.29%	14.81%	6.21%	13.72%
38	6.22%	14.41%	6.40%	15.06%	6.32%	13.96%
39	6.34%	14.68%	6.52%	15.34%	6.44%	14.22%
40	6.44%	14.92%	6.62%	15.58%	6.54%	14.44%
41	6.55%	15.18%	6.74%	15.85%	6.66%	14.70%
42	6.63%	15.35%	6.81%	16.02%	6.73%	14.86%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety Tier 1 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan E (Fire Authority)</u>		<u>Plan E (Law Enforcement)</u>		<u>Plan E (Probation)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
43	6.70%	15.53%	6.88%	16.19%	6.80%	15.02%
44	6.74%	15.62%	6.92%	16.27%	6.84%	15.10%
45	6.76%	15.66%	6.93%	16.30%	6.85%	15.14%
46	6.72%	15.57%	6.87%	16.17%	6.81%	15.03%
47	6.61%	15.32%	6.74%	15.87%	6.69%	14.76%
48	6.45%	14.94%	6.54%	15.40%	6.50%	14.36%
49	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
50	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
51	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
52	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
53	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
54	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
55	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
56	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
57	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
58	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
59	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
60	6.11%	14.15%	6.11%	14.38%	6.11%	13.49%
<i>COLA Loading:</i>		<i>131.66%</i>	<i>135.32%</i>		<i>120.82%</i>	
<i>Interest:</i>		<i>7.25%</i>				
<i>Salary Increases:</i>		<i>See Exhibit II, page 81</i>				
<i>Mortality:</i>		<i>See Exhibit II, page 72</i>				
<i>Additional Cashouts</i>		<i>See Exhibit II, page 82</i>				

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan F (Fire Authority)</u>		<u>Plan F (Law Enforcement)</u>		<u>Plan F (Probation)</u>		<u>Plan R (Fire Authority)</u>		<u>Plan R (Law Enforcement)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	8.66%	14.35%	8.87%	14.87%	8.72%	13.99%	8.66%	13.65%	8.87%	13.94%
16	8.66%	14.35%	8.87%	14.87%	8.72%	13.99%	8.66%	13.65%	8.87%	13.94%
17	8.77%	14.54%	8.98%	15.06%	8.83%	14.17%	8.77%	13.83%	8.98%	14.12%
18	8.88%	14.73%	9.10%	15.26%	8.95%	14.35%	8.88%	14.01%	9.10%	14.30%
19	9.00%	14.92%	9.22%	15.46%	9.07%	14.54%	9.00%	14.20%	9.22%	14.49%
20	9.12%	15.12%	9.34%	15.66%	9.18%	14.73%	9.12%	14.38%	9.34%	14.68%
21	9.24%	15.32%	9.46%	15.87%	9.31%	14.93%	9.24%	14.58%	9.46%	14.87%
22	9.36%	15.53%	9.59%	16.08%	9.43%	15.13%	9.36%	14.77%	9.59%	15.07%
23	9.49%	15.74%	9.72%	16.29%	9.56%	15.33%	9.49%	14.97%	9.72%	15.27%
24	9.62%	15.95%	9.85%	16.51%	9.69%	15.54%	9.62%	15.17%	9.85%	15.48%
25	9.75%	16.17%	9.98%	16.73%	9.82%	15.75%	9.75%	15.38%	9.98%	15.69%
26	9.88%	16.39%	10.12%	16.96%	9.95%	15.97%	9.88%	15.59%	10.12%	15.90%
27	10.02%	16.62%	10.26%	17.20%	10.09%	16.19%	10.02%	15.81%	10.26%	16.12%
28	10.16%	16.85%	10.40%	17.44%	10.23%	16.42%	10.16%	16.03%	10.40%	16.34%
29	10.31%	17.10%	10.55%	17.68%	10.38%	16.65%	10.31%	16.26%	10.55%	16.58%
30	10.46%	17.35%	10.70%	17.94%	10.53%	16.89%	10.46%	16.50%	10.70%	16.82%
31	10.62%	17.61%	10.86%	18.20%	10.69%	17.15%	10.62%	16.75%	10.86%	17.06%
32	10.77%	17.87%	11.01%	18.46%	10.84%	17.40%	10.77%	16.99%	11.01%	17.31%
33	10.93%	18.12%	11.17%	18.72%	11.00%	17.64%	10.93%	17.24%	11.17%	17.55%
34	11.08%	18.37%	11.32%	18.98%	11.15%	17.89%	11.08%	17.48%	11.32%	17.79%
35	11.24%	18.64%	11.48%	19.24%	11.31%	18.14%	11.24%	17.73%	11.48%	18.04%
36	11.41%	18.92%	11.65%	19.53%	11.48%	18.42%	11.41%	18.00%	11.65%	18.31%
37	11.59%	19.23%	11.83%	19.83%	11.66%	18.71%	11.59%	18.29%	11.83%	18.59%
38	11.77%	19.53%	12.00%	20.13%	11.84%	19.00%	11.77%	18.57%	12.00%	18.87%
39	11.95%	19.82%	12.18%	20.42%	12.02%	19.28%	11.95%	18.86%	12.18%	19.14%
40	12.10%	20.07%	12.32%	20.66%	12.17%	19.52%	12.10%	19.09%	12.32%	19.36%
41	12.23%	20.28%	12.44%	20.85%	12.29%	19.72%	12.23%	19.29%	12.44%	19.55%
42	12.31%	20.41%	12.50%	20.96%	12.36%	19.83%	12.31%	19.41%	12.50%	19.64%
43	12.34%	20.46%	12.51%	20.98%	12.39%	19.88%	12.34%	19.46%	12.51%	19.67%
44	12.29%	20.39%	12.44%	20.86%	12.34%	19.79%	12.29%	19.39%	12.44%	19.55%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety Tier 2 Members' Contribution Rates from the December 31, 2016 Actuarial Valuation (Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Plan F (Fire Authority)</u>		<u>Plan F (Law Enforcement)</u>		<u>Plan F (Probation)</u>		<u>Plan R (Fire Authority)</u>		<u>Plan R (Law Enforcement)</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
45	12.15%	20.14%	12.26%	20.56%	12.18%	19.54%	12.15%	19.16%	12.26%	19.27%
46	11.89%	19.71%	11.96%	20.05%	11.91%	19.10%	11.89%	18.75%	11.96%	18.79%
47	11.45%	18.99%	11.45%	19.20%	11.45%	18.37%	11.45%	18.06%	11.45%	18.00%
48	11.82%	19.61%	11.82%	19.83%	11.82%	18.97%	11.82%	18.65%	11.82%	18.59%
49	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
50	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
51	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
52	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
53	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
54	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
55	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
56	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
57	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
58	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
59	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
60	12.22%	20.26%	12.22%	20.49%	12.22%	19.60%	12.22%	19.27%	12.22%	19.20%
<i>COLA Loading:</i>		65.83%		67.66%		60.41%		57.74%		57.17%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 81									
<i>Mortality:</i>	See Exhibit II, page 72									
<i>Additional Cashouts</i>	See Exhibit II, page 82									

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation  
(Expressed as a Percentage of Monthly Payroll)  
Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Rate Group 6 – Plan V</u>		<u>Rate Group 7 – Plan V</u>		<u>Rate Group 8 – Plan V</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	9.13%	12.99%	10.54%	15.10%	8.63%	12.42%
16	9.13%	12.99%	10.54%	15.10%	8.63%	12.42%
17	9.25%	13.15%	10.68%	15.29%	8.74%	12.58%
18	9.37%	13.33%	10.82%	15.49%	8.86%	12.75%
19	9.49%	13.50%	10.96%	15.69%	8.97%	12.91%
20	9.61%	13.67%	11.10%	15.90%	9.09%	13.08%
21	9.74%	13.85%	11.24%	16.10%	9.21%	13.25%
22	9.86%	14.03%	11.39%	16.31%	9.33%	13.42%
23	9.99%	14.22%	11.54%	16.53%	9.45%	13.60%
24	10.12%	14.40%	11.69%	16.74%	9.58%	13.78%
25	10.26%	14.59%	11.85%	16.96%	9.70%	13.96%
26	10.39%	14.79%	12.00%	17.19%	9.83%	14.14%
27	10.53%	14.98%	12.16%	17.42%	9.96%	14.33%
28	10.67%	15.18%	12.32%	17.65%	10.09%	14.52%
29	10.81%	15.39%	12.49%	17.89%	10.23%	14.72%
30	10.96%	15.60%	12.66%	18.13%	10.37%	14.92%
31	11.11%	15.81%	12.83%	18.38%	10.51%	15.12%
32	11.26%	16.03%	13.01%	18.63%	10.65%	15.33%
33	11.42%	16.25%	13.19%	18.89%	10.80%	15.54%
34	11.58%	16.48%	13.38%	19.15%	10.95%	15.76%
35	11.75%	16.71%	13.57%	19.43%	11.11%	15.99%
36	11.92%	16.96%	13.76%	19.71%	11.27%	16.22%
37	12.09%	17.21%	13.97%	20.00%	11.44%	16.46%
38	12.28%	17.47%	14.18%	20.31%	11.61%	16.71%
39	12.46%	17.73%	14.39%	20.61%	11.78%	16.96%
40	12.64%	17.99%	14.60%	20.91%	11.96%	17.20%
41	12.82%	18.24%	14.81%	21.20%	12.13%	17.45%
42	13.01%	18.51%	15.03%	21.52%	12.31%	17.71%
43	13.21%	18.80%	15.26%	21.85%	12.50%	17.98%
44	13.43%	19.11%	15.51%	22.21%	12.70%	18.28%

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Safety CalPEPRA Members' Contribution Rates from the December 31, 2016 Actuarial Valuation  
(Expressed as a Percentage of Monthly Payroll)**

**Calculated Under Recommended Assumptions**

<u>Entry Age</u>	<u>Rate Group 6 – Plan V</u>		<u>Rate Group 7 – Plan V</u>		<u>Rate Group 8 – Plan V</u>	
	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
45	13.64%	19.41%	15.76%	22.57%	12.91%	18.57%
46	13.86%	19.72%	16.01%	22.93%	13.11%	18.87%
47	14.04%	19.98%	16.22%	23.23%	13.28%	19.11%
48	14.20%	20.21%	16.40%	23.49%	13.43%	19.33%
49	14.30%	20.35%	16.52%	23.66%	13.53%	19.47%
50	14.36%	20.43%	16.58%	23.75%	13.58%	19.54%
51	14.32%	20.38%	16.54%	23.69%	13.55%	19.50%
52	14.18%	20.18%	16.38%	23.46%	13.41%	19.30%
53	13.92%	19.81%	16.08%	23.02%	13.17%	18.94%
54	13.47%	19.16%	15.55%	22.27%	12.74%	18.33%
55	13.91%	19.79%	16.06%	23.00%	13.15%	18.93%
56 and thereafter	14.37%	20.45%	16.60%	23.77%	13.59%	19.56%
<i>COLA Loading:</i>		42.29%		43.20%		43.90%
<i>Interest:</i>	7.25%					
<i>Salary Increases:</i>	See Exhibit II, page 81					
<i>Mortality:</i>	See Exhibit II, page 72					

*It is our understanding that in the determination of pension benefits under the CalPEPRA 2.7% at 57 formula, the compensation that can be taken into account for 2017 is equal to \$142,530 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2017 (reference: Section 7522.10(d)).*

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

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### Appendix C Funded Percentages

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The funded percentages on a valuation value of assets basis by rate group provided for informational purposes only are as follows:

	Funded Percentage	
	December 31, 2016 Valuation	December 31, 2015 Valuation
<i>General Members</i>		
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	82.57%	78.87%
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	71.23%	70.00%
Rate Group #3 – Plans B, G, H and U (OCSD)	100.42%	99.09%
Rate Group #5 – Plans A, B and U (OCTA)	77.31%	75.22%
Rate Group #9 – Plans M, N and U (TCA)	75.29%	70.00%
Rate Group #10 – Plans I, J, M, N and U (OCFA)	70.16%	68.09%
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	103.37%	101.53%
Rate Group #12 – Plans G, H, future service, and U (Law Library)	84.42%	65.92%
<i>Safety Members</i>		
Rate Group #6 – Plans E, F and V (Probation)	70.84%	70.19%
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	69.89%	69.08%
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	77.65%	75.19%

## SECTION 4: Reporting Information for the Orange County Employees Retirement System

### Appendix D

#### Reconciliation of Employer Contribution Rates (by Rate Group)

The reconciliation of the employer contribution rates for the General Rate Groups #1 to #5 are as follows:

	Rate Group			
	#1	#2	#3	#5
1. Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	18.51% <sup>(1)</sup>	34.38%	13.07%	26.18%
2. Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	-1.42%	0.00%
3. Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
4. Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	18.51% <sup>(1)</sup>	34.38%	11.65%	26.18%
5. Actuarial (gain)/loss items:				
(a) Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	0.00%	0.00%	0.00%	0.00%
(b) Effect of investment loss (after smoothing)	0.27%	0.41%	N/A <sup>(2)</sup>	0.38%
(c) Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	-0.11%	0.00%	N/A <sup>(2)</sup>	0.00%
(d) Effect of actual contributions less/(more) than expected	-0.12%	-0.02%	N/A <sup>(2)</sup>	0.14%
(e) Effect of difference in actual versus expected COLA increases	-0.42%	-0.68%	N/A <sup>(2)</sup>	-0.55%
(f) Effect of difference in actual versus expected salary increases	-0.24%	0.87%	N/A <sup>(2)</sup>	0.23%
(g) Effect of growth in total payroll (greater)/less than expected	-0.68%	-0.96%	N/A <sup>(2)</sup>	-0.02%
(h) Effect of changes in data and process <sup>(3)</sup>	-0.37%	-0.36%	N/A <sup>(2)</sup>	-0.86%
(i) Effect of other experience (gain)/loss <sup>(4)</sup>	<u>-0.47%</u>	<u>0.02%</u>	<u>-0.04%</u>	<u>-0.02%</u>
(j) Subtotal	-2.14%	-0.72%	-0.04%	-0.70%
6. Aggregate Recommended Contribution Rate as of December 31, 2016	16.37% <sup>(5)</sup>	33.66%	11.61%	25.48%

<sup>(1)</sup> As of December 31, 2015, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 14.86%.

<sup>(2)</sup> N/A because RG #3 has become overfunded and under CalPEPRA, the employer's contribution rate cannot be less than the Normal Cost unless the funded ratio is over 120% and other conditions in CalPEPRA are met. If that restriction did not apply, the UAAL rates would have been -0.21% if the overfunded amounts are amortized over 30 years.

<sup>(3)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

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

<sup>(5)</sup> As of December 31, 2016, the net contribution rate for County and IHSS Public Authority after reflecting Board's UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 13.30%.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix D (Continued)**

**Reconciliation of Employer Contribution Rates (by Rate Group)**

The reconciliation of the employer contribution rates for the General Rate Groups #9 to #12 are as follows:

	Rate Group			
	#9	#10	#11	#12
1. Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	26.30%	32.58%	11.45%	31.00% <sup>(1)</sup>
2. Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	0.00%	-8.89%
3. Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
4. Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	26.30%	32.58%	11.45%	22.11%
5. Actuarial (gain)/loss items:				
(a) Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	0.00%	0.00%	0.00%	0.00%
(b) Effect of investment loss (after smoothing)	0.27%	0.33%	N/A <sup>(2)</sup>	0.41%
(c) Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	0.00%	-0.15%	N/A <sup>(2)</sup>	0.00%
(d) Effect of actual contributions less/(more) than expected	-0.20%	-0.13%	N/A <sup>(2)</sup>	0.19%
(e) Effect of difference in actual versus expected COLA increases	-0.35%	-0.58%	N/A <sup>(2)</sup>	-0.36%
(f) Effect of difference in actual versus expected salary increases	-0.46%	0.08%	N/A <sup>(2)</sup>	-0.99%
(g) Effect of growth in total payroll (greater)/less than expected	-0.45%	-2.14%	N/A <sup>(2)</sup>	0.60%
(h) Effect of changes in data and process	-0.12%	-0.35%	N/A <sup>(2)</sup>	-0.10%
(i) Effect of other experience (gain)/loss <sup>(4)(5)</sup>	<u>-1.17%</u>	<u>0.90%</u>	<u>-0.57%</u>	<u>0.88%</u>
(j) Subtotal	-2.48%	-2.04%	-0.57%	0.63%
6. Aggregate Recommended Contribution Rate as of December 31, 2016	23.82%	30.54%	10.88%	22.74%

<sup>(1)</sup> After adjustments for future service improvements.

<sup>(2)</sup> N/A because RG #11 has become overfunded and under CalPEPRA, the employer's contribution rate cannot be less than the Normal Cost unless the funded ratio is over 120% and other conditions in CalPEPRA are met. If that restriction did not apply, the UAAL rates would have been -1.15% if the overfunded amounts are amortized over 30 years.

<sup>(3)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

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

<sup>(5)</sup> Effect of other experience (gain)/loss includes:

	<u>RG#9</u>	<u>RG#10</u>	<u>RG#11</u>	<u>RG#12</u>
Effect of changes in demographics	-0.15%	0.14%	-0.57%	0.86%
Retirement experience (gain)/loss	-0.59%	0.54%	N/A	N/A

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix D (Continued)**

**Reconciliation of Employer Contribution Rates (by Rate Group)**

The reconciliation of the employer contribution rates for the Safety rate groups are as follows:

	Rate Group		
	#6	#7	#8
1. Aggregate Recommended Contribution Rate as of December 31, 2015 (before adjustments to FY17/18 rates)	47.09%	63.83%	49.43%
2. Adjustment to FY17-18 rates for additional UAAL contributions from OCSD and Law Library	0.00%	0.00%	0.00%
3. Effect of 3-year phase-in of changes in actuarial assumptions for Safety Rate Groups	<u>-2.17%</u>	<u>-2.12%</u>	<u>-1.40%</u>
4. Aggregate Recommended Contribution Rate as of December 31, 2015 (after adjustments to FY17/18 rates)	44.92%	61.71%	48.03%
5. Actuarial (gain)/loss items:			
(a) Effect of recognizing one-third of 3-year phase-in of changes in actuarial assumptions for Safety rate groups	2.17%	2.12%	1.40%
(b) Effect of investment loss (after smoothing)	0.49%	0.69%	0.59%
(c) Effect of additional UAAL contributions from OCFA and scheduled payment for UCI	0.00%	0.00%	-0.27%
(d) Effect of actual contributions less/(more) than expected	0.24%	0.20%	0.07%
(e) Effect of difference in actual versus expected COLA increases	-0.64%	-1.28%	-1.05%
(f) Effect of difference in actual versus expected salary increases	1.30%	2.16%	-0.07%
(g) Effect of growth in total payroll (greater)/less than expected	-0.63%	-1.87%	-0.48%
(h) Effect of changes in data and process <sup>(1)</sup>	-0.27%	-0.50%	-0.08%
(i) Effect of other experience (gain)/loss <sup>(2)</sup>	<u>0.21%</u>	<u>-0.42%</u>	<u>-0.33%</u>
(j) Subtotal	2.87%	1.10%	-0.22%
6. Aggregate Recommended Contribution Rate as of December 31, 2016	47.79%	62.81%	47.81%

<sup>(1)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

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

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix E  
Reconciliation of UAAL (by Rate Group)**

The reconciliation of UAAL for the General rate groups are as follows:

	Rate Group (\$000s)							
	#1	#2	#3	#5	#9	#10	#11	#12
1. UAAL as of December 31, 2015	\$91,105	\$2,864,029	\$5,269	\$201,945	\$11,425	\$62,239	-\$125	\$2,943 <sup>(1)</sup>
2. Total normal cost at middle of year	13,476	232,677	14,867	20,092	1,461	5,546	261	300
3. Expected employer and member contributions	-20,342	-453,663	-15,762	-35,685	-2,342	-10,319	-261	-564
4. Interest	<u>6,202</u>	<u>200,254</u>	<u>177</u>	<u>14,174</u>	<u>807</u>	<u>4,330</u>	<u>-9</u>	<u>245</u>
5. Expected UAAL as of December 31, 2016	\$90,441	\$2,843,297	\$4,551	\$200,526	\$11,351	\$61,796	-\$134	\$2,924
6. Actuarial (gain)/loss and other changes:								
(a) (Gain) from additional UAAL contributions	-\$1,331	\$0	-\$5,652	\$0	\$0	-\$552	\$0	-\$1,504
(b) (Gain)/loss from actual contributions (more)/less than expected	-1,345	-3,049	-1,380	2,106	-188	-490	-22	82
(c) Loss from investment return	3,118	61,622	5,260	5,610	258	1,257	77	67
(d) Gain on lower than expected COLA increases	-4,951	-101,421	-5,860	-7,972	-339	-2,191	-48	-59
(e) (Gain)/loss from lower/higher than expected salary increases	-2,827	129,820	-2,654	3,251	-440	298	80	-163
(f) Change in data and process <sup>(2)</sup>	-4,238	-53,981	-1,324	-12,452	-119	-1,316	-13	-16
(g) Other experience (gain)/loss	<u>-2,601</u>	<u>6,454</u>	<u>4,537</u>	<u>-286</u>	<u>-707</u>	<u>3,128</u>	<u>-229</u>	<u>107</u>
Total Changes	-\$14,175	\$39,445	-\$7,073	-\$9,743	-\$1,535	\$134	-\$155	-\$1,486
7. UAAL as of December 31, 2016	<u>\$76,266</u>	<u>\$2,882,742</u>	<u>-\$2,522</u>	<u>\$190,783</u>	<u>\$9,816</u>	<u>\$61,930</u>	<u>-\$289</u>	<u>\$1,438</u>

<sup>(1)</sup> After adjustment of \$510 for future service only benefit improvement for O.C. Law Library.

<sup>(2)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary.

**SECTION 4: Reporting Information for the Orange County Employees Retirement System**

**Appendix E (Continued)**  
**Reconciliation of UAAL (by Rate Group)**

The reconciliation of UAAL for the Safety rate groups are as follows:

	Rate Group (\$000s)		
	#6	#7	#8
1. UAAL as of December 31, 2015	\$201,176	\$1,025,052	\$356,780
2. Total normal cost at middle of year	22,964	83,194	47,860
3. Expected employer and member contributions	-37,169	-157,951	-73,695
4. Interest	<u>12,880</u>	<u>68,146</u>	<u>23,295</u>
5. Expected UAAL as of December 31, 2016	\$199,851	\$1,018,441	\$354,240
6. Actuarial (gain)/loss and other changes:			
(a) Gain from additional UAAL contributions	\$0	\$0	-\$4,615
(b) (Gain)/loss from actual contributions (more)/less than expected	2,170	6,066	1,192
(c) Loss from investment return	4,481	21,203	10,150
(d) Gain on lower than expected COLA increases	-5,828	-39,359	-18,011
(e) (Gain)/loss from lower/higher than expected salary increases	11,800	66,518	-1,080
(f) Change in data and process <sup>(1)</sup>	-2,421	-15,317	-1,390
(g) Other experience (gain)/loss	<u>3,597</u>	<u>613</u>	<u>-1,982</u>
Total Changes	\$13,799	\$39,724	-\$15,736
7. UAAL as of December 31, 2016	<u>\$213,650</u>	<u>\$1,058,165</u>	<u>\$338,504</u>

<sup>(1)</sup> Includes leap year salary adjustment, revised benefit and eligibility service credits from V3 pension administration system and automatic continuance benefit for child beneficiary