

Memorandum

DATE: July 7, 2016
TO: Members of the Board of Retirement
FROM: Brenda Shott, Assistant CEO, Finance and Internal Operations
SUBJECT: **ACTUARIAL DECEMBER 31, 2015 VALUATION**

Recommendation

Approve the Actuarial Valuation and Review as of December 31, 2015 and adopt contribution rates for Fiscal Year 2017 – 2018 as recommended by Segal Consulting.

Background/Discussion

In June the OCERS Board of Retirement considered the preliminary results of the December 31, 2015 Actuarial Valuation in PowerPoint format with Mr. Paul Angelo from Segal Consulting.

On July 18, Mr. Angelo will present the complete Actuarial Valuation and Review as of December 31, 2015 which contains greater detail, and the Board will be requested to formally adopt that report and the contribution rates that will go into effect in Fiscal Year 2017-2018.

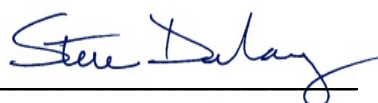
The Board considers the Actuarial Valuation report in this two-step process (a process shared by only two other Segal public pension clients) as a courtesy to our many stakeholders, allowing them an opportunity to consider the initial data and provide comment prior to a formal adoption. To-date we have received no comments or concerns regarding the Actuarial Valuation as of December 31, 2015.

Submitted by:



Brenda Shott
Assistant CEO, Finance and Internal Operations

Approved by:



Steve Delaney
CEO

Orange County Employees Retirement System

Actuarial Valuation and Review as of
December 31, 2015



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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July 8, 2016

*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, 2015. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2017-2018 and analyzes the preceding year's experience.

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


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

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

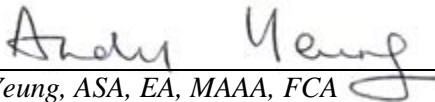
We look forward to reviewing this report at your next meeting and to answering any questions.

Sincerely,

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

By: 

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



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

AW/hy

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

Purpose

This report has been prepared by Segal Consulting to present a valuation of the Orange County Employees Retirement System as of December 31, 2015. 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 the Retirement System, as administered by the Board of Retirement;
- The characteristics of covered active members, inactive vested members, retired members, and beneficiaries as of December 31, 2015, provided by OCERS;
- The assets of the Plan as of December 31, 2015, provided by OCERS;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding member terminations, retirement, death, etc.

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. The results of this valuation reflect the demographic data reported using the System's new Pension Administration System; V3. 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 2013 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, 2017 through June 30, 2018 (the rates will go into effect during the pay period which includes July 1, 2017).

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

Significant Issues in Valuation Year

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

Ref: Pgs. 35 and 126

- The ratio of the valuation value of assets to the actuarial accrued liabilities has increased from 69.8% to 71.7%. 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 decreased from 69.6% to 67.7%. The System's Unfunded Actuarial Accrued Liability (UAAL), measured using the valuation value of assets, has decreased from \$4,963.2 million as of December 31, 2014 to \$4,822.3 million as of December 31, 2015. The decrease in UAAL is mainly due to (a) additional UAAL payments made by certain employers, (b) lower than expected salary increases, and (c) lower than expected COLA increases, offset somewhat by (d) actual contributions less than expected, (e) unfavorable investment return (after smoothing), (f) higher than expected retirement experience, and (g) other actuarial losses. 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.

Ref: Pgs. 64 and 129

- 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 second year of the phase-in. The employer contribution rates for Safety Rate Groups shown as of December 31, 2014 and 2015 in this report have been adjusted to reflect the phase-in.

Ref: Pgs. 32 and 127

- The aggregate employer rate calculated in this valuation has increased from 36.14% of payroll to 37.25% of payroll. The 36.14% rate was calculated after adjusting for the additional UAAL contributions made by O.C. Sanitation District (OCSD) during 2015 and the phase-in adjustment for Safety Rate Groups. The December 31, 2014 contribution rate without adjustment for the additional UAAL contributions and the phase-in adjustment was 37.24% of payroll.

The reasons for the increases in the rates between the 2014 and 2015 valuations are: (a) recognizing one-third of the cost impact of changes in actuarial assumptions for Safety Rate Groups, (b) unfavorable investment return (after smoothing), (c) actual contributions less than expected, (d) growth in total payroll less than expected, (e) higher than expected retirement experience, and (f) other actuarial losses, offset somewhat by (g) additional UAAL payments made by certain employers, (h) lower than expected salary increases, and (i) lower than expected COLA increases. 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 valuation report, we have included a footnote to Chart 13 to show what the UAAL contribution

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

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. 97

The UAAL amounts of \$27.586 million and \$3.283 million allocated to U.C.I. and the Department of Education, respectively, as of December 31, 2014 were provided in our side letters dated September 17, 2015. The UAAL amounts for U.C.I. and Department of Education have increased to \$31.550 million and \$3.723 million, respectively, as of December 31, 2015 primarily as a result of interest accruing on the UAAL (and no or very little UAAL contributions) and unfavorable return on the valuation value of assets. 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.

- San Juan Capistrano adopted Plan W (1.62% @ 65 formula) effective January 1, 2016. For members with membership dates on or after January 1, 2016, they will be allowed to elect Plan W in lieu of the current Plan U (2.5% @ 67 formula). As there were no active members in Plan W as of the valuation date, we have continued to apply the same Plan W Normal Cost contribution rates previously calculated for 2016/2017 as provided in our letter dated October 8, 2015 for 2017/2018.

Ref: Pg. 33

- The aggregate member rate calculated in this valuation has remained unchanged at 12.21% 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, 2015 is \$679,569,000 (as compared to a net unrecognized loss of \$21,778,000 as of December 31, 2014). 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, 2015 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 \$679.6 million represent about 5.9% of the market value of assets. 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 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 37.25% to about 40.2% of payroll. Note that both of the 37.25% and 40.2% rates are before reflecting the last one-third of the phase-in adjustment for Safety Rate Groups.

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

- The actuarial valuation report as of December 31, 2015 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 \$50 million additional contributions made by O.C. Sanitation District towards its UAAL. The \$50 million¹ of additional contributions made by O.C. Sanitation District has been amortized as a level percent of pay over a period of twenty years effective on July 1, 2016 and used to reduce their UAAL rates starting 2016/2017.

This report also reflects the \$18.4 million² additional contributions made by O.C. Fire Authority towards their UAAL. The \$18.4 million 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, 2015 and used to reduce their UAAL rates for 2017/2018.

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.

¹ \$50 million in additional contributions were made by O.C. Sanitation District on September 3, 2015. After adjusting with interest, those contributions have a value of \$51.2 million as of December 31, 2015.

² \$18.4 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 \$18.7 million as of December 31, 2015.

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

Summary of Key Valuation Results

	December 31, 2015		December 31, 2014	
Aggregate Employer Contribution Rates:				
<u>General</u>	<u>Total Rate</u>	<u>Estimated Annual Amount⁽¹⁾</u>	<u>Total Rate⁽²⁾</u>	<u>Estimated Annual Amount⁽¹⁾</u>
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	18.57%	\$13,826	18.01%	\$13,409
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	34.70%	341,545	34.00%	334,667
Rate Group #3 – Plans B, G, H and U (Law Library, OCSD)	13.63%	8,764	12.91%	8,300
Rate Group #5 – Plans A, B and U (OCTA)	26.20%	26,321	25.15%	25,270
Rate Group #9 – Plans M, N and U (TCA)	26.42%	1,688	25.32%	1,618
Rate Group #10 – Plans I, J, M, N and U (OCFA)	33.04%	7,681	32.97%	7,665
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	11.40%	146	11.79%	152
<u>Safety⁽³⁾</u>				
Rate Group #6 – Plans E, F and V (Probation)	44.97%	\$27,591	42.73%	\$26,223
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	61.89%	124,944	58.30%	117,696
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	48.38%	55,803	47.78%	55,116
<u>All Groups Combined</u>	37.25%	\$608,309	36.14%	\$590,116
Average Member Contribution Rates:				
<u>General</u>	<u>Total Rate</u>	<u>Estimated Annual Amount⁽¹⁾</u>	<u>Total Rate⁽⁴⁾</u>	<u>Estimated Annual Amount⁽¹⁾</u>
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	8.75%	\$6,516	8.75%	\$6,516
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	11.39%	112,118	11.39%	112,118
Rate Group #3 – Plans B, G, H and U (Law Library, OCSD)	11.76%	7,562	11.76%	7,562
Rate Group #5 – Plans A, B and U (OCTA)	9.32%	9,364	9.31%	9,354
Rate Group #9 – Plans M, N and U (TCA)	10.23%	654	10.19%	651
Rate Group #10 – Plans I, J, M, N and U (OCFA)	11.35%	2,638	11.38%	2,645
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	8.92%	115	8.92%	115
<u>Safety</u>				
Rate Group #6 – Plans E, F and V (Probation)	15.61%	\$9,578	15.55%	\$9,542
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	16.35%	33,007	16.32%	32,946
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	15.51%	17,892	15.52%	17,903
<u>All Groups Combined</u>	12.21%	\$199,444	12.21%	\$199,352

⁽¹⁾ Based on December 31, 2015 projected annual compensation.

⁽²⁾ For those Rate Groups with tier specific contribution rates, the total rates shown above have been recalculated by applying the tier specific contribution rates determined in the December 31, 2014 valuation to the corresponding projected payrolls reported as of December 31, 2015.

⁽³⁾ These rates reflect the phase-in of changes in actuarial assumptions starting with the December 31, 2014 valuation.

⁽⁴⁾ Average rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2014 valuation to the System membership as of December 31, 2015.

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

Summary of Key Valuation Results

	December 31, 2015	December 31, 2014
Funded Status:		
Actuarial accrued liability (AAL)	\$17,050,357	\$16,413,124
Valuation value of assets (VVA) ⁽¹⁾	12,228,009	11,449,911
Market value of assets (MVA) ^{(1),(2)}	11,548,440	11,428,133
Funded percentage on a VVA basis	71.72%	69.76%
Funded percentage on a MVA basis	67.73%	69.63%
Unfunded Actuarial Accrued Liability on a VVA basis	\$4,822,348	\$4,963,213
Unfunded Actuarial Accrued Liability on a MVA basis	5,501,917	4,984,991
Key Assumptions:		
Interest rate	7.25%	7.25%
Inflation rate	3.00%	3.00%
Across-the-board real salary increase	0.50%	0.50%

⁽¹⁾ Excludes County Investment Account (funded by pension obligation bond proceeds held by OCERS), prepaid employer contributions account and non-valuation reserves.

⁽²⁾ 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, 2015	December 31, 2014	Percentage Change
Active Members:			
Number of members	21,525	21,459	0.3%
Average age	45.5	45.6	N/A
Average service	13.1	13.2	N/A
Projected total compensation	\$1,633,110,601	\$1,648,160,449	-0.9%
Average projected compensation	\$75,870	\$76,805	-1.2%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	12,271	11,759	4.4%
Disability retired	1,404	1,364	2.9%
Beneficiaries	<u>2,135</u>	<u>2,046</u>	4.3%
Total	15,810	15,169	4.2%
Average age	69.5	69.4	N/A
Average monthly benefit ⁽¹⁾	\$3,560	\$3,455	3.0%
Vested Terminated Members:			
Number of vested terminated members ⁽²⁾	5,091	4,789	6.3%
Average age	44.8	44.7	N/A
Summary of Financial Data (dollar amounts in thousands):			
Market value of assets ⁽³⁾	\$11,548,529	\$11,428,223	1.1%
Return on market value of assets	-0.45%	4.52%	N/A
Actuarial value of assets ⁽³⁾	\$12,228,098	\$11,450,001	6.8%
Return on actuarial value of assets	5.26%	7.34%	N/A
Valuation value of assets ⁽³⁾	\$12,228,009	\$11,449,911	6.8%
Return on valuation value of assets	5.26%	7.34%	N/A

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

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

⁽³⁾ The market value excludes \$108,789,000 and \$109,103,000 as of December 31, 2015 and December 31, 2014, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS) and \$227,166,000 and \$207,829,000 as of December 31, 2015 and December 31, 2014, respectively, in the prepaid employer contributions 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

Important Information about Actuarial Valuations

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

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

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

- The valuation is prepared at the request of the OCERS. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan’s assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If OCERS is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.

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

- 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: 2006 – 2015

Year Ended December 31	Active Members	Vested Terminated Members⁽¹⁾	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2006	22,791	3,195	10,915	0.62
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

⁽¹⁾ 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 21,525 active members with an average age of 45.5, average years of service of 13.1 years, and average compensation of \$75,870. The 21,459 active members in the prior valuation had an average age of 45.6, average service of 13.2 years, and average compensation of \$76,805.

Inactive Members

In this year's valuation, there were 5,091 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 4,789 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, 2015

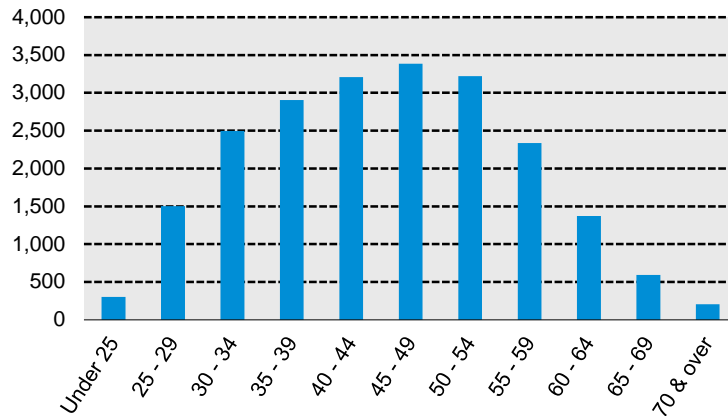
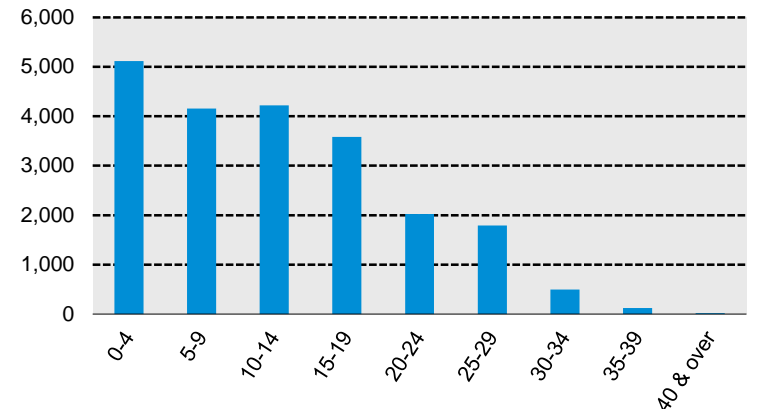


CHART 3
Distribution of Active Members by Years of Service as of December 31, 2015



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

Retired Members and Beneficiaries

As of December 31, 2015, 13,675 retired members and 2,135 beneficiaries were receiving total monthly benefits of \$56,291,151. For comparison, in the previous valuation, there were 13,123 retired members and 2,046 beneficiaries receiving total monthly benefits of \$52,407,644. 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, 2015

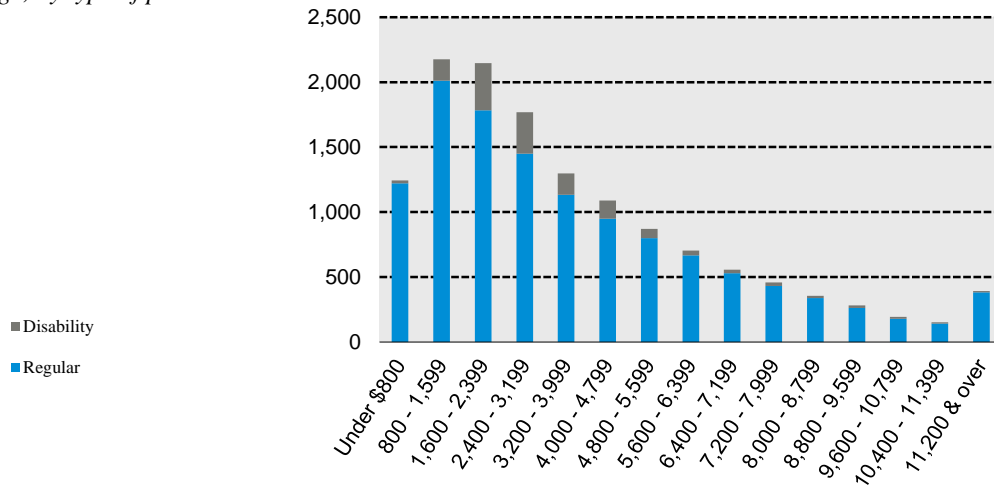
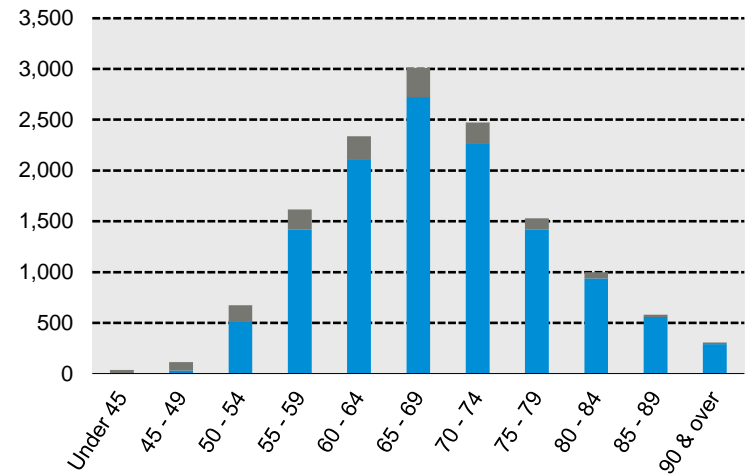


CHART 5
Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of December 31, 2015



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

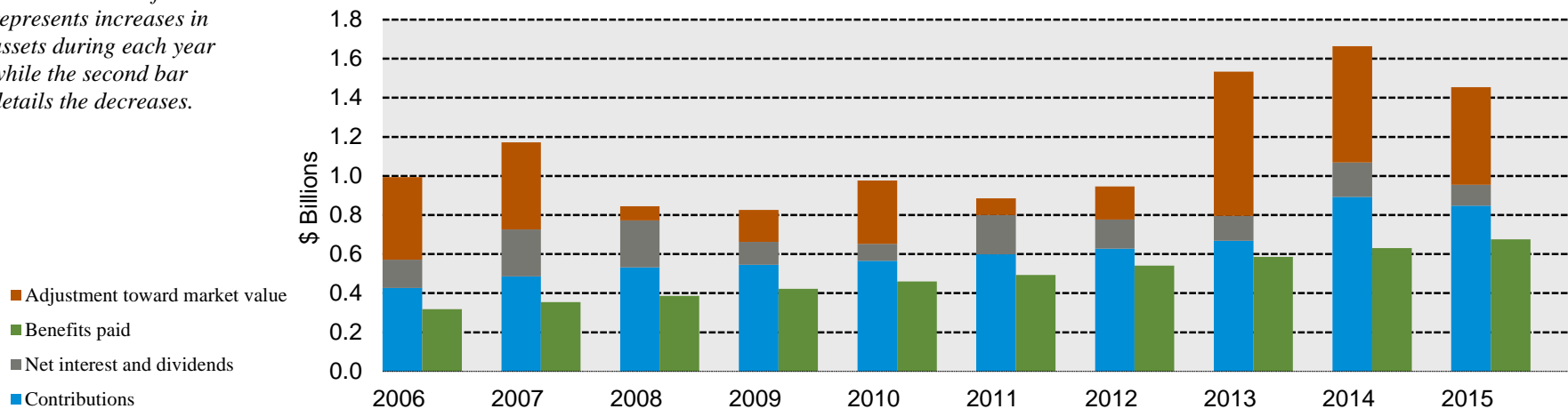
B. FINANCIAL INFORMATION

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, 2006 – 2015



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, 2015

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
2011	\$3,236,000	\$651,782,000	\$(648,546,000)	0.0	\$0
2012	1,014,471,000	659,447,000	355,024,000	0.2	71,005,000
2013	1,031,118,000	696,553,000	334,565,000	0.4	133,826,000
2014	487,104,000	780,627,000	(293,523,000)	0.6	(176,114,000)
2015	(51,601,000)	833,757,000	(885,358,000)	0.8	<u>(708,286,000)</u>
1. Total Deferred Return					\$(679,569,000)
2. Net Market Value Of Assets (Excludes \$108,789,000 in County Investment Account (funded by pension obligation bond proceeds held by OCERS) and \$227,166,000 in Prepaid Employer Contributions)					\$11,548,529,000 ⁽¹⁾
3. Actuarial Value of Assets (2) – (1)					\$12,228,098,000
4. Ratio of Actuarial Value To Market Value (3) / (2)					105.9%
5. Non-valuation Reserves					
(a) Unclaimed member deposit					\$0
(b) Medicare medical insurance reserve					<u>89,000</u>
(c) Subtotal					\$89,000
6. Valuation value of assets (3) – (5)(c)					\$12,228,009,000
7. Deferred Return Recognized in Each of the Next 4 years					
(a) Amount recognized on 12/31/2016					\$(97,858,000)
(b) Amount recognized on 12/31/2017					(168,863,000)
(c) Amount recognized on 12/31/2018					(235,776,000)
(d) Amount recognized on 12/31/2019					<u>(177,072,000)</u>
(e) Subtotal (may not total exactly due to rounding)					\$(679,569,000)

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

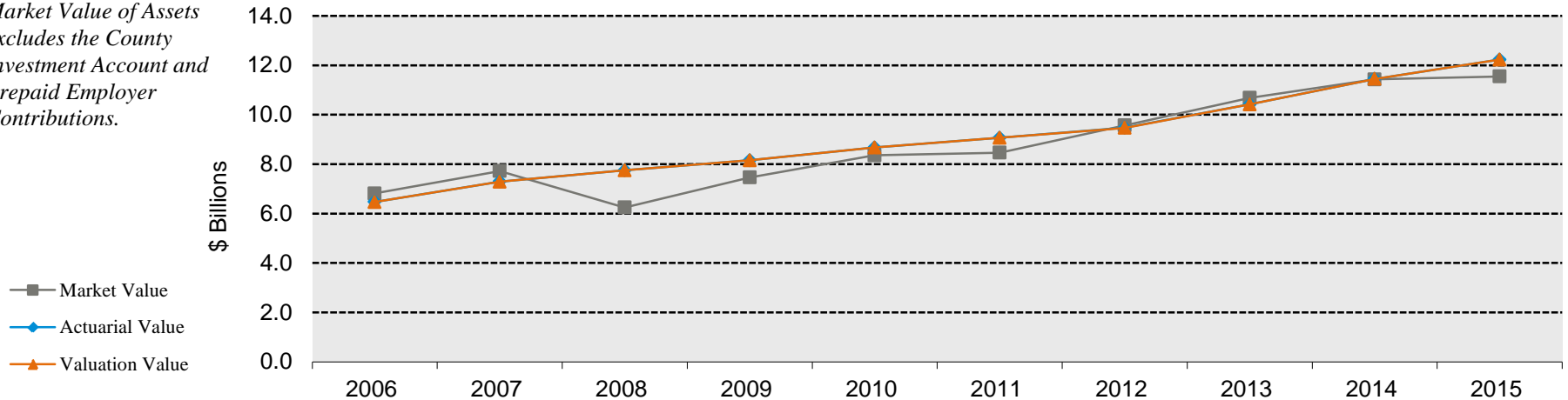
SECTION 2: Valuation Results for the Orange County Employees Retirement System

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 and Prepaid Employer Contributions.

CHART 8

Market Value, Actuarial Value and Valuation Value of Assets as of December 31, 2006 – 2015



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

C. ACTUARIAL EXPERIENCE

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

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

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

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

The total experience gain was \$120.9 million, a loss of \$229.1 million from investments, a gain of \$24.9 million from contribution experience (includes a gain of \$69.9 million from additional UAAL payments and a loss of \$45.0 million from all other contribution experience) and a gain of \$325.2 million from all other sources. A discussion of the major components of the actuarial experience is on the following pages.

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

CHART 9

Actuarial Experience for Year Ended December 31, 2015 (Dollar Amounts in Thousands)

1. Net gain/(loss) from investments ⁽¹⁾	\$(229,138,000)
2. Net gain/(loss) from contribution experience	24,892,000
3. Net gain/(loss) from other experience ⁽²⁾	<u>325,157,000</u>
4. Net experience gain/(loss): (1) + (2) + (3)	<u>\$120,911,000</u>

⁽¹⁾ Details in Chart 10.

⁽²⁾ 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, 2014 valuation). The actual rate of return on a valuation basis for the 2015 plan year was 5.26%.

Since the actual return for the year was less than the assumed return, OCERS experienced an actuarial loss during the year ended December 31, 2015 with regard to its investments.

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

CHART 10
Investment Experience for Year Ended December 31, 2015 – Valuation Value, Actuarial Value and Market Value of Assets

	Valuation Value	Actuarial Value	Market Value
1. Actual return	\$606,191,000	\$606,190,000	\$(51,601,000)
2. Average value of assets	\$11,521,782,000	\$11,521,872,000	\$11,500,094,000
3. Actual rate of return: (1) ÷ (2)	5.26%	5.26%	-0.45%
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	\$835,329,000	\$835,336,000	\$833,757,000
6. Actuarial gain/(loss): (1) – (5)	<u>\$(229,138,000)</u>	<u>\$(229,146,000)</u>	<u>\$(885,358,000)</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 an valuation, actuarial and market basis for the last ten years.

CHART 11

Investment Return – Valuation Value, Actuarial Value and Market Value: 2006 - 2015 (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
2006	\$565,491	9.68%	\$568,254	9.71%	\$787,330	13.17%
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%
5-Year Average Return		5.67%		5.67%		5.22%
10-Year Average Return		6.12%		6.12%		5.24%

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) and prepaid employer contributions 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.

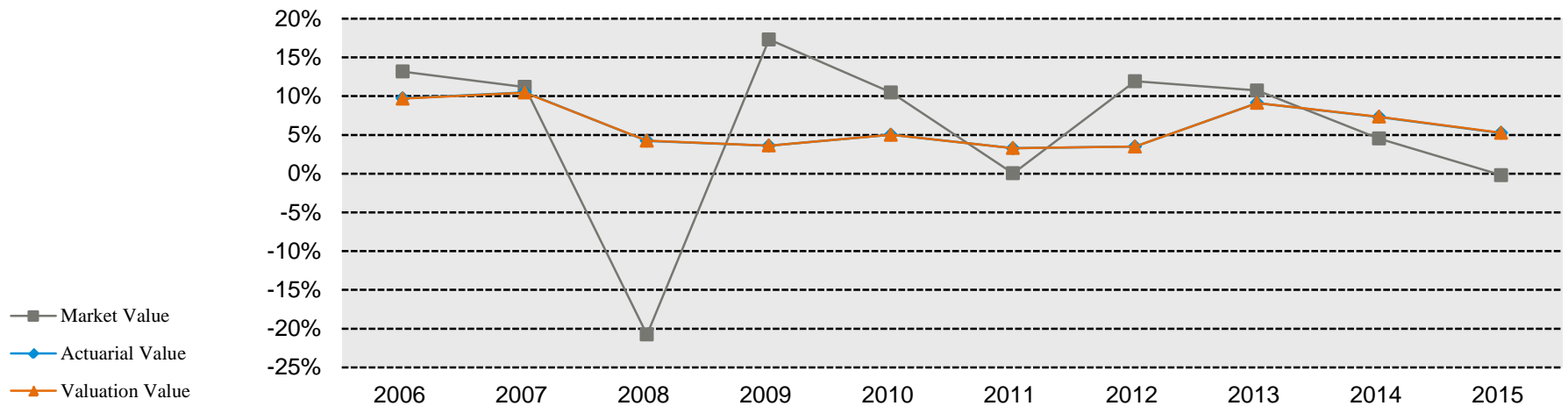
SECTION 2: Valuation Results for the Orange County Employees Retirement System

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, 2006 – 2015



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

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, 2015 amounted to \$325.2 million which is 1.91% 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

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

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

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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #1 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – non-OCTA, non-OCSD)				
Normal Cost	9.58%	\$4,607	9.67%	\$4,650
UAAL ^{(2),(3)}	<u>9.22%</u>	<u>4,434</u>	<u>8.62%</u>	<u>4,145</u>
Total Contribution	18.80%	\$9,041	18.29%	\$8,795
Rate Group #1 – Plan U (2.5% @ 67 PEPR) ⁽⁴⁾				
Normal Cost	8.92%	\$2,353	8.87%	\$2,340
UAAL ^{(2),(3)}	<u>9.22%</u>	<u>2,432</u>	<u>8.62%</u>	<u>2,274</u>
Total Contribution	18.14%	\$4,785	17.49%	\$4,614
Rate Group #1 – Plans A, B and U Combined				
Normal Cost	9.35%	\$6,960	9.39%	\$6,990
UAAL ^{(2),(3)}	<u>9.22%</u>	<u>6,866</u>	<u>8.62%</u>	<u>6,419</u>
Total Contribution	18.57%	\$13,826	18.01%	\$13,409

⁽¹⁾ See page 27 for projected annual compensation.

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

⁽³⁾ The net UAAL contribution rates for County and IHSS Public Authority when calculated after excluding the UAAL for U.C.I. and Department of Education are 5.57% and 5.67% for the December 31, 2015 and 2014 valuations, respectively.

⁽⁴⁾ 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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #2 – Plans I and J (2.7% @ 55 – non-OCFA)				
Normal Cost	13.19%	\$111,253	13.22%	\$111,506
UAAL ⁽²⁾	<u>22.45%</u>	<u>189,358</u>	<u>21.72%</u>	<u>183,201</u>
Total Contribution	35.64%	\$300,611	34.94%	\$294,707
Rate Group #2 – Plans O and P (1.62% @ 65)				
Normal Cost	5.46%	\$740	5.49%	\$744
UAAL ⁽²⁾	<u>22.45%</u>	<u>3,041</u>	<u>21.72%</u>	<u>2,942</u>
Total Contribution	27.91%	\$3,781	27.21%	\$3,686
Rate Group #2 – Plan S (2.0% @ 57)				
Normal Cost	11.40%	\$86	10.54%	\$80
UAAL ⁽²⁾	<u>22.45%</u>	<u>169</u>	<u>21.72%</u>	<u>164</u>
Total Contribution	33.85%	\$255	32.26%	\$244

⁽¹⁾ See page 27 for projected annual compensation.

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

Note: For employers with future service only benefit improvements under 2.7% @ 55, refer to the employer rate adjustment 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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #2 – Plan T (1.62% @ 65 PEPR) ⁽³⁾				
Normal Cost	6.56%	\$7,663	6.61%	\$7,721
UAAL ⁽²⁾	<u>22.45%</u>	<u>26,223</u>	<u>21.72%</u>	<u>25,370</u>
Total Contribution	29.01%	\$33,886	28.33%	\$33,091
Rate Group #2 – Plan U (2.5% @ 67 PEPR) ⁽⁴⁾				
Normal Cost	8.35%	\$817	8.33%	\$815
UAAL ⁽²⁾	<u>22.45%</u>	<u>2,195</u>	<u>21.72%</u>	<u>2,124</u>
Total Contribution	30.80%	\$3,012	30.05%	\$2,939
Rate Group #2 – Plan W (1.62% @ 65 PEPR) ^{(5),(6)}				
Normal Cost	6.68%	\$0	6.68%	\$0
UAAL ⁽²⁾	<u>22.45%</u>	<u>0</u>	<u>21.72%</u>	<u>0</u>
Total Contribution	29.13%	\$0	28.40%	\$0
Rate Group #2 – Plans I, J, O, P, S, T, U and W Combined				
Normal Cost	12.25%	\$120,559	12.28%	\$120,866
UAAL ⁽²⁾	<u>22.45%</u>	<u>220,986</u>	<u>21.72%</u>	<u>213,801</u>
Total Contribution	34.70%	\$341,545	34.00%	\$334,667

⁽¹⁾ See page 27 for projected annual compensation.

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

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

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

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

⁽⁶⁾ No active members yet as the plan became effective on January 1, 2016.

Note: For employers with future service only benefit improvements under 2.7% @ 55, refer to the employer rate adjustment 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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #3 – Plans G and H (2.5% @ 55 – OCSD)				
Normal Cost	12.33%	\$6,288	12.40%	\$6,324
UAAL ^{(2),(3)}	<u>1.42%</u>	<u>724</u>	<u>0.69%</u>	<u>352</u>
Total Contribution	13.75%	\$7,012	13.09%	\$6,676
Rate Group #3 – Plans G and H (2.5% @ 55 – Law Library)				
Normal Cost	12.33%	\$136	12.40%	\$136
UAAL ⁽²⁾	<u>22.08%</u>	<u>243</u>	<u>20.21%</u>	<u>222</u>
Total Contribution	34.41%	\$379	32.61%	\$358
Rate Group #3 – Plan B (1.64% @ 57 – OCSD)				
Normal Cost	10.30%	\$518	10.30%	\$518
UAAL ^{(2),(3)}	<u>1.42%</u>	<u>71</u>	<u>0.69%</u>	<u>35</u>
Total Contribution	11.72%	\$589	10.99%	\$553

⁽¹⁾ See page 27 for projected annual compensation.

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

⁽³⁾ These rates are after adjustment to the contribution rates for the FY 16-17 for additional UAAL contributions made by OCSD.

Note: For employers with future service only benefit improvements under 2.5% @ 55, refer to the employer rate adjustment 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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾
Rate Group #3 – Plan U (2.5% @ 67 PEPRA – OCSD)⁽³⁾				
Normal Cost	9.25%	\$654	9.00%	\$637
UAAL ^{(2),(4)}	<u>1.42%</u>	<u>100</u>	<u>0.69%</u>	<u>49</u>
Total Contribution	10.67%	\$754	9.69%	\$686
Rate Group #3 – Plan U (2.5% @ 67 PEPRA – Law Library)⁽³⁾				
Normal Cost	9.25%	\$9	9.00%	\$8
UAAL ⁽²⁾	<u>22.08%</u>	<u>21</u>	<u>20.21%</u>	<u>19</u>
Total Contribution	31.33%	\$30	29.21%	\$27
Rate Group #3 – Plans B, G, H and U Combined				
Normal Cost	11.83%	\$7,605	11.86%	\$7,623
UAAL ⁽²⁾	<u>1.80%</u>	<u>1,159</u>	<u>1.05%</u>	<u>677</u>
Total Contribution	13.63%	\$8,764	12.91%	\$8,300

⁽¹⁾ See page 27 for projected annual compensation.

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

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

⁽⁴⁾ These rates are after adjustment to the contribution rates for the FY 16-17 for additional UAAL contributions made by OCSD.

Note: For employer with future service only benefit improvements under 2.5% @ 55, refer to the employer rate adjustment 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, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #5 – Plans A and B (2.0% @ 57 and 1.6667% @ 57.5 – OCTA)				
Normal Cost	10.70%	\$10,333	10.78%	\$10,410
UAAL ⁽²⁾	<u>15.52%</u>	<u>14,988</u>	<u>14.40%</u>	<u>13,906</u>
Total Contribution	26.22%	\$25,321	25.18%	\$24,316
Rate Group #5 – Plan U (2.5% @ 67 PEPRA)⁽³⁾				
Normal Cost	10.12%	\$395	10.04%	\$392
UAAL ⁽²⁾	<u>15.52%</u>	<u>605</u>	<u>14.40%</u>	<u>562</u>
Total Contribution	25.64%	\$1,000	24.44%	\$954
Rate Group #5 – Plans A, B and U Combined				
Normal Cost	10.68%	\$10,728	10.75%	\$10,802
UAAL ⁽²⁾	<u>15.52%</u>	<u>15,593</u>	<u>14.40%</u>	<u>14,468</u>
Total Contribution	26.20%	\$26,321	25.15%	\$25,270

⁽¹⁾ See page 27 for projected annual compensation.

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

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #9 – Plans M and N (2.0% @ 55 – TCA)				
Normal Cost	13.44%	\$617	13.59%	\$624
UAAL ⁽²⁾	<u>13.79%</u>	<u>633</u>	<u>12.78%</u>	<u>587</u>
Total Contribution	27.23%	\$1,250	26.37%	\$1,211
Rate Group #9 – Plan U (2.5% @ 67 PEPR) ⁽³⁾				
Normal Cost	10.57%	\$190	9.85%	\$177
UAAL ⁽²⁾	<u>13.79%</u>	<u>248</u>	<u>12.78%</u>	<u>230</u>
Total Contribution	24.36%	\$438	22.63%	\$407
Rate Group #9 – Plans M, N and U Combined				
Normal Cost	12.63%	\$807	12.54%	\$801
UAAL ⁽²⁾	<u>13.79%</u>	<u>881</u>	<u>12.78%</u>	<u>817</u>
Total Contribution	26.42%	\$1,688	25.32%	\$1,618

⁽¹⁾ See page 27 for projected annual compensation.

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

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate	Estimated Annual Amount ⁽¹⁾
Rate Group #10 – Plans I and J (2.7% @ 55 – OCFA)				
Normal Cost	13.44%	\$2,177	13.53%	\$2,192
UAAL ⁽²⁾	<u>20.53%</u>	<u>3,326</u>	<u>20.28%</u>	<u>3,286</u>
Total Contribution	33.97%	\$5,503	33.81%	\$5,478
Rate Group #10 – Plans M and N (2.0% @ 55 – OCFA)				
Normal Cost	12.72%	\$358	12.47%	\$351
UAAL ⁽²⁾	<u>20.53%</u>	<u>578</u>	<u>20.28%</u>	<u>570</u>
Total Contribution	33.25%	\$936	32.75%	\$921
Rate Group #10 – Plan U (2.5% @ 67 PEPR) ⁽³⁾				
Normal Cost	8.81%	\$373	9.63%	\$408
UAAL ⁽²⁾	<u>20.53%</u>	<u>869</u>	<u>20.28%</u>	<u>858</u>
Total Contribution	29.34%	\$1,242	29.91%	\$1,266
Rate Group #10 – Plans I, J, M, N and U Combined				
Normal Cost	12.51%	\$2,908	12.69%	\$2,951
UAAL ⁽²⁾	<u>20.53%</u>	<u>4,773</u>	<u>20.28%</u>	<u>4,714</u>
Total Contribution	33.04%	\$7,681	32.97%	\$7,665

⁽¹⁾ See page 27 for projected annual compensation.

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

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2015 (Dollar Amounts in Thousands)

General Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾
Rate Group #11 – Plans M and N, future service (2.0% @ 55 – Cemetery)				
Normal Cost	11.33%	\$135	11.79%	\$141
UAAL ⁽²⁾	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Contribution	11.33%	\$135	11.79%	\$141
Rate Group #11 – Plan U (2.5% @ 67 PEPR) ⁽³⁾				
Normal Cost	12.23%	\$11	11.81%	\$11
UAAL ⁽²⁾	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Contribution	12.23%	\$11	11.81%	\$11
Rate Group #11 – Plans M, N and U Combined				
Normal Cost	11.40%	\$146	11.79%	\$152
UAAL ⁽²⁾	<u>0.00%</u>	<u>0</u>	<u>0.00%</u>	<u>0</u>
Total Contribution	11.40%	\$146	11.79%	\$152

⁽¹⁾ See page 27 for projected annual compensation.

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

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

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2015 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾	<u>Rate</u> ⁽²⁾	<u>Estimated Annual Amount</u> ^{(1),(2)}
Rate Group #6 – Plans E and F (3% @ 50 – Probation)				
Normal Cost	21.92%	\$13,246	22.17%	\$13,397
UAAL ^{(3),(4)}	<u>23.15%</u>	<u>13,989</u>	<u>20.67%</u>	<u>12,490</u>
Total Contribution	45.07%	\$27,235	42.84%	\$25,887
Rate Group #6 – Plan V (2.7% @ 57 PEPR) ⁽⁵⁾				
Normal Cost	15.00%	\$140	15.25%	\$142
UAAL ^{(3),(4)}	<u>23.20%</u>	<u>216</u>	<u>20.77%</u>	<u>194</u>
Total Contribution	38.20%	\$356	36.02%	\$336
Rate Group #6 – Plans E, F and V Combined				
Normal Cost	21.82%	\$13,386	22.06%	\$13,539
UAAL ^{(3),(4)}	<u>23.15%</u>	<u>14,205</u>	<u>20.67%</u>	<u>12,684</u>
Total Contribution	44.97%	\$27,591	42.73%	\$26,223

⁽¹⁾ See page 27 for projected annual compensation.

⁽²⁾ These employer rates after the phase-in adjustments may also be found in the December 31, 2014 CAFR Actuarial Certificate.

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

⁽⁴⁾ These rates reflect the phase-in of changes in actuarial assumptions starting with the December 31, 2014 valuation.

⁽⁵⁾ 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, 2015 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate ⁽²⁾	Estimated Annual Amount ^{(1),(2)}
Rate Group #7 – Plans E and F (3% @ 50 – Law Enforcement)				
Normal Cost	25.56%	\$40,337	25.79%	\$40,700
UAAL ^{(3),(4)}	<u>36.99%</u>	<u>58,375</u>	<u>33.13%</u>	<u>52,283</u>
Total Contribution	62.55%	\$98,712	58.92%	\$92,983
Rate Group #7 – Plans Q and R (3% @ 55 – Law Enforcement)				
Normal Cost	23.24%	\$7,407	23.55%	\$7,505
UAAL ^{(3),(4)}	<u>37.10%</u>	<u>11,824</u>	<u>33.33%</u>	<u>10,622</u>
Total Contribution	60.34%	\$19,231	56.88%	\$18,127
Rate Group #7 – Plan V (2.7% @ 57 PEPRA)⁽⁵⁾				
Normal Cost	20.04%	\$2,443	20.10%	\$2,451
UAAL ^{(3),(4)}	<u>37.38%</u>	<u>4,558</u>	<u>33.91%</u>	<u>4,135</u>
Total Contribution	57.42%	\$7,001	54.01%	\$6,586
Rate Group #7 – Plans E, F, Q, R and V Combined				
Normal Cost	24.86%	\$50,187	25.09%	\$50,656
UAAL ^{(3),(4)}	<u>37.03%</u>	<u>74,757</u>	<u>33.21%</u>	<u>67,040</u>
Total Contribution	61.89%	\$124,944	58.30%	\$117,696

⁽¹⁾ See page 27 for projected annual compensation.

⁽²⁾ These employer rates after the phase-in adjustments may also be found in the December 31, 2014 CAFR Actuarial Certificate.

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

⁽⁴⁾ These rates reflect the phase-in of changes in actuarial assumptions starting with the December 31, 2014 valuation.

⁽⁵⁾ 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, 2015 (Dollar Amounts in Thousands)

Safety Employers	December 31, 2015 Valuation		December 31, 2014 Valuation	
	Rate	Estimated Annual Amount ⁽¹⁾	Rate ⁽²⁾	Estimated Annual Amount ^{(1),(2)}
Rate Group #8 – Plans E and F (3% @ 50 – Fire Authority)				
Normal Cost	26.87%	\$28,029	27.05%	\$28,217
UAAL ^{(3),(4)}	<u>22.37%</u>	<u>23,335</u>	<u>21.55%</u>	<u>22,480</u>
Total Contribution	49.24%	\$51,364	48.60%	\$50,697
Rate Group #8 – Plans Q and R (3% @ 55 – Fire Authority)				
Normal Cost	22.10%	\$812	22.38%	\$822
UAAL ^{(3),(4)}	<u>22.37%</u>	<u>821</u>	<u>21.55%</u>	<u>791</u>
Total Contribution	44.47%	\$1,633	43.93%	\$1,613
Rate Group #8 – Plan V (2.7% @ 57 PEPRA)⁽⁵⁾				
Normal Cost	15.30%	\$1,127	15.71%	\$1,158
UAAL ^{(3),(4)}	<u>22.79%</u>	<u>1,679</u>	<u>22.37%</u>	<u>1,648</u>
Total Contribution	38.09%	\$2,806	38.08%	\$2,806
Rate Group #8 – Plans E, F, Q, R and V Combined				
Normal Cost	25.98%	\$29,968	26.18%	\$30,197
UAAL ^{(3),(4)}	<u>22.40%</u>	<u>25,835</u>	<u>21.60%</u>	<u>24,919</u>
Total Contribution	48.38%	\$55,803	47.78%	\$55,116

⁽¹⁾ See page 27 for projected annual compensation.

⁽²⁾ These employer rates after the phase-in adjustments may also be found in the December 31, 2014 CAFR Actuarial Certificate.

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

⁽⁴⁾ These rates reflect the phase-in of changes in actuarial assumptions starting with the December 31, 2014 valuation.

⁽⁵⁾ 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, 2015 (Dollar Amounts in Thousands)

General and Safety Combined	December 31, 2015 Valuation		December 31, 2014 Valuation	
	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾	<u>Rate</u>	<u>Estimated Annual Amount</u> ⁽¹⁾
Rate Groups #1 – #11				
Total Contribution	37.25%	\$608,309	36.14%	\$590,116

⁽¹⁾ Based on December 31, 2015 projected annual compensation (also in thousands):

Rate Group #1 – Plans A and B	\$48,091
Rate Group #1 – Plan U	26,382
Rate Group #2 – Plans I and J	843,467
Rate Group #2 – Plans O and P	13,545
Rate Group #2 – Plan S	755
Rate Group #2 – Plan T	116,807
Rate Group #2 – Plan U	9,779
Rate Group #2 – Plan W	0
Rate Group #3 – Plans G and H (OCSD)	50,999
Rate Group #3 – Plans G and H (Law Library)	1,100
Rate Group #3 – Plan B (OCSD)	5,032
Rate Group #3 – Plan U (OCSD)	7,075
Rate Group #3 – Plan U (Law Library)	93
Rate Group #5 – Plans A and B	96,570
Rate Group #5 – Plan U	3,901
Rate Group #9 – Plans M and N	4,592
Rate Group #9 – Plan U	1,797
Rate Group #10 – Plans I and J	16,201
Rate Group #10 – Plans M and N	2,813
Rate Group #10 – Plan U	4,232
Rate Group #11 – Plans M and N	1,195
Rate Group #11 – Plan U	94
Rate Group #6 – Plans E and F	60,428
Rate Group #6 – Plan V	933
Rate Group #7 – Plans E and F	157,813
Rate Group #7 – Plans Q and R	31,870
Rate Group #7 – Plan V	12,193
Rate Group #8 – Plans E and F	104,314
Rate Group #8 – Plans Q and R	3,672
Rate Group #8 – Plan V	<u>7,369</u>
Total	\$1,633,112

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

CHART 13 (Continued)

Recommended Employer Contribution Rates as of December 31, 2015 (Dollar Amounts in Thousands)

**December 31, 2015 Rate Adjustment for General Employers with 2.7% @ 55 – Rate Group #2
Future Service Only Benefit Improvement (Plans I and J)**

Reduction to UAAL Rate Calculated in December 31, 2015 Valuation	<u>Rate</u>	Estimated Annual <u>Amount⁽¹⁾</u>
Reduction to Total Contribution	-1.82%	-\$83

⁽¹⁾ Based on December 31, 2015 projected annual compensation (also in thousands):

Retirement System	\$3,232
Local Agency Formation Commission	325
Children & Family Commission	<u>985</u>
Total	\$4,542

**December 31, 2015 Rate Adjustment for General Employers with 2.5% @ 55 – Rate Group #3
Future Service Only Benefit Improvement (Plans G and H)**

Reduction to UAAL Rate Calculated in December 31, 2015 Valuation	<u>Rate</u>	Estimated Annual <u>Amount⁽²⁾</u>
Reduction to Total Contribution	-3.27%	-\$39

⁽²⁾ Based on December 31, 2015 projected annual compensation (also in thousands):

Law Library	\$1,193
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SECTION 2: Valuation Results for the Orange County Employees Retirement System

CHART 14

“Pick – Up” - Discount Percentages

For every dollar of member contribution “picked up” by the employer 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, 2015 Valuation Pick-Up Percentage		December 31, 2014 Valuation Pick-Up Percentage	
<i>General Members</i>				
Rate Group #1 Plan A/B (non-OCTA, non-OCSD)	Plan A: 100.00%	Plan B: 97.03%	Plan A: 98.41%	Plan B: 96.94%
Rate Group #1 Plan U (non-OCTA, non-OCSD)		Plan U: 94.93%		Plan U: 95.82%
Rate Group #2 (2.7% @ 55 – non-OCFA)	Plan I: 98.86%	Plan J: 97.38%	Plan I: 98.83%	Plan J: 97.28%
Rate Group #2 (1.62% @ 65)	Plan O: Not calculated	Plan P: 96.21%	Plan O: Not calculated	Plan P: 95.93%
Rate Group #2 (2.0% @ 57)		Plan S: 96.37%		Plan S: 95.93%
Rate Group #2 (1.62% @ 65 PEPRA)		Plan T: 94.91%		Plan T: 94.75%
Rate Group #2 (1.62% @ 65 PEPRA)		Plan W: 96.75%		Plan W: 96.75%
Rate Group #2 (2.5% @ 67 PEPRA)		Plan U: 94.77%		Plan U: 95.86%
Rate Group #3 (2.5% @ 55)	Plan G: 98.41%	Plan H: 97.66%	Plan G: 98.44%	Plan H: 97.58%
Rate Group #3 (1.64% @ 57)		Plan B: 96.24%		Plan B: 96.03%
Rate Group #3 (2.5% @ 67 PEPRA)		Plan U: 95.02%		Plan U: 95.92%
Rate Group #5 Plan A/B (OCTA)	Plan A: 97.99%	Plan B: 94.54%	Plan A: 98.05%	Plan B: 94.27%
Rate Group #5 (2.5% @ 67 PEPRA)		Plan U: 88.46%		Plan U: 88.64%
Rate Group #9 (2.0% @ 55 – TCA)	Plan M: Not calculated	Plan N: 97.66%	Plan M: 97.50%	Plan N: 97.50%
Rate Group #9 (2.5% @ 67 PEPRA)		Plan U: 95.20%		Plan U: 95.91%
Rate Group #10 (2.7% @ 55 – OCFA)	Plan I: Not calculated	Plan J: 97.66%	Plan I: Not calculated	Plan J: 97.56%
Rate Group #10 (2.0% @ 55 – OCFA)	Plan M: Not calculated	Plan N: 96.86%	Plan M: Not calculated	Plan N: 96.61%
Rate Group #10 (2.5% @ 67 PEPRA – OCFA)		Plan U: 94.72%		Plan U: 95.90%
Rate Group #11 (2.0% @ 55 – Cemetery)	Plan M: Not calculated	Plan N: 97.53%	Plan M: 97.32%	Plan N: 97.32%
Rate Group #11 (2.5% @ 67 PEPRA – Cemetery)		Plan U: 95.00%		Plan U: 96.72%

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

CHART 14 (Continued)

“Pick – Up” - Discount Percentages

	December 31, 2015 Valuation Pick-Up Percentage		December 31, 2014 Valuation Pick-Up Percentage	
<i>Safety Members</i>				
Rate Group #6 (3% @ 50 – Probation)	Plan E: 100.00%	Plan F: 98.68%	Plan E: 100.00%	Plan F: 98.61%
Rate Group #6 (2.7% @ 57 PEPRA – Probation)		Plan V: 96.00%		Plan V: 97.36%
Rate Group #7 (3% @ 50 – Law Enforcement)	Plan E: 100.00%	Plan F: 99.58%	Plan E: 100.00%	Plan F: 99.56%
Rate Group #7 (3% @ 55 – Law Enforcement)	Plan Q: Not calculated	Plan R: 99.18%	Plan Q: Not calculated	Plan R: 99.13%
Rate Group #7 (2.7% @ 57 PEPRA – Law Enforcement)		Plan V: 99.09%		Plan V: 99.31%
Rate Group #8 (3% @ 50 – Fire Authority)	Plan E: 100.00%	Plan F: 99.48%	Plan E: 100.00%	Plan F: 99.45%
Rate Group #8 (3% @ 55 – Fire Authority)	Plan Q: Not calculated	Plan R: 99.27%	Plan Q: Not calculated	Plan R: 99.21%
Rate Group #8 (2.7% @ 57 PEPRA – Fire Authority)		Plan V: 98.97%		Plan V: 99.22%

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

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

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

<u>Employer</u>	<u>Code</u>	<u>Average Entry Age for All (non-PEPRA and PEPRA) Members</u>
<i>General</i>		
Orange County	101	32
Cemetery District	102	31
Law Library	103	42
Retirement System	105	35
Fire Authority	106	33
Transportation Corridor Agency	109	39
City of San Juan Capistrano	110	36
Sanitation District	111	34
OCTA	112	36
U.C.I. (Bi-weekly)	113	18
Children & Families Commission	118	33
Local Agency Formation Commission	119	33
Superior Court	121	33
IHSS Public Authority	122	38
<i>Safety</i>		
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, 2015 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, 2014 to December 31, 2015 (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 ⁽¹⁾
1. Aggregate Recommended Contribution Rate as of December 31, 2014 (before UAAL credit)	37.24%	\$608,127
2. Adjustment to contribution rates for FY16-17 for additional UAAL contributions from OCSD	-0.21%	-3,515
3. Effect of 3-year phase-in of the cost impact of changes in actuarial assumptions for Safety Rate Groups	-0.89%	-14,496
4. Aggregate Recommended Contribution Rate as of December 31, 2014 (after UAAL credit)	36.14%	\$590,116
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 (another one-third remains to be recognized)	0.45%	7,349
(b) Effect of investment loss (after smoothing)	1.00%	16,331
(c) Effect of additional UAAL contributions from OCFA	-0.08%	-1,306
(d) Effect of actual contributions less than expected	0.18%	2,940
(e) Effect of lower than expected COLA increases	-0.52%	-8,492
(f) Effect of lower than expected salary increases	-1.23%	-20,087
(g) Effect of growth in total payroll less than expected	0.96%	15,678
(h) Effect of higher than expected retirement experience	0.27%	4,409
(i) Effect of other experience (gain)/loss ⁽²⁾	<u>0.08%</u>	<u>1,371</u>
(j) Subtotal	1.11%	\$18,193
6. Aggregate Recommended Contribution Rate as of December 31, 2015	37.25%	\$608,309

⁽¹⁾ Based on December 31, 2015 projected annual compensation of \$1,633,112,000.

⁽²⁾ Net of an adjustment of 0.04% 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, 2015 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, 2014 to December 31, 2015 (Dollar Amounts in Thousands)

	Contribution Rate	Estimated Amount ⁽¹⁾
Average Recommended Contribution Rate as of December 31, 2014 ⁽²⁾	12.21%	\$199,352
Effect of change in demographics	0.00%	\$92
Average Recommended Contribution Rate as of December 31, 2015	12.21%	\$199,444

⁽¹⁾ Based on December 31, 2015 projected annual compensation of \$1,633,112,000.

⁽²⁾ Rates have been recalculated by applying the individual entry age based rates determined in the December 31, 2014 valuation to the System membership as of December 31, 2015.

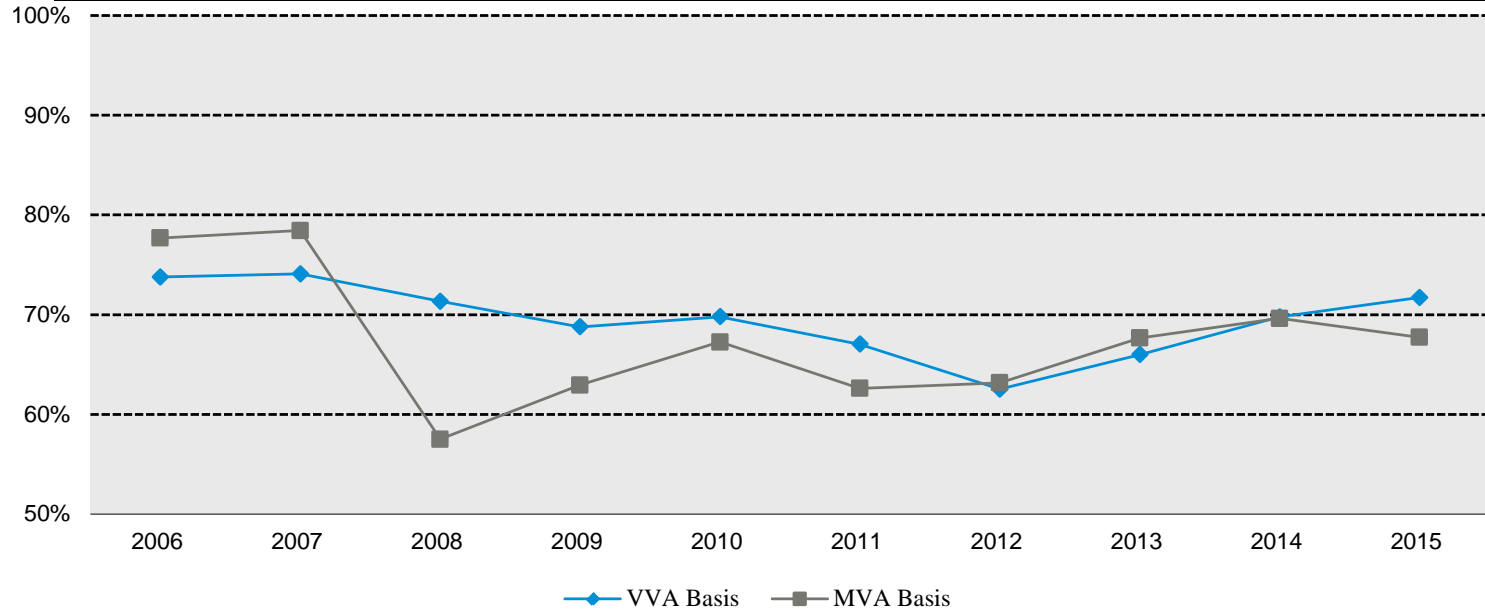
SECTION 2: Valuation Results for the Orange County Employees Retirement System

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 2006 - 2015



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

CHART 18
Schedule of Funding Progress

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

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

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

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 7.1. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 7.1% 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 10.4. This is about 46% 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 - 2015

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

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)

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	1,535	1,542	-0.5%
Average age	42.9	42.9	N/A
Average service	9.3	9.2	N/A
Projected total compensation	\$74,473,543	\$74,474,442	0.0%
Projected average compensation	\$48,517	\$48,297	0.5%
Account balances	\$44,531,177	\$39,701,027	12.2%
Total active vested members	822	880	-6.6%
Vested terminated members⁽¹⁾			
Number	403	280	43.9%
Average age	41.9	43.5	N/A
Retired members			
Number in pay status	604	592	2.0%
Average age	74.1	73.9	N/A
Average monthly benefit ⁽²⁾	\$2,611	\$2,556	2.2%
Disabled members			
Number in pay status	38	36	5.6%
Average age	66.2	67.2	N/A
Average monthly benefit ⁽²⁾	\$2,203	\$2,228	-1.1%
Beneficiaries			
Number in pay status	90	84	7.1%
Average age	75.9	75.8	N/A
Average monthly benefit ⁽²⁾	\$1,365	\$1,378	-0.9%

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

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

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

EXHIBIT A

Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	13,957	13,761	1.4%
Average age	46.0	46.1	N/A
Average service	13.1	13.2	N/A
Projected total compensation	\$984,353,085	\$993,682,493	-0.9%
Projected average compensation	\$70,528	\$72,210	-2.3%
Account balances	\$1,724,763,361	\$1,590,348,357	8.5%
Total active vested members	11,039	11,469	-3.7%
Vested terminated members⁽¹⁾			
Number	3,440	3,305	4.1%
Average age	44.8	44.5	N/A
Retired members			
Number in pay status	8,475	8,172	3.7%
Average age	70.7	70.6	N/A
Average monthly benefit ⁽²⁾	\$3,445	\$3,343	3.1%
Disabled members			
Number in pay status	572	567	0.9%
Average age	66.5	66.1	N/A
Average monthly benefit ⁽²⁾	\$2,391	\$2,362	1.2%
Beneficiaries			
Number in pay status	1,395	1,348	3.5%
Average age	75.1	75.2	N/A
Average monthly benefit ⁽²⁾	\$1,743	\$1,674	4.1%

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

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

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

EXHIBIT A

Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	588	611	-3.8%
Average age	48.4	48.3	N/A
Average service	13.6	13.5	N/A
Projected total compensation	\$64,298,889	\$66,009,510	-2.6%
Projected average compensation	\$109,352	\$108,035	1.2%
Account balances	\$87,426,602	\$85,734,935	2.0%
Total active vested members	461	484	-4.8%
Vested terminated members⁽¹⁾			
Number	103	97	6.2%
Average age	46.7	46.7	N/A
Retired members			
Number in pay status	344	317	8.5%
Average age	67.4	67.3	N/A
Average monthly benefit ⁽²⁾	\$4,854	\$4,691	3.5%
Disabled members			
Number in pay status	12	12	0.0%
Average age	65.5	64.5	N/A
Average monthly benefit ⁽²⁾	\$3,126	\$3,074	1.7%
Beneficiaries			
Number in pay status	63	56	12.5%
Average age	70.5	71.0	N/A
Average monthly benefit ⁽²⁾	\$2,127	\$1,982	7.3%

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

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

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

EXHIBIT A

Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	1,413	1,454	-2.8%
Average age	50.0	50.1	N/A
Average service	13.5	13.6	N/A
Projected total compensation	\$100,471,246	\$103,650,844	-3.1%
Projected average compensation	\$71,105	\$71,287	-0.3%
Account balances	\$122,679,867	\$118,946,235	3.1%
Total active vested members	1,107	1,192	-7.1%
Vested terminated members⁽¹⁾			
Number	547	536	2.1%
Average age	49.6	49.1	N/A
Retired members			
Number in pay status	818	761	7.5%
Average age	69.2	69.0	N/A
Average monthly benefit ⁽²⁾	\$2,343	\$2,287	2.4%
Disabled members			
Number in pay status	254	253	0.4%
Average age	64.6	64.1	N/A
Average monthly benefit ⁽²⁾	\$2,220	\$2,184	1.6%
Beneficiaries			
Number in pay status	158	157	0.6%
Average age	70.8	70.1	N/A
Average monthly benefit ⁽²⁾	\$1,298	\$1,225	6.0%

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

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

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

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Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	63	65	-3.1%
Average age	49.3	50.0	N/A
Average service	9.9	10.0	N/A
Projected total compensation	\$6,389,323	\$6,182,268	3.3%
Projected average compensation	\$101,418	\$95,112	6.6%
Account balances	\$5,093,016	\$5,112,999	-0.4%
Total active vested members	41	50	-18.0%
Vested terminated members⁽¹⁾			
Number	55	52	5.8%
Average age	44.8	43.5	N/A
Retired members			
Number in pay status	39	33	18.2%
Average age	67.7	67.1	N/A
Average monthly benefit ⁽²⁾	\$2,786	\$2,755	1.1%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽²⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	2	2	0.0%
Average age	73.9	72.9	N/A
Average monthly benefit ⁽²⁾	\$322	\$318	1.3%

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

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

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

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Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	262	251	4.4%
Average age	45.4	46.8	N/A
Average service ⁽¹⁾	11.9	12.9	N/A
Projected total compensation	\$23,245,637	\$22,290,639	4.3%
Projected average compensation	\$88,724	\$88,807	-0.1%
Account balances	\$26,134,476	\$25,385,283	3.0%
Total active vested members	184	197	-6.6%
Vested terminated members⁽²⁾			
Number	114	104	9.6%
Average age	42.9	41.8	N/A
Retired members			
Number in pay status	131	116	12.9%
Average age	65.2	65.3	N/A
Average monthly benefit ⁽³⁾	\$4,220	\$4,106	2.8%
Disabled members			
Number in pay status	10	9	11.1%
Average age	59.4	60.6	N/A
Average monthly benefit ⁽³⁾	\$2,448	\$2,536	-3.5%
Beneficiaries			
Number in pay status	8	7	14.3%
Average age	61.7	58.1	N/A
Average monthly benefit ⁽³⁾	\$1,419	\$1,327	6.9%

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

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

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

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EXHIBIT A

Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	21	21	0.0%
Average age	49.0	47.3	N/A
Average service	17.4	15.9	N/A
Projected total compensation	\$1,289,124	\$1,292,021	-0.2%
Projected average compensation	\$61,387	\$61,525	-0.2%
Account balances	\$1,951,091	\$1,686,594	15.7%
Total active vested members	19	18	5.6%
Vested terminated members⁽¹⁾			
Number	3	2	50.0%
Average age	36.2	36.1	N/A
Retired members			
Number in pay status	5	5	0.0%
Average age	73.8	72.8	N/A
Average monthly benefit ⁽²⁾	\$2,383	\$2,347	1.5%
Disabled members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit ⁽²⁾	N/A	N/A	N/A
Beneficiaries			
Number in pay status	4	4	0.0%
Average age	77.0	76.0	N/A
Average monthly benefit ⁽²⁾	\$1,552	\$1,529	1.5%

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

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

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EXHIBIT A

Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	821	843	-2.6%
Average age	43.2	42.8	N/A
Average service	15.7	15.1	N/A
Projected total compensation	\$61,360,251	\$64,020,760	-4.2%
Projected average compensation	\$74,738	\$75,944	-1.6%
Account balances	\$120,052,167	\$111,090,176	8.1%
Total active vested members	781	809	-3.5%
Vested terminated members⁽¹⁾			
Number	211	170	24.1%
Average age	39.7	38.7	N/A
Retired members			
Number in pay status	262	241	8.7%
Average age	65.5	65.3	N/A
Average monthly benefit ⁽²⁾	\$5,499	\$5,495	0.1%
Disabled members			
Number in pay status	25	22	13.6%
Average age	53.6	53.8	N/A
Average monthly benefit ⁽²⁾	\$2,778	\$2,679	3.7%
Beneficiaries			
Number in pay status	24	21	14.3%
Average age	61.6	60.8	N/A
Average monthly benefit ⁽²⁾	\$2,407	\$2,580	-6.7%

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

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

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Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	1,902	1,949	-2.4%
Average age	41.6	41.2	N/A
Average service	14.2	13.9	N/A
Projected total compensation	\$201,875,372	\$200,833,715	0.5%
Projected average compensation	\$106,138	\$103,044	3.0%
Account balances	\$245,799,332	\$222,990,905	10.2%
Total active vested members	1,508	1,556	-3.1%
Vested terminated members⁽¹⁾			
Number	173	204	-15.2%
Average age	43.1	43.0	N/A
Retired members			
Number in pay status	1,216	1,158	5.0%
Average age	63.5	63.3	N/A
Average monthly benefit ⁽²⁾	\$6,652	\$6,529	1.9%
Disabled members			
Number in pay status	343	332	3.3%
Average age	62.3	61.8	N/A
Average monthly benefit ⁽²⁾	\$4,711	\$4,521	4.2%
Beneficiaries			
Number in pay status	305	292	4.5%
Average age	66.7	66.5	N/A
Average monthly benefit ⁽²⁾	\$2,827	\$2,781	1.7%

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

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

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Table of Plan Coverage

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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	963	962	0.1%
Average age	44.0	43.9	N/A
Average service ⁽¹⁾	14.2	14.2	N/A
Projected total compensation	\$115,354,130	\$115,723,757	-0.3%
Projected average compensation	\$119,786	\$120,295	-0.4%
Account balances	\$110,325,973	\$97,747,420	12.9%
Total active vested members	730	746	-2.1%
Vested terminated members⁽²⁾			
Number	41	38	7.9%
Average age	40.9	41.8	N/A
Retired members			
Number in pay status	377	364	3.6%
Average age	63.5	62.8	N/A
Average monthly benefit ⁽³⁾	\$7,694	\$7,423	3.7%
Disabled members			
Number in pay status	150	133	12.8%
Average age	64.0	63.7	N/A
Average monthly benefit ⁽³⁾	\$6,531	\$6,192	5.5%
Beneficiaries			
Number in pay status	86	75	14.7%
Average age	60.6	60.1	N/A
Average monthly benefit ⁽³⁾	\$2,949	\$2,823	4.5%

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

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

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

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

EXHIBIT A

Table of Plan Coverage

xi. Total

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	21,525	21,459	0.3%
Average age	45.5	45.6	N/A
Average service	13.1	13.2	N/A
Projected total compensation	\$1,633,110,601	\$1,648,160,449	-0.9%
Projected average compensation	\$75,870	\$76,805	-1.2%
Account balances	\$2,488,757,062	\$2,298,743,933	8.3%
Total active vested members	16,692	17,401	-4.1%
Vested terminated members⁽¹⁾			
Number	5,091	4,789	6.3%
Average age	44.8	44.7	N/A
Retired members			
Number in pay status	12,271	11,759	4.4%
Average age	69.5	69.4	N/A
Average monthly benefit ⁽²⁾	\$3,868	\$3,761	2.8%
Disabled members			
Number in pay status	1,404	1,364	2.9%
Average age	64.6	64.2	N/A
Average monthly benefit ⁽²⁾	\$3,378	\$3,237	4.4%
Beneficiaries			
Number in pay status	2,135	2,046	4.3%
Average age	72.7	72.7	N/A
Average monthly benefit ⁽²⁾	\$1,914	\$1,842	3.9%

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

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

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, 2015
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
Under 25	42	42	--	--	--	--	--	--	--	--
	\$44,761	\$44,761	--	--	--	--	--	--	--	--
25-29	222	215	7	--	--	--	--	--	--	--
	43,798	43,578	\$50,549	--	--	--	--	--	--	--
30-34	216	152	44	18	2	--	--	--	--	--
	46,631	44,639	50,746	\$52,606	\$53,772	--	--	--	--	--
35-39	226	101	40	59	26	--	--	--	--	--
	48,643	44,593	51,719	51,977	52,079	--	--	--	--	--
40-44	209	56	34	70	40	8	1	--	--	--
	50,283	43,820	53,096	52,885	52,133	\$51,334	\$52,032	--	--	--
45-49	184	43	35	36	26	34	10	--	--	--
	50,380	43,062	51,413	51,833	53,256	53,650	54,411	--	--	--
50-54	132	47	14	26	16	17	10	2	--	--
	48,727	43,094	49,345	51,672	51,752	53,907	52,346	\$52,196	--	--
55-59	141	37	16	21	9	29	20	6	2	1
	50,202	45,130	50,183	51,781	51,033	52,769	53,630	52,120	\$51,912	\$39,665
60-64	92	18	6	14	8	24	14	4	3	1
	52,317	43,551	51,653	52,637	51,016	53,240	52,525	54,619	53,110	183,378
65-69	54	6	4	8	13	13	7	3	--	--
	52,407	49,042	56,551	48,833	51,869	54,448	53,054	55,124	--	--
70 & over	17	1	1	3	3	7	2	--	--	--
	51,289	41,375	52,285	51,350	51,928	52,070	51,964	--	--	--
Total	1,535	718	201	255	143	132	64	15	5	2
	\$48,517	\$44,093	\$51,454	\$52,133	\$52,148	\$53,269	\$53,170	\$53,397	\$52,630	\$111,522

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, 2015
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
Under 25	198	194	4	--	--	--	--	--	--	--
	\$44,344	\$44,020	\$60,056	--	--	--	--	--	--	--
25-29	886	742	139	5	--	--	--	--	--	--
	51,538	51,422	52,336	\$46,695	--	--	--	--	--	--
30-34	1,615	735	652	221	7	--	--	--	--	--
	61,108	60,165	62,783	59,255	\$62,685	--	--	--	--	--
35-39	1,806	395	640	576	194	1	--	--	--	--
	68,479	64,123	71,643	69,383	64,114	\$90,149	--	--	--	--
40-44	2,041	309	462	570	550	136	14	--	--	--
	73,218	67,992	70,349	76,689	75,405	70,374	\$83,622	--	--	--
45-49	2,162	222	345	447	559	366	219	4	--	--
	76,034	69,598	72,127	77,925	79,454	77,161	74,450	\$64,368	--	--
50-54	2,128	199	288	338	420	312	424	141	6	--
	76,984	72,665	73,745	73,410	78,344	76,594	83,025	76,223	\$93,244	--
55-59	1,559	111	203	255	320	234	296	109	30	1
	75,426	76,707	69,782	73,013	75,526	75,952	80,281	77,498	69,206	\$62,878
60-64	953	67	111	178	226	126	154	62	27	2
	73,564	71,875	71,530	68,948	74,917	73,401	76,910	78,973	74,309	75,664
65-69	445	25	67	85	125	57	58	18	4	6
	71,799	68,127	71,440	72,107	70,336	70,219	79,228	70,616	88,777	52,664
70 & over	164	7	24	26	39	24	24	11	7	2
	62,533	41,437	68,385	76,579	62,909	51,966	61,398	52,135	62,307	74,633
Total	13,957	3,006	2,935	2,701	2,440	1,256	1,189	345	74	11
	\$70,528	\$60,708	\$68,640	\$72,441	\$75,416	\$74,897	\$79,356	\$75,922	\$73,422	\$61,769

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, 2015
By Age and Years of Service**

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

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	--	--	--	--	--	--	--	--
	\$86,082	\$86,082	--	--	--	--	--	--	--	--
25-29	22	21	1	--	--	--	--	--	--	--
	79,424	78,743	\$93,715	--	--	--	--	--	--	--
30-34	53	31	16	6	--	--	--	--	--	--
	94,147	89,811	101,388	\$97,237	--	--	--	--	--	--
35-39	65	26	22	17	--	--	--	--	--	--
	98,381	90,419	105,874	100,861	--	--	--	--	--	--
40-44	74	25	25	16	4	4	--	--	--	--
	102,350	101,447	103,725	94,067	\$114,614	\$120,263	--	--	--	--
45-49	86	12	12	16	15	21	10	--	--	--
	115,443	106,080	112,850	115,134	115,622	129,819	\$99,830	--	--	--
50-54	119	14	19	22	11	24	25	4	--	--
	118,809	99,240	107,388	120,010	119,651	131,670	127,953	\$98,322	--	--
55-59	92	11	16	18	11	19	13	4	--	--
	116,360	100,723	106,477	117,373	118,063	124,411	125,135	122,886	--	--
60-64	52	3	5	14	3	10	15	1	1	--
	118,099	85,485	105,328	106,138	106,410	130,197	129,568	138,687	\$168,723	--
65-69	16	2	2	5	2	2	2	--	1	--
	105,393	77,710	106,958	96,486	172,714	104,982	84,633	--	109,867	--
70 & over	8	--	--	--	1	2	5	--	--	--
	113,514	--	--	--	128,066	115,460	109,825	--	--	--
Total	588	146	118	114	47	82	70	9	2	--
	\$109,352	\$93,103	\$105,737	\$108,479	\$119,157	\$127,732	\$121,225	\$113,724	\$139,295	--

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, 2015
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
Under 25	13	13	--	--	--	--	--	--	--	--
	\$48,468	\$48,468	--	--	--	--	--	--	--	--
25-29	52	48	4	--	--	--	--	--	--	--
	51,827	51,323	\$57,873	--	--	--	--	--	--	--
30-34	72	37	22	13	--	--	--	--	--	--
	63,940	60,998	69,172	\$63,459	--	--	--	--	--	--
35-39	137	45	29	51	12	--	--	--	--	--
	68,509	67,678	64,263	69,150	\$79,166	--	--	--	--	--
40-44	144	35	26	56	20	7	--	--	--	--
	71,250	64,921	78,827	68,637	77,682	\$77,270	--	--	--	--
45-49	208	46	32	66	40	12	12	--	--	--
	72,766	68,959	81,011	70,059	70,106	78,866	\$83,036	--	--	--
50-54	279	37	32	95	50	29	30	5	1	--
	73,923	61,095	91,757	65,636	74,836	90,548	77,531	\$84,692	\$75,245	--
55-59	256	27	24	68	42	27	38	19	10	1
	73,126	62,941	81,445	66,739	66,136	90,049	78,265	75,407	84,307	\$68,955
60-64	184	23	18	40	23	22	22	19	16	1
	71,722	70,425	72,626	65,028	72,011	79,190	74,167	68,947	78,852	66,887
65-69	55	3	8	19	10	5	7	--	2	1
	78,115	49,447	81,652	85,550	77,349	62,747	83,032	--	67,799	65,269
70 & over	13	2	1	5	2	2	--	--	--	1
	71,035	71,846	55,191	69,454	56,992	63,510	--	--	--	136,302
Total	1,413	316	196	413	199	104	109	43	29	4
	\$71,105	\$62,380	\$77,374	\$68,200	\$72,217	\$83,918	\$78,067	\$73,632	\$79,846	\$84,353

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, 2015
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	--	--	--	--	--	--	--	--
	\$58,603	\$58,603	--	--	--	--	--	--	--	--
25-29	--	--	--	--	--	--	--	--	--	--
30-34	4	2	1	1	--	--	--	--	--	--
	70,213	58,899	\$101,468	\$61,585	--	--	--	--	--	--
35-39	5	2	2	1	--	--	--	--	--	--
	62,747	73,372	60,815	45,361	--	--	--	--	--	--
40-44	8	2	1	5	--	--	--	--	--	--
	73,085	81,722	75,858	69,075	--	--	--	--	--	--
45-49	10	6	2	1	--	1	--	--	--	--
	115,195	130,249	103,713	83,384	--	\$79,648	--	--	--	--
50-54	17	5	3	6	1	1	1	--	--	--
	117,048	130,119	56,182	127,547	\$103,536	111,592	\$190,262	--	--	--
55-59	11	4	1	2	4	--	--	--	--	--
	105,912	115,185	44,830	87,263	121,234	--	--	--	--	--
60-64	5	1	--	1	1	1	1	--	--	--
	146,277	312,744	--	181,070	71,805	90,446	75,319	--	--	--
65-69	2	--	--	2	--	--	--	--	--	--
	56,638	--	--	56,638	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	63	23	10	19	6	3	2	--	--	--
	\$101,418	\$117,051	\$71,976	\$93,150	\$110,046	\$93,895	\$132,790	--	--	--

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, 2015
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
Under 25	5	5	--	--	--	--	--	--	--	--
	\$59,547	\$59,547	--	--	--	--	--	--	--	--
25-29	18	17	1	--	--	--	--	--	--	--
	62,114	61,489	\$72,744	--	--	--	--	--	--	--
30-34	29	21	6	2	--	--	--	--	--	--
	67,816	64,208	88,647	\$43,206	--	--	--	--	--	--
35-39	34	16	12	6	--	--	--	--	--	--
	81,112	76,967	87,141	80,107	--	--	--	--	--	--
40-44	34	11	7	9	6	1	--	--	--	--
	91,525	96,274	83,630	91,162	\$89,585	\$109,446	--	--	--	--
45-49	42	8	4	10	8	8	4	--	--	--
	104,955	121,693	111,687	100,947	114,866	89,719	\$85,419	--	--	--
50-54	56	6	5	9	15	8	9	3	1	--
	88,817	71,890	107,659	65,790	93,697	89,977	97,896	\$96,566	\$115,996	--
55-59	24	6	3	6	5	1	2	1	--	--
	108,312	133,110	92,574	103,549	96,047	167,056	94,264	65,980	--	--
60-64	15	3	1	7	3	1	--	--	--	--
	101,603	87,742	87,713	99,833	112,989	135,302	--	--	--	--
65-69	4	--	--	1	2	1	--	--	--	--
	108,925	--	--	150,837	100,814	83,235	--	--	--	--
70 & over	1	--	--	1	--	--	--	--	--	--
	52,426	--	--	52,426	--	--	--	--	--	--
Total	262	93	39	51	39	20	15	4	1	--
	\$88,724	\$80,093	\$91,954	\$88,480	\$99,557	\$96,630	\$94,085	\$88,920	\$115,996	--

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, 2015
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	--	--	--	--	--	--	--	--	--	--
30-34	2	--	1	1	--	--	--	--	--	--
35-39	\$47,895	--	\$45,451	\$50,339	--	--	--	--	--	--
40-44	3	--	2	--	1	--	--	--	--	--
45-49	52,071	--	47,576	--	\$61,062	--	--	--	--	--
50-54	1	--	--	--	1	--	--	--	--	--
55-59	85,847	--	--	--	85,847	--	--	--	--	--
60-64	6	2	1	1	1	--	1	--	--	--
65-69	65,005	\$47,150	134,126	63,854	48,876	--	\$48,876	--	--	--
70 & over	4	--	--	--	2	1	1	--	--	--
Total	60,522	--	--	--	53,657	\$85,847	48,928	--	--	--
	1	--	--	--	--	1	--	--	--	--
	62,320	--	--	--	--	62,320	--	--	--	--
	4	--	--	--	--	1	3	--	--	--
	64,209	--	--	--	--	73,236	61,199	--	--	--
	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	21	2	4	2	5	3	5	--	--	--
	\$61,387	\$47,150	\$68,682	\$57,097	\$60,620	\$73,801	\$56,280	--	--	--

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, 2015
By Age and Years of Service**

viii. 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	5	5	--	--	--	--	--	--	--	--
	\$49,076	\$49,076	--	--	--	--	--	--	--	--
25-29	20	16	3	1	--	--	--	--	--	--
	53,130	52,366	\$52,612	\$66,908	--	--	--	--	--	--
30-34	80	11	48	21	--	--	--	--	--	--
	62,692	48,765	63,836	67,369	--	--	--	--	--	--
35-39	202	6	35	132	29	--	--	--	--	--
	71,068	48,610	62,548	72,654	\$78,776	--	--	--	--	--
40-44	207	1	16	57	115	18	--	--	--	--
	76,868	47,677	59,226	72,690	79,267	\$92,078	--	--	--	--
45-49	155	--	5	29	59	51	11	--	--	--
	78,640	--	61,601	69,620	78,106	83,720	\$89,478	--	--	--
50-54	84	1	--	9	25	15	31	3	--	--
	86,892	48,309	--	71,759	75,437	84,591	97,306	\$144,514	--	--
55-59	44	1	2	3	8	12	10	6	2	--
	79,594	74,686	65,705	69,974	68,365	79,362	84,167	94,072	\$90,374	--
60-64	20	--	--	3	7	4	5	1	--	--
	75,708	--	--	72,528	64,808	89,704	84,118	63,511	--	--
65-69	4	--	--	1	2	1	--	--	--	--
	66,279	--	--	63,662	57,128	87,199	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	821	41	109	256	245	101	57	10	2	--
	\$74,738	\$50,780	\$62,369	\$71,763	\$77,589	\$85,093	\$92,333	\$106,148	\$90,374	--

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, 2015
By Age and Years of Service**

ix. 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	28	26	2	--	--	--	--	--	--	--
	\$73,989	\$73,186	\$84,431	--	--	--	--	--	--	--
25-29	222	168	54	--	--	--	--	--	--	--
	81,724	78,805	90,805	--	--	--	--	--	--	--
30-34	303	125	147	31	--	--	--	--	--	--
	91,798	81,893	98,045	\$102,119	--	--	--	--	--	--
35-39	252	31	83	92	46	--	--	--	--	--
	102,261	84,910	100,344	105,939	\$110,058	--	--	--	--	--
40-44	338	18	38	70	170	42	--	--	--	--
	109,209	95,172	102,040	104,758	112,216	\$116,956	--	--	--	--
45-49	392	11	21	55	108	128	69	--	--	--
	117,176	116,873	111,419	116,602	112,454	118,498	\$124,373	--	--	--
50-54	243	19	8	17	31	41	100	27	--	--
	123,907	121,502	112,911	119,399	112,495	115,391	128,497	\$140,730	--	--
55-59	96	29	14	1	9	13	20	10	--	--
	119,935	124,495	119,258	98,819	105,673	122,435	114,143	130,935	--	--
60-64	22	2	3	7	--	1	5	4	--	--
	127,204	114,801	170,838	124,152	--	104,831	115,304	126,492	--	--
65-69	5	1	3	--	1	--	--	--	--	--
	137,118	117,824	155,564	--	101,076	--	--	--	--	--
70 & over	1	--	--	--	1	--	--	--	--	--
	123,503	--	--	--	123,503	--	--	--	--	--
Total	1,902	430	373	273	366	225	194	41	--	--
	\$106,138	\$86,688	\$100,758	\$108,630	\$111,878	\$117,811	\$125,211	\$136,952	--	--

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, 2015
By Age and Years of Service**

x. 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
Under 25	11	11	--	--	--	--	--	--	--	--
	\$77,393	\$77,393	--	--	--	--	--	--	--	--
25-29	59	48	11	--	--	--	--	--	--	--
	86,081	82,761	\$100,570	--	--	--	--	--	--	--
30-34	123	68	43	12	--	--	--	--	--	--
	101,700	92,219	112,038	\$118,383	--	--	--	--	--	--
35-39	173	60	69	36	8	--	--	--	--	--
	116,631	108,956	119,677	124,183	\$113,947	--	--	--	--	--
40-44	153	38	36	41	30	7	1	--	--	--
	122,897	118,057	120,055	125,620	126,436	\$129,238	\$146,967	--	--	--
45-49	141	23	11	26	26	35	20	--	--	--
	133,286	133,633	116,770	126,072	133,861	135,406	146,891	--	--	--
50-54	158	39	3	15	21	28	42	10	--	--
	132,704	135,231	114,421	126,574	125,329	130,031	136,791	\$143,337	--	--
55-59	112	38	--	4	6	23	21	14	6	--
	126,938	126,255	--	119,560	120,615	125,693	131,397	126,286	\$133,199	--
60-64	26	12	--	1	2	1	2	6	2	--
	122,530	120,782	--	130,662	97,925	117,900	111,394	132,498	137,102	--
65-69	6	3	--	--	1	1	--	--	1	--
	118,035	120,992	--	--	129,183	116,320	--	--	99,731	--
70 & over	1	--	--	--	1	--	--	--	--	--
	62,782	--	--	--	62,782	--	--	--	--	--
Total	963	340	173	135	95	95	86	30	9	--
	\$119,786	\$109,047	\$116,366	\$124,644	\$125,563	\$130,630	\$137,351	\$133,212	\$130,348	--

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, 2015
By Age and Years of Service**

xi. 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	304	298	6	--	--	--	--	--	--	--
	\$49,016	\$48,631	\$68,181	--	--	--	--	--	--	--
25-29	1,501	1,275	220	6	--	--	--	--	--	--
	56,783	55,479	64,518	\$50,064	--	--	--	--	--	--
30-34	2,497	1,182	980	326	9	--	--	--	--	--
	66,495	63,077	70,699	66,411	\$60,704	--	--	--	--	--
35-39	2,903	682	934	970	316	1	--	--	--	--
	73,709	67,549	77,250	74,851	72,981	\$90,149	--	--	--	--
40-44	3,209	495	645	894	936	223	16	--	--	--
	78,900	72,205	75,593	78,922	83,524	83,351	\$85,607	--	--	--
45-49	3,386	373	468	687	842	656	356	4	--	--
	83,161	74,949	75,535	81,559	84,964	89,500	89,151	\$64,368	--	--
50-54	3,220	367	372	537	592	476	673	195	8	--
	84,037	78,606	77,579	76,282	81,777	86,466	95,071	90,384	\$93,838	--
55-59	2,336	264	279	378	414	359	420	169	50	3
	80,117	86,113	74,375	73,914	77,031	82,904	84,545	85,160	80,060	\$57,166
60-64	1,373	129	144	265	273	191	221	97	49	4
	75,942	75,432	74,193	72,430	74,634	75,660	79,790	81,731	78,985	100,398
65-69	591	40	84	121	156	80	74	21	8	7
	72,709	69,550	75,553	74,011	71,355	69,010	77,258	68,403	87,538	54,465
70 & over	205	10	26	35	47	35	31	11	7	3
	64,379	47,512	67,258	72,709	64,629	56,275	68,600	52,135	62,307	95,189
Total	21,525	5,115	4,158	4,219	3,585	2,021	1,791	497	122	17
	\$75,870	\$65,322	\$74,203	\$76,023	\$80,383	\$84,241	\$88,261	\$84,934	\$80,003	\$72,936

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

EXHIBIT C

Reconciliation of Member Data – December 31, 2014 to December 31, 2015

	Active Members	Vested Former Members*	Pensioners	Disableds	Beneficiaries	Total
Number as of December 31, 2014	21,459	4,789	11,759	1,364	2,046	41,417
New members	1,420	95	0	0	170	1,685
Terminations – with vested rights	-479	479	0	0	0	0
Contributions refunds	-151	-102	0	0	0	-253
Retirements	-715	-126	841	0	0	0
New disabilities	-23	-4	-42	69	0	0
Return to work	39	-37	-2	0	0	0
Deaths	-25	-3	-286	-30	-81	-425
Data adjustments	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>2</u>
Number as of December 31, 2015	21,525	5,091	12,271	1,404	2,135	42,426

* 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, 2015	Year Ended December 31, 2014
Contribution income:		
Employer contributions	\$571,298,000	\$625,520,000
Member contributions	249,271,000	232,656,000
Discount for prepaid contributions	27,301,000	29,114,000
Transfer from County Investment Account ⁽¹⁾	<u>0</u>	<u>5,000,000</u>
Contribution income	\$847,870,000	\$892,290,000
Investment income:		
Interest, dividends and other income	\$171,671,000	\$225,760,000
Recognition of capital appreciation	501,572,000	598,681,000
Less investment and administrative fees	<u>-67,053,000</u>	<u>-53,392,000</u>
Net investment income	<u>\$606,190,000</u>	<u>\$771,049,000</u>
Total income available for benefits	\$1,454,060,000	\$1,663,339,000
Less benefit payments	-\$675,963,000	-\$630,678,000
Change in reserve for future benefits	\$778,097,000	\$1,032,661,000

⁽¹⁾ 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, 2015	Year Ended December 31, 2014
Cash equivalents	\$360,180,000	\$375,708,000
Accounts receivable:		
Contributions	\$17,730,000	\$17,470,000
Investment income	15,520,000	20,325,000
Securities settlements	48,568,000	138,819,000
Other	<u>7,722,000</u>	<u>5,944,000</u>
Total accounts receivable	\$89,540,000	\$182,558,000
Investments:		
Fixed income investments	\$1,760,617,000	\$1,961,219,000
Equities	4,329,171,000	4,328,917,000
Real estate	1,109,260,000	1,090,592,000
Alternative investments and diversified credit	4,335,000,000	3,944,608,000
Security lending collateral	106,142,000	197,345,000
Fixed assets net of accumulated depreciation	<u>24,935,000</u>	<u>21,482,000</u>
Total investments at market value	<u>\$11,665,125,000</u>	<u>\$11,544,163,000</u>
Total assets	\$12,114,845,000	\$12,102,429,000
Less accounts payable:		
Securities settlements	-\$50,506,000	-\$94,290,000
Security lending liability	-106,142,000	-197,345,000
All other	<u>-73,713,000</u>	<u>-65,639,000</u>
Total accounts payable	-\$230,361,000	-\$357,274,000
Net assets at market value⁽¹⁾	<u>\$11,548,529,000</u>	<u>\$11,428,223,000</u>
Net assets at actuarial value	<u>\$12,228,098,000</u>	<u>\$11,450,001,000</u>
Net assets at valuation value	<u>\$12,228,009,000</u>	<u>\$11,449,911,000</u>

⁽¹⁾ The market value excludes \$108,789,000 and \$109,103,000 as of December 31, 2015 and December 31, 2014, respectively, in the County Investment Account (funded by pension obligation bond proceeds held by OCERS) and \$227,166,000 and \$207,829,000 as of December 31, 2015 and December 31, 2014, respectively, in the prepaid employer contributions account.

Note: Results may not total exactly due to rounding.

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

EXHIBIT F

Actuarial Balance Sheet

An overview of the Plan’s funding is given by an Actuarial Balance Sheet. In this approach, we first determine the amount and timing of all future payments that will be made by the Plan for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. 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	\$12,228,009,000
2. Present value of future contributions by members	1,753,059,000
3. Present value of future employer contributions for:	
a. entry age normal cost	1,985,445,000
b. unfunded actuarial accrued liability	<u>4,822,348,000</u>
4. Total current and future assets	\$20,788,861,000

Liabilities

5. Present value of retirement allowance payable to present retired members	\$9,301,597,000
6. Present value of retirement allowances to be granted to present non-retired members	<u>11,487,264,000</u>
7. Total liabilities	\$20,788,861,000

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

EXHIBIT G

Summary of Reported Asset Information as of December 31, 2015

Reserves

Included in Valuation Value of Assets

Active Members Reserve (Book Value)	\$2,691,259,000
Retired Members Reserve (Book Value)	8,728,585,000
Employer Advanced Reserve (Book Value)	1,904,405,000
ERI Contribution Reserve	8,317,000
STAR COLA Contribution Reserve	0
Unrealized Appreciation Included in Valuation Value of Assets	<u>-1,104,557,000</u>
Subtotal: Valuation Value of Assets	\$12,228,009,000

Not Included in Valuation Value of Assets

RMBR	\$0
Unclaimed Member Deposit	0
Medicare Medical Insurance Reserve	<u>89,000</u>
Total	\$89,000
Subtotal: Actuarial Value of Assets	\$12,228,098,000
Unrecognized Investment Income	<u>-679,569,000</u>
Subtotal: Market Value of Assets (Net of County Investment Account ⁽¹⁾ and Prepaid Employer Contributions)	\$11,548,529,000
County Investment Account ⁽¹⁾	108,789,000
Prepaid Employer Contributions	<u>227,166,000</u>
Total: Gross Market Value of Assets	\$11,884,484,000

⁽¹⁾ 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, 2015

1.	Unfunded actuarial accrued liability at beginning of year		\$4,963,213,000
2.	Total normal cost at middle of year		455,105,000
3.	Expected employer and member contributions		-822,863,000
4.	Interest		<u>347,804,000</u>
5.	Expected unfunded actuarial accrued liability		\$4,943,259,000
6.	Actuarial (gain)/loss and other changes:		
	(a) Gain from additional UAAL contributions	-\$69,852,000	
	(b) Loss from actual contributions less than expected	44,960,000	
	(c) Loss from investment return	229,138,000	
	(d) Gain from lower than expected COLA increases	-119,367,000	
	(e) Gain from lower than expected salary increases	-282,696,000	
	(f) Loss from higher than expected retirement experience	62,070,000	
	(g) Other experience (gain)/loss	<u>14,836,000</u>	
	Total changes		<u>-\$120,911,000</u>
7.	Unfunded actuarial accrued liability at end of year		<u>\$4,822,348,000</u>

Note: The sum of 6(d) through 6(g) is equal to the "other experience" gain of \$325,157,000 provided on page 7.

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

EXHIBIT I

Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar indexed for inflation. That limit is \$210,000 for 2016. 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

EXHIBIT J

Definitions of Pension Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial

Assumptions:

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of members and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age; and
- (d) Turnover rates — the rates at which members of various ages are expected to leave employment for reasons other than death, disability, or retirement.

Normal Cost:

The amount of contributions required to fund the level cost allocated to the current year of service.

Actuarial Accrued Liability

For Actives:

The equivalent of the accumulated normal costs allocated to the years before the valuation date.

Actuarial Accrued Liability

For Pensioners:

The single sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

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

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

**EXHIBIT I
Summary of Actuarial Valuation Results**

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

1. Retired members as of the valuation date (including 2,135 beneficiaries in pay status)	15,810
2. Members inactive during year ended December 31, 2015 with vested rights ⁽¹⁾	5,091
3. Members active during the year ended December 31, 2015	21,525

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

1. Normal cost	\$442,698
2. Present value of future benefits	20,788,861
3. Present value of future normal costs	3,738,504
4. Actuarial accrued liability ⁽²⁾	17,050,357
Retired members and beneficiaries	\$9,301,597
Inactive members with vested rights ⁽¹⁾	395,179
Active members	7,353,581
5. Valuation value of assets ⁽³⁾ (\$11,548,529 at market value as reported by Retirement System)	12,228,009
6. Unfunded actuarial accrued liability	\$4,822,348

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

⁽²⁾ Excludes liabilities held for STAR COLA.

⁽³⁾ Excludes assets held for Medicare medical insurance reserve.

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

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

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

	Dollar Amount	% of Payroll
1. Total normal cost	\$442,698	27.11%
2. Expected member contributions	<u>-199,444</u>	<u>-12.21%</u>
3. Employer normal cost: (1) + (2)	\$243,254	14.90%
4. Amortization of unfunded actuarial accrued liability	<u>365,055</u>	<u>22.35%</u>
5. Total recommended average employer contribution: (3) + (4)	\$608,309	37.25%
6. Projected compensation	\$1,633,112	

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

EXHIBIT II
Actuarial Assumptions and Actuarial Cost Method

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

Economic Assumptions

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

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

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

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

Demographic Assumptions

Post – Retirement Mortality Rates:

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

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

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

The mortality tables shown above were determined to contain sufficient provision appropriate to reasonably 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

- 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

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

Termination Rates Before Retirement (Continued):

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

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

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

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

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

Termination Rates Before Retirement (Continued):

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

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

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

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

Retirement Rates:

Age	Rate (%)							
	General - Enhanced	General - Non-Enhanced ⁽¹⁾	General - SJC (31676.12)	Safety - Law (31664.1) ⁽²⁾	Safety - Law (31664.2) ⁽²⁾	Safety - Fire (31664.1) ⁽²⁾	Safety - Fire (31664.2) ⁽²⁾	Safety - Probation ⁽²⁾
49	0.0	0.0	0.0	10.0	0.0	0.0	0.0	0.0
50	2.5	2.5	3.0	16.0	11.5	6.0	8.0	3.0
51	2.0	2.5	3.0	16.0	12.0	8.0	10.0	3.0
52	2.0	2.5	3.0	16.0	12.7	9.0	11.0	4.0
53	2.0	2.5	3.0	16.0	17.9	10.0	12.0	4.0
54	5.0	2.5	3.0	22.0	18.8	16.0	14.0	6.0
55	15.0	3.0	4.0	22.0	30.7	19.0	24.0	11.0
56	10.0	3.5	5.0	20.0	20.0	20.0	23.0	11.0
57	10.0	5.0	6.0	20.0	20.0	23.0	27.0	17.0
58	10.0	5.0	7.0	20.0	25.0	30.0	27.0	20.0
59	11.0	7.0	9.0	26.0	30.0	30.0	36.0	20.0
60	12.0	9.0	11.0	45.0	100.0	45.0	100.0	20.0
61	12.0	10.0	13.0	45.0	100.0	45.0	100.0	20.0
62	15.0	16.0	15.0	45.0	100.0	45.0	100.0	25.0
63	16.0	16.0	15.0	45.0	100.0	45.0	100.0	50.0
64	16.0	18.0	20.0	45.0	100.0	45.0	100.0	50.0
65	21.0	21.0	20.0	100.0	100.0	100.0	100.0	100.0
66	22.0	26.0	24.0	100.0	100.0	100.0	100.0	100.0
67	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
68	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
69	23.0	21.0	24.0	100.0	100.0	100.0	100.0	100.0
70	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
71	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
72	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
73	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
74	40.0	30.0	100.0	100.0	100.0	100.0	100.0	100.0
75	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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

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

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

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

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

Retirement Age and Benefit for Deferred Vested Members:

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

General Age: 58

Safety Age: 53

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

Liability Calculation for Current Deferred Vested Members:

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

Future Benefit Accruals:

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

Unknown Data for Members:

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

Percent Married:

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

Age of Spouse:

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

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

Individual Salary Increases:

Annual Rate of Compensation Increase (%)

Inflation: 3.00% per year, plus “across the board” real salary increases of 0.50% per year, plus the following merit and promotional increases:

Years of Service	General	Safety
Less than 1	10.00%	14.00%
1	7.25	10.00
2	6.00	8.50
3	4.75	6.75
4	4.00	5.25
5	3.25	4.50
6	2.25	3.50
7	2.00	3.25
8	1.50	2.25
9	1.25	2.25
10	1.25	1.75
11	1.25	1.75
12	1.25	1.75
13	1.25	1.75
14	1.25	1.75
15	1.25	1.75
16	0.75	1.50
17	0.75	1.50
18	0.75	1.50
19	0.75	1.50
20 & over	0.75	1.50

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

Additional Cashout Assumptions:

Non-CalPEPRA Formulas

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

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

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

CalPEPRA Formulas

None

**Increase in Section 7522.10
Compensation Limit:**

Increase of 3.00% per year from the valuation date.

Actuarial 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

Actuarial Cost Method:

Entry Age Actuarial Cost Method. Entry Age is the current age minus Vesting Credit. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salaries, with Normal Cost determined as a level percentage of individual salary, as if the current benefit accrual rate had always been in effect. Effective December 31, 2013, the outstanding balance of the UAAL from the December 31, 2012 valuation was combined and re-amortized over a declining 20-year period. Any changes in UAAL due to actuarial gains or losses or due to changes in assumptions or methods will be amortized over separate 20-year periods. Any changes in UAAL due to plan amendments will be amortized over separate 15-year periods and any change in UAAL due to early retirement incentive programs will be amortized over a separate period of up to 5 years.

Please note that for Probation members who have prior benefit service in another OCERS plan, the normal cost rate for the current plan is calculated assuming their Entry Age is the date they entered service with their current plan.

Changes in Actuarial Assumptions and Methods:

None.

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

**EXHIBIT III
Summary of Plan Provisions**

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

Membership Eligibility:	Membership with OCERS begins with the day of employment in an eligible position by the County or a participating employer.
Non-CalPEPRA General Plans	
<i>2.5% @ 55 Plans (Orange County Sanitation District and Law Library⁽¹⁾)</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, Orange County Local Agency Formation Commission⁽¹⁾, Orange County Employees Retirement System⁽²⁾, Children and Family Commission⁽³⁾ 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.
⁽¹⁾ <i>Improvement is prospective only for service after June 23, 2005.</i>	
⁽²⁾ <i>Improvement for management members is prospective only for service after June 30, 2005.</i>	
⁽³⁾ <i>Improvement is prospective only for service after December 22, 2005.</i>	
<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

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

CalPEPRA General Plans

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

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

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

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

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

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

CalPEPRA Safety Plans

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

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

Final Compensation for Benefit Determination:

Plans A, E, G, I, M, O and Q Highest consecutive twelve months of compensation earnable. (§31462.1) (FAS1)

Plans B, F, H, J, N, P, R and S Highest consecutive thirty-six months of compensation earnable. (§31462) (FAS3)

Plans T, U, V and W Highest consecutive thirty-six months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)

Service: Years of service. (Yrs)

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

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).

Benefit Formula:

General Plans

<i>2.5% @ 55</i>	Retirement Age	Benefit Formula
<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

Benefit Formula (continued):

	Retirement Age	Benefit Formula
<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

Benefit Formula (continued):

<i>2.0% @ 55</i>	Retirement Age	Benefit Formula
<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

Benefit Formula (continued):

	Retirement Age	Benefit Formula
<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

Benefit Formula (continued):

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

Benefit Formula (continued):

	Retirement Age	Benefit Formula
<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

Benefit Formula (continued):

Safety Plans

3% @ 50

Plan E (§31664.1)

Retirement Age

50

55

60 or later

Benefit Formula

(3.00% x FAS1 x Yrs)

(3.00% x FAS1 x Yrs)

(3.00% x FAS1 x Yrs)

Plan F (§31664.1)

50

55

60 or later

(3.00% x FAS3 x Yrs)

(3.00% x FAS3 x Yrs)

(3.00% x FAS3 x Yrs)

3% @ 55

Plan Q (§31664.2)

50

55

60 or later

(2.29% x FAS1 x Yrs)

(3.00% x FAS1 x Yrs)

(3.00% x FAS1 x Yrs)

Plan R (§31664.2)

50

55

60 or later

(2.29% x FAS3 x Yrs)

(3.00% x FAS3 x Yrs)

(3.00% x FAS3 x Yrs)

Plan V (§7522.25(d))

50

55

57 or later

(2.00% x FAS3 x Yrs)

(2.50% x FAS3 x Yrs)

(2.70% x FAS3 x Yrs)

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

Maximum Benefit:

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

Plans U and V None.

Ordinary Disability:

General Plans

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

Eligibility Five years of service. (§31720)

Benefit Formula Plans A, G, I, M and O:
1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 62, but the total benefit cannot be more than one-third of Final Compensation. (§31727.1)

Plans B, H, J, N, P, S, T, U and W:
1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but the total benefit cannot be more than one-third of Final Compensation. (§31727)

Safety Plans

Plans E, F, Q, R and V

Eligibility Five years of service. (§31720)

Benefit Formula 1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation. (§31727.2)

For all members, 100% of the Service Retirement benefit will be paid, if greater.

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

Line-of-Duty Disability:

All Members

Eligibility

No age or service requirements. (§31720)

Benefit Formula

50% of the Final Compensation or 100% of Service Retirement benefit, if greater. (§31727.4)

Pre-Retirement Death:

All Members

Eligibility

None.

Benefit

Refund of member contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation. (§31781) A lump sum benefit in the amount of \$1,000 is payable upon the death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)

Death in line of duty

50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children. (§31787)

OR

Vested Members

Eligibility

Five years of service.

Benefit

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

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

Death After Retirement:

All Members

Service or

Ordinary Disability Retirement

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

Line-of-Duty Disability

100% of member's allowance continued to eligible spouse. (§31786) A lump sum benefit in the amount of \$1,000 is payable upon the death of a member (with 10 years of service) to his/her eligible beneficiary. (§31790)

Withdrawal Benefits:

Less than Five Years of Service

Refund of accumulated member contributions with interest or earned benefit at age 70. (§31628) Effective January 1, 2003, a member may also elect to leave contributions on deposit in the retirement fund. (§31629.5)

Five or More Years of Service

If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire. (§31700)

Post-retirement

Cost-of-Living Benefits:

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

Supplemental Benefit:

Non-vested supplemental COLA and medical benefits are also paid by the System to eligible retirees and survivors. These benefits have been excluded from this valuation.

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

Member Contributions:	Please refer to Appendix B for the specific rates.
Non-CalPEPRA General Plans	
<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

Member Contributions (Continued):

Non-CalPEPRA Safety Plans

Plans E and Q

Basic

Provide for an average annuity payable at age 50 equal to 1/200 FAS1. (\$31639.5)

Cost-of-Living

Provide for 50% of future Cost-of-Living costs.

Plans F and R

Basic

Provide for an average annuity payable at age 50 equal to 1/100 of FAS3. (\$31639.25)

Cost-of-Living

Provide for 50% of future Cost-of-Living costs.

CalPEPRA Plans

Plans T, U, V and W

50% of total Normal Cost rate.

Other Information:

Non-CalPEPRA Safety members with 30 or more years of service are exempt from paying member contributions. This also applies for General members hired on or before March 7, 1973.

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

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #2 – Plans I, J, O, P, S, T, U and W						
	12/31/2012	Restart amortization	\$3,438,555,000	18	\$3,426,624,000	\$263,052,000
	12/31/2013	Actuarial (gain) or loss	(173,790,000)	18	(173,187,000)	(13,295,000)
	12/31/2014	Actuarial (gain) or loss	(78,001,000)	19	(77,912,000)	(5,757,000)
	12/31/2014	Assumption changes	(246,714,000)	19	(246,433,000)	(18,209,000)
	12/31/2015	Actuarial (gain) or loss	(65,063,000)	20	<u>(65,063,000)</u>	<u>(4,640,000)</u>
Subtotal					\$2,864,029,000	\$221,151,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #3 – Plans B, G, H and U (Law Library, OCSD)						
	12/31/2012	Restart amortization	\$213,425,000	18	\$212,684,000	\$16,327,000
	12/31/2013	Actuarial (gain) or loss	(15,594,000)	18	(15,540,000)	(1,193,000)
	12/31/2014	OCSD additional UAAL contribution	(126,350,000)	19	(126,206,000)	(1)
	12/31/2014	Actuarial (gain) or loss	(2,345,000)	19	(2,342,000)	(173,000)
	12/31/2014	Assumption changes	(13,379,000)	19	(13,364,000)	(987,000)
	12/31/2015	OCSD additional UAAL contribution	(51,154,000)	20	(51,154,000)	(2)
	12/31/2015	Actuarial (gain) or loss	4,644,000	20	<u>4,644,000</u>	<u>331,000</u>
Subtotal					\$8,722,000	\$14,305,000

⁽¹⁾ This additional UAAL contribution has been amortized as a level percent of pay over a period of twenty years effective on January 1, 2015 and used to reduce O.C. Sanitation District's UAAL rates for one-half of fiscal year 2014/2015 and all of 2015/2016 and 2016/2017. The amortization credit available from annuitizing the remaining balance of the additional UAAL contributions over 17.5 years is about \$9.8 million in 2017/2018.

⁽²⁾ This additional UAAL contribution has been amortized as a level percent of pay over a period of twenty years effective on July 1, 2016 and used to reduce O.C. Sanitation District's UAAL rates for fiscal year 2016/2017. The amortization credit available from annuitizing the remaining balance of the additional UAAL contributions over 19 years is about \$3.9 million in 2017/2018.

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #5 – Plans A, B and U (OCTA)						
	12/31/2012	Restart amortization	\$232,513,000	18	\$231,706,000	\$17,787,000
	12/31/2013	Actuarial (gain) or loss	(13,471,000)	18	(13,424,000)	(1,031,000)
	12/31/2014	Actuarial (gain) or loss	4,522,000	19	4,517,000	334,000
	12/31/2014	Assumption changes	(19,944,000)	19	(19,921,000)	(1,472,000)
	12/31/2015	Actuarial (gain) or loss	(933,000)	20	<u>(933,000)</u>	<u>(67,000)</u>
Subtotal					\$201,945,000	\$15,551,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #9 – Plans M, N and U (TCA)						
	12/31/2012	Restart amortization	\$11,906,000	18	\$11,865,000	\$911,000
	12/31/2013	Actuarial (gain) or loss	(684,000)	18	(682,000)	(52,000)
	12/31/2014	Actuarial (gain) or loss	496,000	19	495,000	37,000
	12/31/2014	Assumption changes	(1,032,000)	19	(1,031,000)	(76,000)
	12/31/2015	Actuarial (gain) or loss	778,000	20	<u>778,000</u>	<u>55,000</u>
Subtotal					\$11,425,000	\$875,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #10 – Plans I, J, M, N and U (OCFA)						
	12/31/2012	Restart amortization	\$72,750,000	18	\$72,498,000	\$5,565,000
	12/31/2013	Actuarial (gain) or loss	(2,659,000)	18	(2,650,000)	(203,000)
	12/31/2014	Actuarial (gain) or loss	(3,755,000)	19	(3,751,000)	(277,000)
	12/31/2014	Assumption changes	(4,489,000)	19	(4,484,000)	(331,000)
	12/31/2015	Actuarial (gain) or loss	626,000	20	<u>626,000</u>	<u>45,000</u>
Subtotal					\$62,239,000	\$4,799,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #11 – Plans M and N, future service, and U (Cemetery)						
Subtotal					\$(125,000)	\$0

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
<i>Safety Members</i>						
Rate Group #6 – Plans E, F and V (Probation)						
	12/31/2012	Restart amortization	\$192,912,000	18	\$192,243,000	\$14,758,000
	12/31/2013	Actuarial (gain) or loss	(14,039,000)	18	(13,990,000)	(1,074,000)
	12/31/2014	Actuarial (gain) or loss	(2,596,000)	19	(2,593,000)	(192,000)
	12/31/2014	Assumption changes	36,260,000	19	36,219,000	2,676,000
	12/31/2015	Actuarial (gain) or loss	(10,703,000)	20	<u>(10,703,000)</u>	<u>(763,000)</u>
Subtotal					\$201,176,000	\$15,405,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)						
	12/31/2012	Restart amortization	\$988,833,000	18	\$985,402,000	\$75,647,000
	12/31/2013	Actuarial (gain) or loss	(51,652,000)	18	(51,473,000)	(3,951,000)
	12/31/2014	Actuarial (gain) or loss	(34,729,000)	19	(34,689,000)	(2,563,000)
	12/31/2014	Assumption changes	102,262,000	19	102,146,000	7,547,000
	12/31/2015	Actuarial (gain) or loss	23,666,000	20	<u>23,666,000</u>	<u>1,688,000</u>
Subtotal					\$1,025,052,000	\$78,368,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)						
	12/31/2012	Restart amortization	\$399,947,000	18	\$398,559,000	\$30,596,000
	12/31/2013	Actuarial (gain) or loss	(20,177,000)	18	(20,107,000)	(1,544,000)
	12/31/2014	Actuarial (gain) or loss	(35,400,000)	19	(35,360,000)	(2,613,000)
	12/31/2014	Assumption changes	35,957,000	19	35,916,000	2,654,000
	12/31/2015	Actuarial (gain) or loss	(22,228,000)	20	<u>(22,228,000)</u>	<u>(1,585,000)</u>
Subtotal					\$356,780,000	\$27,508,000

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

Appendix A (Continued)

UAAL Amortization Schedule as of December 31, 2015

Rate Groups	Date Established	Source	Initial Base	Years Remaining	Remaining Base	Amortization Amount
All Rate Groups Combined Excluding DOE, U.C.I. and Vector Control						
	12/31/2012	Restart amortization	\$5,621,962,000	18	\$5,602,455,000	\$430,083,000
	12/31/2013	Actuarial (gain) or loss	(297,899,000)	18	(296,866,000)	(22,788,000)
	12/31/2014	OCSD additional UAAL contribution	(126,350,000)	19	(126,206,000)	(1)
	12/31/2014	Actuarial (gain) or loss	(154,587,000)	19	(154,411,000)	(11,409,000)
	12/31/2014	Assumption changes	(117,714,000)	19	(117,579,000)	(8,688,000)
	12/31/2015	OCSD additional UAAL contribution	(51,154,000)	20	(51,154,000)	(2)
	12/31/2015	Actuarial (gain) or loss	(70,991,000)	20	<u>(70,991,000)</u>	<u>(5,054,000)</u>
Subtotal Total					\$4,785,248,000	\$382,144,000
Vector Control					\$1,827,000	
Department of Education					\$3,723,000	
U.C.I.					\$31,550,000	
Grand Total					\$4,822,348,000	

⁽¹⁾ This additional UAAL contribution has been amortized as a level percent of pay over a period of twenty years effective on January 1, 2015 and used to reduce O.C. Sanitation District's UAAL rates for one-half of fiscal year 2014/2015 and all of 2015/2016 and 2016/2017. The amortization credit available from annuitizing the remaining balance of the additional UAAL contributions over 17.5 years is about \$9.8 million in 2017/2018.

⁽²⁾ This additional UAAL contribution has been amortized as a level percent of pay over a period of twenty years effective on July 1, 2016 and used to reduce O.C. Sanitation District's UAAL rates for fiscal year 2016/2017. The amortization credit available from annuitizing the remaining balance of the additional UAAL contributions over 19 years is about \$3.9 million in 2017/2018.

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, 2015 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%	9.66%	6.99%	9.51%	5.01%	7.19%	3.00%	4.89%
16	6.99%	9.66%	6.99%	9.51%	5.01%	7.19%	3.00%	4.89%
17	7.12%	9.83%	7.12%	9.68%	5.09%	7.32%	3.06%	4.98%
18	7.24%	10.01%	7.24%	9.85%	5.18%	7.45%	3.11%	5.07%
19	7.37%	10.18%	7.37%	10.03%	5.28%	7.58%	3.17%	5.16%
20	7.50%	10.36%	7.50%	10.20%	5.37%	7.71%	3.22%	5.25%
21	7.63%	10.54%	7.63%	10.38%	5.46%	7.85%	3.28%	5.34%
22	7.77%	10.73%	7.77%	10.56%	5.56%	7.99%	3.34%	5.43%
23	7.90%	10.92%	7.90%	10.75%	5.66%	8.13%	3.40%	5.53%
24	8.04%	11.11%	8.04%	10.94%	5.76%	8.27%	3.46%	5.63%
25	8.18%	11.31%	8.18%	11.13%	5.86%	8.42%	3.52%	5.73%
26	8.33%	11.51%	8.33%	11.33%	5.96%	8.57%	3.58%	5.83%
27	8.48%	11.71%	8.48%	11.53%	6.07%	8.72%	3.64%	5.93%
28	8.63%	11.92%	8.63%	11.73%	6.17%	8.87%	3.70%	6.03%
29	8.78%	12.13%	8.78%	11.94%	6.28%	9.03%	3.77%	6.14%
30	8.94%	12.35%	8.94%	12.16%	6.39%	9.19%	3.84%	6.25%
31	9.10%	12.57%	9.10%	12.38%	6.51%	9.35%	3.90%	6.36%
32	9.26%	12.80%	9.26%	12.60%	6.62%	9.51%	3.97%	6.47%
33	9.43%	13.03%	9.43%	12.83%	6.74%	9.68%	4.04%	6.59%
34	9.61%	13.27%	9.61%	13.07%	6.86%	9.86%	4.12%	6.70%
35	9.79%	13.52%	9.79%	13.31%	6.98%	10.03%	4.19%	6.82%
36	9.97%	13.78%	9.97%	13.57%	7.11%	10.21%	4.27%	6.95%
37	10.17%	14.04%	10.17%	13.83%	7.24%	10.40%	4.34%	7.07%
38	10.37%	14.32%	10.37%	14.10%	7.37%	10.59%	4.42%	7.20%
39	10.53%	14.54%	10.53%	14.32%	7.51%	10.78%	4.50%	7.34%

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

**General Tier 1 Members' Contribution Rates from the December 31, 2015 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%	14.77%	10.69%	14.54%	7.65%	10.99%	4.59%	7.47%
41	10.86%	15.01%	10.86%	14.78%	7.79%	11.19%	4.68%	7.62%
42	11.04%	15.26%	11.04%	15.02%	7.94%	11.41%	4.77%	7.76%
43	11.23%	15.52%	11.23%	15.28%	8.10%	11.64%	4.86%	7.92%
44	11.44%	15.80%	11.44%	15.56%	8.22%	11.81%	4.93%	8.04%
45	11.66%	16.11%	11.66%	15.86%	8.35%	12.00%	5.01%	8.16%
46	11.87%	16.40%	11.87%	16.15%	8.49%	12.19%	5.09%	8.29%
47	12.06%	16.66%	12.06%	16.40%	8.63%	12.39%	5.18%	8.43%
48	12.24%	16.91%	12.24%	16.65%	8.78%	12.61%	5.27%	8.58%
49	12.35%	17.06%	12.35%	16.80%	8.94%	12.84%	5.36%	8.73%
50	12.40%	17.13%	12.40%	16.87%	9.11%	13.09%	5.47%	8.90%
51	12.40%	17.13%	12.40%	16.87%	9.28%	13.33%	5.57%	9.07%
52	12.30%	16.99%	12.30%	16.73%	9.42%	13.53%	5.65%	9.21%
53	12.08%	16.69%	12.08%	16.44%	9.57%	13.74%	5.74%	9.35%
54	11.56%	15.97%	11.56%	15.72%	9.65%	13.86%	5.79%	9.43%
55	11.56%	15.97%	11.56%	15.72%	9.69%	13.92%	5.81%	9.47%
56	11.56%	15.97%	11.56%	15.72%	9.69%	13.92%	5.81%	9.47%
57	11.56%	15.97%	11.56%	15.72%	9.61%	13.80%	5.76%	9.39%
58	11.56%	15.97%	11.56%	15.72%	9.44%	13.56%	5.67%	9.23%
59	11.56%	15.97%	11.56%	15.72%	9.03%	12.97%	5.42%	8.83%
60	11.56%	15.97%	11.56%	15.72%	9.03%	12.97%	5.42%	8.83%
<i>COLA Loading:</i>		38.15%		36.02%		43.65%		62.87%

Interest: 7.25%
Salary Increases: See Exhibit II, page 79
Mortality: See Exhibit II, page 70
Additional Cashouts: See Exhibit II, page 80

* 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, 2015 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%	9.67%
16	3.00%	4.80%	6.99%	9.67%
17	3.06%	4.89%	7.12%	9.84%
18	3.11%	4.97%	7.24%	10.01%
19	3.17%	5.06%	7.37%	10.19%
20	3.22%	5.15%	7.50%	10.37%
21	3.28%	5.24%	7.63%	10.55%
22	3.34%	5.33%	7.77%	10.74%
23	3.40%	5.43%	7.90%	10.93%
24	3.46%	5.52%	8.04%	11.12%
25	3.52%	5.62%	8.18%	11.31%
26	3.58%	5.72%	8.33%	11.51%
27	3.64%	5.82%	8.48%	11.72%
28	3.70%	5.92%	8.63%	11.93%
29	3.77%	6.03%	8.78%	12.14%
30	3.84%	6.13%	8.94%	12.36%
31	3.90%	6.24%	9.10%	12.58%
32	3.97%	6.35%	9.26%	12.81%
33	4.04%	6.46%	9.43%	13.04%
34	4.12%	6.58%	9.61%	13.28%
35	4.19%	6.70%	9.79%	13.53%
36	4.27%	6.82%	9.97%	13.79%
37	4.34%	6.94%	10.17%	14.05%
38	4.42%	7.07%	10.37%	14.33%
39	4.50%	7.20%	10.53%	14.55%
40	4.59%	7.33%	10.69%	14.78%
41	4.68%	7.47%	10.86%	15.02%
42	4.77%	7.62%	11.04%	15.27%

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

**General Tier 1 Members' Contribution Rates from the December 31, 2015 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%	15.53%
44	4.93%	7.89%	11.44%	15.81%
45	5.01%	8.01%	11.66%	16.12%
46	5.09%	8.14%	11.87%	16.41%
47	5.18%	8.27%	12.06%	16.67%
48	5.27%	8.42%	12.24%	16.93%
49	5.36%	8.57%	12.35%	17.07%
50	5.47%	8.74%	12.40%	17.14%
51	5.57%	8.90%	12.40%	17.14%
52	5.65%	9.04%	12.30%	17.00%
53	5.74%	9.17%	12.08%	16.71%
54	5.79%	9.25%	11.56%	15.98%
55	5.81%	9.29%	11.56%	15.98%
56	5.81%	9.29%	11.56%	15.98%
57	5.76%	9.21%	11.56%	15.98%
58	5.67%	9.05%	11.56%	15.98%
59	5.42%	8.66%	11.56%	15.98%
60	5.42%	8.66%	11.56%	15.98%
<i>COLA Loading:</i>		59.83%		38.24%
<i>Interest:</i>		7.25%		
<i>Salary Increases:</i>		See Exhibit II, page 79		
<i>Mortality:</i>		See Exhibit II, page 70		
<i>Additional Cashouts</i>		See Exhibit II, page 80		

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

**General Tier 2 Members' Contribution Rates from the December 31, 2015 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)</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%	9.20%	6.66%	9.06%	4.77%	6.85%	4.77%	6.57%	4.77%	6.48%
16	6.66%	9.20%	6.66%	9.06%	4.77%	6.85%	4.77%	6.57%	4.77%	6.48%
17	6.78%	9.37%	6.78%	9.22%	4.85%	6.97%	4.85%	6.68%	4.85%	6.60%
18	6.90%	9.53%	6.90%	9.38%	4.94%	7.10%	4.94%	6.80%	4.94%	6.71%
19	7.02%	9.70%	7.02%	9.55%	5.03%	7.22%	5.03%	6.92%	5.03%	6.83%
20	7.14%	9.87%	7.14%	9.72%	5.12%	7.35%	5.12%	7.04%	5.12%	6.95%
21	7.27%	10.04%	7.27%	9.89%	5.21%	7.48%	5.21%	7.17%	5.21%	7.07%
22	7.40%	10.22%	7.40%	10.06%	5.30%	7.61%	5.30%	7.30%	5.30%	7.20%
23	7.53%	10.40%	7.53%	10.24%	5.39%	7.74%	5.39%	7.42%	5.39%	7.33%
24	7.66%	10.58%	7.66%	10.42%	5.48%	7.88%	5.48%	7.55%	5.48%	7.45%
25	7.79%	10.77%	7.79%	10.60%	5.58%	8.02%	5.58%	7.69%	5.58%	7.58%
26	7.93%	10.96%	7.93%	10.79%	5.68%	8.16%	5.68%	7.82%	5.68%	7.72%
27	8.07%	11.15%	8.07%	10.98%	5.78%	8.30%	5.78%	7.96%	5.78%	7.85%
28	8.21%	11.35%	8.21%	11.17%	5.88%	8.45%	5.88%	8.10%	5.88%	7.99%
29	8.36%	11.55%	8.36%	11.37%	5.98%	8.60%	5.98%	8.24%	5.98%	8.13%
30	8.51%	11.75%	8.51%	11.57%	6.09%	8.75%	6.09%	8.39%	6.09%	8.27%
31	8.66%	11.96%	8.66%	11.78%	6.20%	8.90%	6.20%	8.53%	6.20%	8.42%
32	8.82%	12.18%	8.82%	11.99%	6.31%	9.06%	6.31%	8.68%	6.31%	8.57%
33	8.98%	12.40%	8.98%	12.21%	6.42%	9.22%	6.42%	8.84%	6.42%	8.72%
34	9.14%	12.63%	9.14%	12.43%	6.53%	9.38%	6.53%	8.99%	6.53%	8.88%
35	9.31%	12.86%	9.31%	12.66%	6.65%	9.55%	6.65%	9.15%	6.65%	9.03%
36	9.49%	13.11%	9.49%	12.90%	6.77%	9.72%	6.77%	9.32%	6.77%	9.20%
37	9.65%	13.34%	9.65%	13.13%	6.89%	9.90%	6.89%	9.49%	6.89%	9.36%
38	9.81%	13.55%	9.81%	13.34%	7.01%	10.07%	7.01%	9.66%	7.01%	9.53%
39	9.96%	13.76%	9.96%	13.55%	7.14%	10.26%	7.14%	9.84%	7.14%	9.71%
40	10.11%	13.97%	10.11%	13.76%	7.27%	10.45%	7.27%	10.02%	7.27%	9.89%
41	10.27%	14.19%	10.27%	13.97%	7.41%	10.65%	7.41%	10.21%	7.41%	10.07%
42	10.44%	14.42%	10.44%	14.20%	7.54%	10.83%	7.54%	10.39%	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, 2015 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)</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%	14.67%	10.62%	14.44%	7.67%	11.01%	7.67%	10.56%	7.67%	10.42%
44	10.80%	14.92%	10.80%	14.69%	7.78%	11.18%	7.78%	10.72%	7.78%	10.58%
45	10.97%	15.15%	10.97%	14.92%	7.90%	11.35%	7.90%	10.88%	7.90%	10.74%
46	11.12%	15.36%	11.12%	15.12%	8.03%	11.53%	8.03%	11.05%	8.03%	10.91%
47	11.23%	15.52%	11.23%	15.28%	8.16%	11.72%	8.16%	11.23%	8.16%	11.09%
48	11.30%	15.61%	11.30%	15.37%	8.30%	11.92%	8.30%	11.42%	8.30%	11.27%
49	11.31%	15.62%	11.31%	15.38%	8.44%	12.12%	8.44%	11.62%	8.44%	11.46%
50	11.25%	15.54%	11.25%	15.30%	8.57%	12.31%	8.57%	11.80%	8.57%	11.64%
51	11.10%	15.34%	11.10%	15.10%	8.69%	12.48%	8.69%	11.97%	8.69%	11.81%
52	10.82%	14.94%	10.82%	14.71%	8.78%	12.61%	8.78%	12.09%	8.78%	11.93%
53	11.18%	15.44%	11.18%	15.21%	8.83%	12.68%	8.83%	12.16%	8.83%	12.00%
54	11.56%	15.97%	11.56%	15.72%	8.84%	12.69%	8.84%	12.17%	8.84%	12.01%
55	11.56%	15.97%	11.56%	15.72%	8.79%	12.63%	8.79%	12.10%	8.79%	11.95%
56	11.56%	15.97%	11.56%	15.72%	8.68%	12.46%	8.68%	11.95%	8.68%	11.79%
57	11.56%	15.97%	11.56%	15.72%	8.45%	12.14%	8.45%	11.64%	8.45%	11.49%
58	11.56%	15.97%	11.56%	15.72%	8.73%	12.55%	8.73%	12.03%	8.73%	11.87%
59	11.56%	15.97%	11.56%	15.72%	9.03%	12.97%	9.03%	12.44%	9.03%	12.27%
60	11.56%	15.97%	11.56%	15.72%	9.03%	12.97%	9.03%	12.44%	9.03%	12.27%
<i>COLA Loading:</i>		38.15%		36.02%		43.65%		37.72%		35.90%

Interest: 7.25%

Salary Increases: See Exhibit II, page 79

Mortality: See Exhibit II, page 70

Additional Cashouts See Exhibit II, page 80

* 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, 2015 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%	9.21%	4.77%	5.97%	4.77%	6.54%	4.77%	6.85%	5.72%	7.83%
16	6.66%	9.21%	4.77%	5.97%	4.77%	6.54%	4.77%	6.85%	5.72%	7.83%
17	6.78%	9.37%	4.85%	6.07%	4.85%	6.66%	4.85%	6.97%	5.82%	7.96%
18	6.90%	9.54%	4.94%	6.18%	4.94%	6.78%	4.94%	7.09%	5.93%	8.11%
19	7.02%	9.70%	5.03%	6.29%	5.03%	6.90%	5.03%	7.22%	6.03%	8.25%
20	7.14%	9.87%	5.12%	6.40%	5.12%	7.02%	5.12%	7.34%	6.14%	8.39%
21	7.27%	10.05%	5.21%	6.51%	5.21%	7.14%	5.21%	7.47%	6.25%	8.54%
22	7.40%	10.22%	5.30%	6.63%	5.30%	7.27%	5.30%	7.61%	6.36%	8.69%
23	7.53%	10.40%	5.39%	6.75%	5.39%	7.39%	5.39%	7.74%	6.47%	8.85%
24	7.66%	10.59%	5.48%	6.86%	5.48%	7.52%	5.48%	7.88%	6.58%	9.00%
25	7.79%	10.77%	5.58%	6.98%	5.58%	7.66%	5.58%	8.01%	6.70%	9.16%
26	7.93%	10.96%	5.68%	7.11%	5.68%	7.79%	5.68%	8.15%	6.82%	9.32%
27	8.07%	11.16%	5.78%	7.23%	5.78%	7.93%	5.78%	8.30%	6.93%	9.48%
28	8.21%	11.35%	5.88%	7.36%	5.88%	8.07%	5.88%	8.44%	7.06%	9.65%
29	8.36%	11.55%	5.98%	7.49%	5.98%	8.21%	5.98%	8.59%	7.18%	9.82%
30	8.51%	11.76%	6.09%	7.62%	6.09%	8.35%	6.09%	8.74%	7.31%	9.99%
31	8.66%	11.97%	6.20%	7.75%	6.20%	8.50%	6.20%	8.90%	7.44%	10.17%
32	8.82%	12.19%	6.31%	7.89%	6.31%	8.65%	6.31%	9.05%	7.57%	10.35%
33	8.98%	12.41%	6.42%	8.03%	6.42%	8.80%	6.42%	9.21%	7.70%	10.53%
34	9.14%	12.64%	6.53%	8.17%	6.53%	8.96%	6.53%	9.38%	7.84%	10.72%
35	9.31%	12.87%	6.65%	8.32%	6.65%	9.12%	6.65%	9.54%	7.98%	10.91%
36	9.49%	13.11%	6.77%	8.47%	6.77%	9.28%	6.77%	9.71%	8.12%	11.10%
37	9.65%	13.34%	6.89%	8.62%	6.89%	9.45%	6.89%	9.89%	8.27%	11.30%
38	9.81%	13.56%	7.01%	8.78%	7.01%	9.62%	7.01%	10.07%	8.42%	11.51%
39	9.96%	13.77%	7.14%	8.94%	7.14%	9.80%	7.14%	10.25%	8.57%	11.72%
40	10.11%	13.98%	7.27%	9.10%	7.27%	9.98%	7.27%	10.45%	8.73%	11.94%
41	10.27%	14.20%	7.41%	9.28%	7.41%	10.17%	7.41%	10.64%	8.89%	12.16%
42	10.44%	14.43%	7.54%	9.44%	7.54%	10.35%	7.54%	10.83%	9.05%	12.38%

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

**General Tier 2 Members' Contribution Rates from the December 31, 2015 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>Normal</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
43	10.62%	14.68%	7.67%	9.59%	7.67%	10.52%	7.67%	11.01%	9.20%	12.58%
44	10.80%	14.93%	7.78%	9.74%	7.78%	10.68%	7.78%	11.17%	9.34%	12.77%
45	10.97%	15.16%	7.90%	9.89%	7.90%	10.84%	7.90%	11.35%	9.48%	12.97%
46	11.12%	15.37%	8.03%	10.04%	8.03%	11.01%	8.03%	11.53%	9.63%	13.17%
47	11.23%	15.53%	8.16%	10.21%	8.16%	11.19%	8.16%	11.71%	9.79%	13.39%
48	11.30%	15.62%	8.30%	10.38%	8.30%	11.38%	8.30%	11.91%	9.95%	13.61%
49	11.31%	15.64%	8.44%	10.56%	8.44%	11.57%	8.44%	12.11%	10.12%	13.84%
50	11.25%	15.55%	8.57%	10.72%	8.57%	11.75%	8.57%	12.30%	10.28%	14.06%
51	11.10%	15.35%	8.69%	10.87%	8.69%	11.92%	8.69%	12.47%	10.43%	14.26%
52	10.82%	14.95%	8.78%	10.98%	8.78%	12.04%	8.78%	12.60%	10.53%	14.40%
53	11.18%	15.45%	8.83%	11.05%	8.83%	12.11%	8.83%	12.68%	10.60%	14.49%
54	11.56%	15.98%	8.84%	11.06%	8.84%	12.12%	8.84%	12.69%	10.60%	14.50%
55	11.56%	15.98%	8.79%	11.00%	8.79%	12.06%	8.79%	12.62%	10.55%	14.42%
56	11.56%	15.98%	8.68%	10.86%	8.68%	11.90%	8.68%	12.46%	10.41%	14.24%
57	11.56%	15.98%	8.45%	10.58%	8.45%	11.59%	8.45%	12.13%	10.14%	13.87%
58	11.56%	15.98%	8.73%	10.93%	8.73%	11.98%	8.73%	12.54%	10.48%	14.33%
59	11.56%	15.98%	9.03%	11.30%	9.03%	12.39%	9.03%	12.97%	10.84%	14.82%
60	11.56%	15.98%	9.03%	11.30%	9.03%	12.39%	9.03%	12.97%	10.84%	14.82%
<i>COLA Loading:</i>		38.24%		25.14%		37.18%		43.58%		36.76%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 79									
<i>Mortality:</i>	See Exhibit II, page 70									
<i>Additional Cashouts</i>	See Exhibit II, page 80									

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

**General CalPEPRA Members' Contribution Rates from the December 31, 2015 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>	<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	5.43%	7.35%	3.46%	4.64%	5.07%	6.87%	3.49%	4.69%	5.24%	7.11%
16	5.43%	7.35%	3.46%	4.64%	5.07%	6.87%	3.49%	4.69%	5.24%	7.11%
17	5.18%	7.01%	3.52%	4.72%	4.84%	6.55%	3.55%	4.78%	5.00%	6.78%
18	4.91%	6.65%	3.58%	4.81%	4.59%	6.22%	3.62%	4.86%	4.75%	6.44%
19	5.00%	6.77%	3.65%	4.89%	4.67%	6.33%	3.68%	4.95%	4.83%	6.55%
20	5.09%	6.89%	3.71%	4.98%	4.76%	6.44%	3.75%	5.04%	4.92%	6.67%
21	5.18%	7.02%	3.78%	5.07%	4.84%	6.56%	3.81%	5.13%	5.01%	6.79%
22	5.28%	7.14%	3.84%	5.16%	4.93%	6.67%	3.88%	5.22%	5.10%	6.91%
23	5.37%	7.27%	3.91%	5.25%	5.02%	6.79%	3.95%	5.31%	5.19%	7.03%
24	5.46%	7.40%	3.98%	5.34%	5.11%	6.91%	4.02%	5.40%	5.28%	7.16%
25	5.56%	7.53%	4.05%	5.43%	5.20%	7.04%	4.09%	5.50%	5.37%	7.28%
26	5.66%	7.66%	4.12%	5.53%	5.29%	7.16%	4.16%	5.59%	5.47%	7.41%
27	5.76%	7.80%	4.19%	5.63%	5.38%	7.29%	4.24%	5.69%	5.57%	7.54%
28	5.86%	7.94%	4.27%	5.73%	5.48%	7.42%	4.31%	5.79%	5.67%	7.68%
29	5.97%	8.08%	4.34%	5.83%	5.58%	7.55%	4.39%	5.90%	5.77%	7.81%
30	6.07%	8.22%	4.42%	5.93%	5.67%	7.68%	4.46%	6.00%	5.87%	7.95%
31	6.18%	8.37%	4.50%	6.03%	5.77%	7.82%	4.54%	6.11%	5.97%	8.09%
32	6.29%	8.51%	4.58%	6.14%	5.88%	7.96%	4.62%	6.21%	6.08%	8.23%
33	6.40%	8.66%	4.66%	6.25%	5.98%	8.10%	4.71%	6.32%	6.18%	8.38%
34	6.51%	8.82%	4.74%	6.36%	6.08%	8.24%	4.79%	6.44%	6.29%	8.53%
35	6.63%	8.97%	4.83%	6.48%	6.19%	8.38%	4.88%	6.55%	6.40%	8.68%
36	6.74%	9.13%	4.92%	6.59%	6.30%	8.53%	4.96%	6.67%	6.52%	8.83%
37	6.86%	9.29%	5.01%	6.71%	6.41%	8.68%	5.05%	6.79%	6.63%	8.99%
38	6.98%	9.46%	5.10%	6.84%	6.53%	8.84%	5.15%	6.92%	6.75%	9.15%
39	7.11%	9.62%	5.19%	6.96%	6.64%	8.99%	5.24%	7.05%	6.87%	9.31%
40	7.23%	9.80%	5.29%	7.10%	6.76%	9.15%	5.34%	7.18%	6.99%	9.47%
41	7.36%	9.97%	5.39%	7.23%	6.88%	9.32%	5.44%	7.32%	7.12%	9.64%
42	7.50%	10.15%	5.49%	7.36%	7.00%	9.48%	5.54%	7.45%	7.24%	9.82%
43	7.63%	10.33%	5.58%	7.48%	7.13%	9.66%	5.63%	7.57%	7.37%	9.99%
44	7.77%	10.52%	5.66%	7.60%	7.26%	9.83%	5.72%	7.69%	7.51%	10.18%

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

General CalPEPRA Members' Contribution Rates from the December 31, 2015 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>	<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	7.91%	10.71%	5.75%	7.72%	7.39%	10.01%	5.81%	7.81%	7.65%	10.36%
46	8.06%	10.91%	5.85%	7.85%	7.53%	10.20%	5.91%	7.94%	7.79%	10.56%
47	8.21%	11.12%	5.95%	7.98%	7.67%	10.39%	6.01%	8.07%	7.94%	10.75%
48	8.37%	11.33%	6.05%	8.12%	7.82%	10.59%	6.11%	8.21%	8.09%	10.96%
49	8.52%	11.53%	6.16%	8.26%	7.96%	10.78%	6.22%	8.36%	8.23%	11.16%
50	8.66%	11.73%	6.26%	8.40%	8.09%	10.96%	6.32%	8.50%	8.37%	11.34%
51	8.79%	11.91%	6.35%	8.52%	8.22%	11.13%	6.42%	8.62%	8.50%	11.52%
52	8.93%	12.10%	6.43%	8.62%	8.35%	11.30%	6.49%	8.72%	8.63%	11.70%
53	9.08%	12.29%	6.48%	8.69%	8.48%	11.49%	6.54%	8.79%	8.77%	11.89%
54	9.23%	12.50%	6.50%	8.71%	8.63%	11.68%	6.56%	8.82%	8.92%	12.09%
55	9.39%	12.72%	6.48%	8.69%	8.78%	11.89%	6.54%	8.79%	9.08%	12.30%
56	9.56%	12.94%	6.42%	8.61%	8.93%	12.10%	6.48%	8.72%	9.24%	12.52%
57	9.72%	13.16%	6.29%	8.44%	9.08%	12.30%	6.36%	8.54%	9.39%	12.73%
58	9.86%	13.36%	6.51%	8.73%	9.22%	12.48%	6.57%	8.83%	9.53%	12.92%
59	9.98%	13.51%	6.73%	9.02%	9.32%	12.63%	6.79%	9.13%	9.64%	13.07%
60	10.05%	13.61%	6.73%	9.02%	9.40%	12.72%	6.79%	9.13%	9.72%	13.17%
61	10.08%	13.65%	6.73%	9.02%	9.42%	12.76%	6.79%	9.13%	9.74%	13.21%
62	10.06%	13.62%	6.73%	9.02%	9.40%	12.73%	6.79%	9.13%	9.72%	13.17%
63	9.97%	13.50%	6.73%	9.02%	9.31%	12.61%	6.79%	9.13%	9.63%	13.05%
64	9.77%	13.23%	6.73%	9.02%	9.13%	12.36%	6.79%	9.13%	9.44%	12.80%
65	10.10%	13.68%	6.73%	9.02%	9.44%	12.78%	6.79%	9.13%	9.76%	13.23%
66 and thereafter	10.44%	14.14%	6.73%	9.02%	9.76%	13.21%	6.79%	9.13%	10.09%	13.68%
<i>COLA Loading:</i>		36.39%		34.15%		36.66%		34.41%		36.83%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 79									
<i>Mortality:</i>	See Exhibit II, page 70									

It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula, the compensation that can be taken into account for 2016 is equal to \$140,424 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016 (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, 2015 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>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
15	5.72%	7.78%	5.26%	7.03%	5.29%	7.18%	5.86%	7.66%
16	5.72%	7.78%	5.26%	7.03%	5.29%	7.18%	5.86%	7.66%
17	5.46%	7.42%	5.02%	6.71%	5.05%	6.85%	5.59%	7.31%
18	5.18%	7.04%	4.76%	6.37%	4.79%	6.51%	5.30%	6.94%
19	5.27%	7.17%	4.85%	6.48%	4.88%	6.62%	5.40%	7.06%
20	5.37%	7.30%	4.94%	6.60%	4.96%	6.74%	5.50%	7.19%
21	5.47%	7.43%	5.02%	6.72%	5.05%	6.86%	5.59%	7.32%
22	5.56%	7.56%	5.11%	6.84%	5.14%	6.98%	5.69%	7.45%
23	5.66%	7.69%	5.20%	6.96%	5.23%	7.11%	5.80%	7.58%
24	5.76%	7.83%	5.30%	7.08%	5.33%	7.23%	5.90%	7.71%
25	5.87%	7.97%	5.39%	7.21%	5.42%	7.36%	6.00%	7.85%
26	5.97%	8.11%	5.49%	7.33%	5.52%	7.49%	6.11%	7.99%
27	6.08%	8.25%	5.58%	7.46%	5.62%	7.63%	6.22%	8.13%
28	6.18%	8.40%	5.68%	7.60%	5.71%	7.76%	6.33%	8.28%
29	6.29%	8.55%	5.78%	7.73%	5.82%	7.90%	6.44%	8.42%
30	6.40%	8.70%	5.88%	7.87%	5.92%	8.04%	6.55%	8.57%
31	6.52%	8.85%	5.99%	8.01%	6.02%	8.18%	6.67%	8.72%
32	6.63%	9.01%	6.09%	8.15%	6.13%	8.32%	6.79%	8.88%
33	6.75%	9.17%	6.20%	8.29%	6.24%	8.47%	6.91%	9.03%
34	6.87%	9.33%	6.31%	8.44%	6.35%	8.62%	7.03%	9.19%
35	6.99%	9.49%	6.42%	8.59%	6.46%	8.77%	7.15%	9.35%
36	7.11%	9.66%	6.54%	8.74%	6.57%	8.93%	7.28%	9.52%
37	7.24%	9.83%	6.65%	8.89%	6.69%	9.08%	7.41%	9.69%
38	7.36%	10.01%	6.77%	9.05%	6.81%	9.25%	7.54%	9.86%
39	7.50%	10.18%	6.89%	9.21%	6.93%	9.41%	7.67%	10.03%
40	7.63%	10.37%	7.01%	9.37%	7.05%	9.58%	7.81%	10.21%
41	7.77%	10.55%	7.14%	9.54%	7.18%	9.75%	7.95%	10.40%
42	7.90%	10.74%	7.27%	9.71%	7.31%	9.92%	8.09%	10.58%
43	8.05%	10.93%	7.40%	9.89%	7.44%	10.10%	8.24%	10.77%
44	8.19%	11.13%	7.53%	10.07%	7.57%	10.29%	8.39%	10.97%

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

**General CalPEPRA Members' Contribution Rates from the December 31, 2015 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>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>	<u>Normal</u>	<u>Total</u>
45	8.34%	11.34%	7.67%	10.25%	7.71%	10.48%	8.54%	11.17%
46	8.50%	11.55%	7.81%	10.44%	7.86%	10.67%	8.70%	11.38%
47	8.66%	11.77%	7.96%	10.64%	8.00%	10.87%	8.86%	11.59%
48	8.82%	11.99%	8.11%	10.84%	8.16%	11.08%	9.03%	11.81%
49	8.98%	12.20%	8.26%	11.04%	8.30%	11.28%	9.19%	12.02%
50	9.13%	12.41%	8.39%	11.22%	8.44%	11.46%	9.35%	12.23%
51	9.27%	12.60%	8.52%	11.40%	8.57%	11.64%	9.49%	12.41%
52	9.42%	12.80%	8.66%	11.58%	8.71%	11.83%	9.64%	12.61%
53	9.57%	13.01%	8.80%	11.76%	8.85%	12.02%	9.80%	12.82%
54	9.74%	13.23%	8.95%	11.96%	9.00%	12.22%	9.97%	13.03%
55	9.91%	13.46%	9.10%	12.17%	9.16%	12.44%	10.14%	13.26%
56	10.08%	13.70%	9.27%	12.39%	9.32%	12.66%	10.32%	13.50%
57	10.25%	13.93%	9.42%	12.59%	9.47%	12.87%	10.49%	13.72%
58	10.40%	14.13%	9.56%	12.78%	9.62%	13.06%	10.65%	13.93%
59	10.52%	14.30%	9.67%	12.93%	9.73%	13.21%	10.77%	14.09%
60	10.60%	14.41%	9.75%	13.03%	9.80%	13.31%	10.85%	14.19%
61	10.63%	14.45%	9.77%	13.07%	9.83%	13.35%	10.88%	14.23%
62	10.61%	14.41%	9.75%	13.03%	9.80%	13.31%	10.86%	14.20%
63	10.51%	14.28%	9.66%	12.92%	9.72%	13.20%	10.76%	14.07%
64	10.31%	14.00%	9.47%	12.66%	9.53%	12.94%	10.55%	13.80%
65	10.65%	14.47%	9.79%	13.09%	9.84%	13.37%	10.90%	14.26%
66 and thereafter	11.01%	14.96%	10.12%	13.53%	10.18%	13.82%	11.27%	14.74%
<i>COLA Loading:</i>		38.82%		35.34%		37.01%		36.65%
<i>Interest:</i>	7.25%							
<i>Salary Increases:</i>	See Exhibit II, page 79							
<i>Mortality:</i>	See Exhibit II, page 70							

It is our understanding that in the determination of pension benefits under the CalPEPRA 2.5% at 67 formula, the compensation that can be taken into account for 2016 is equal to \$140,424 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016 (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, 2015 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%	10.50%	4.68%	11.01%	4.62%	10.17%
16	4.54%	10.50%	4.68%	11.01%	4.62%	10.17%
17	4.60%	10.64%	4.74%	11.15%	4.68%	10.31%
18	4.66%	10.78%	4.81%	11.30%	4.74%	10.44%
19	4.73%	10.92%	4.87%	11.45%	4.81%	10.58%
20	4.79%	11.07%	4.93%	11.60%	4.87%	10.72%
21	4.85%	11.21%	5.00%	11.75%	4.94%	10.86%
22	4.92%	11.36%	5.07%	11.91%	5.00%	11.01%
23	4.98%	11.52%	5.14%	12.07%	5.07%	11.16%
24	5.05%	11.67%	5.21%	12.23%	5.14%	11.31%
25	5.12%	11.83%	5.28%	12.40%	5.21%	11.46%
26	5.19%	12.00%	5.35%	12.57%	5.28%	11.62%
27	5.27%	12.17%	5.42%	12.75%	5.35%	11.79%
28	5.34%	12.34%	5.50%	12.93%	5.43%	11.95%
29	5.42%	12.52%	5.58%	13.12%	5.51%	12.13%
30	5.50%	12.70%	5.66%	13.31%	5.59%	12.30%
31	5.58%	12.90%	5.75%	13.51%	5.67%	12.49%
32	5.67%	13.10%	5.84%	13.72%	5.76%	12.68%
33	5.76%	13.31%	5.93%	13.94%	5.85%	12.88%
34	5.84%	13.49%	6.01%	14.13%	5.94%	13.07%
35	5.93%	13.69%	6.10%	14.34%	6.02%	13.26%
36	6.02%	13.90%	6.19%	14.56%	6.12%	13.46%
37	6.12%	14.13%	6.29%	14.79%	6.21%	13.68%
38	6.22%	14.38%	6.40%	15.04%	6.32%	13.91%
39	6.34%	14.65%	6.52%	15.32%	6.44%	14.17%
40	6.44%	14.88%	6.62%	15.56%	6.54%	14.40%
41	6.55%	15.15%	6.74%	15.83%	6.66%	14.65%
42	6.63%	15.32%	6.81%	16.00%	6.73%	14.81%

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

**Safety Tier 1 Members' Contribution Rates from the December 31, 2015 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%	15.49%	6.88%	16.17%	6.80%	14.98%
44	6.74%	15.58%	6.92%	16.25%	6.84%	15.06%
45	6.76%	15.63%	6.93%	16.28%	6.85%	15.09%
46	6.72%	15.53%	6.87%	16.16%	6.81%	14.98%
47	6.61%	15.28%	6.74%	15.85%	6.69%	14.72%
48	6.45%	14.90%	6.54%	15.38%	6.50%	14.31%
49	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
50	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
51	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
52	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
53	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
54	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
55	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
56	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
57	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
58	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
59	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
60	6.11%	14.12%	6.11%	14.36%	6.11%	13.45%
<i>COLA Loading:</i>		<i>131.08%</i>	<i>135.06%</i>		<i>120.10%</i>	
<i>Interest:</i>		<i>7.25%</i>				
<i>Salary Increases:</i>		<i>See Exhibit II, page 79</i>				
<i>Mortality:</i>		<i>See Exhibit II, page 70</i>				
<i>Additional Cashouts</i>		<i>See Exhibit II, page 80</i>				

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

**Safety Tier 2 Members' Contribution Rates from the December 31, 2015 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%	14.33%	8.87%	14.86%	8.72%	13.95%	8.66%	13.66%	8.87%	13.94%
16	8.66%	14.33%	8.87%	14.86%	8.72%	13.95%	8.66%	13.66%	8.87%	13.94%
17	8.77%	14.51%	8.98%	15.05%	8.83%	14.14%	8.77%	13.84%	8.98%	14.12%
18	8.88%	14.71%	9.10%	15.25%	8.95%	14.32%	8.88%	14.02%	9.10%	14.30%
19	9.00%	14.90%	9.22%	15.45%	9.07%	14.51%	9.00%	14.21%	9.22%	14.49%
20	9.12%	15.10%	9.34%	15.65%	9.18%	14.70%	9.12%	14.40%	9.34%	14.68%
21	9.24%	15.30%	9.46%	15.85%	9.31%	14.89%	9.24%	14.59%	9.46%	14.87%
22	9.36%	15.50%	9.59%	16.06%	9.43%	15.09%	9.36%	14.78%	9.59%	15.07%
23	9.49%	15.71%	9.72%	16.28%	9.56%	15.30%	9.49%	14.98%	9.72%	15.27%
24	9.62%	15.92%	9.85%	16.50%	9.69%	15.50%	9.62%	15.18%	9.85%	15.48%
25	9.75%	16.14%	9.98%	16.72%	9.82%	15.71%	9.75%	15.39%	9.98%	15.69%
26	9.88%	16.36%	10.12%	16.95%	9.95%	15.93%	9.88%	15.60%	10.12%	15.90%
27	10.02%	16.59%	10.26%	17.18%	10.09%	16.15%	10.02%	15.82%	10.26%	16.12%
28	10.16%	16.83%	10.40%	17.42%	10.23%	16.38%	10.16%	16.05%	10.40%	16.35%
29	10.31%	17.07%	10.55%	17.67%	10.38%	16.61%	10.31%	16.28%	10.55%	16.58%
30	10.46%	17.32%	10.70%	17.92%	10.53%	16.86%	10.46%	16.52%	10.70%	16.82%
31	10.62%	17.58%	10.86%	18.19%	10.69%	17.11%	10.62%	16.76%	10.86%	17.07%
32	10.77%	17.83%	11.01%	18.45%	10.84%	17.36%	10.77%	17.01%	11.01%	17.31%
33	10.93%	18.09%	11.17%	18.71%	11.00%	17.60%	10.93%	17.25%	11.17%	17.55%
34	11.08%	18.34%	11.32%	18.96%	11.15%	17.85%	11.08%	17.49%	11.32%	17.79%
35	11.24%	18.61%	11.48%	19.23%	11.31%	18.10%	11.24%	17.75%	11.48%	18.04%
36	11.41%	18.89%	11.65%	19.51%	11.48%	18.38%	11.41%	18.02%	11.65%	18.31%
37	11.59%	19.19%	11.83%	19.81%	11.66%	18.67%	11.59%	18.31%	11.83%	18.59%
38	11.77%	19.49%	12.00%	20.11%	11.84%	18.95%	11.77%	18.59%	12.00%	18.87%
39	11.95%	19.79%	12.18%	20.40%	12.02%	19.24%	11.95%	18.87%	12.18%	19.14%
40	12.10%	20.04%	12.32%	20.64%	12.17%	19.48%	12.10%	19.11%	12.32%	19.37%
41	12.23%	20.25%	12.44%	20.84%	12.29%	19.67%	12.23%	19.31%	12.44%	19.55%
42	12.31%	20.37%	12.50%	20.94%	12.36%	19.79%	12.31%	19.43%	12.50%	19.65%
43	12.34%	20.43%	12.51%	20.96%	12.39%	19.83%	12.34%	19.48%	12.51%	19.67%
44	12.29%	20.35%	12.44%	20.84%	12.34%	19.75%	12.29%	19.41%	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, 2015 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%	20.11%	12.26%	20.54%	12.18%	19.50%	12.15%	19.18%	12.26%	19.27%
46	11.89%	19.68%	11.96%	20.03%	11.91%	19.06%	11.89%	18.77%	11.96%	18.79%
47	11.45%	18.96%	11.45%	19.18%	11.45%	18.33%	11.45%	18.08%	11.45%	18.00%
48	11.82%	19.57%	11.82%	19.81%	11.82%	18.93%	11.82%	18.67%	11.82%	18.59%
49	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
50	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
51	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
52	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
53	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
54	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
55	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
56	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
57	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
58	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
59	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
60	12.22%	20.23%	12.22%	20.47%	12.22%	19.56%	12.22%	19.29%	12.22%	19.21%
<i>COLA Loading:</i>		65.54%		67.53%		60.05%		57.88%		57.18%
<i>Interest:</i>	7.25%									
<i>Salary Increases:</i>	See Exhibit II, page 79									
<i>Mortality:</i>	See Exhibit II, page 70									
<i>Additional Cashouts</i>	See Exhibit II, page 80									

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

**Safety CalPEPRA Members' Contribution Rates from the December 31, 2015 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	9.09%	12.97%	10.80%	15.47%	8.91%	12.81%
16	9.09%	12.97%	10.80%	15.47%	8.91%	12.81%
17	9.21%	13.14%	10.94%	15.67%	9.02%	12.98%
18	9.33%	13.31%	11.08%	15.87%	9.14%	13.15%
19	9.45%	13.48%	11.23%	16.08%	9.26%	13.32%
20	9.58%	13.66%	11.37%	16.29%	9.38%	13.49%
21	9.70%	13.84%	11.52%	16.50%	9.50%	13.67%
22	9.83%	14.02%	11.67%	16.71%	9.63%	13.84%
23	9.96%	14.20%	11.82%	16.93%	9.75%	14.03%
24	10.09%	14.39%	11.98%	17.16%	9.88%	14.21%
25	10.22%	14.58%	12.14%	17.38%	10.01%	14.40%
26	10.36%	14.77%	12.30%	17.61%	10.14%	14.59%
27	10.49%	14.97%	12.46%	17.85%	10.28%	14.78%
28	10.63%	15.17%	12.63%	18.08%	10.42%	14.98%
29	10.78%	15.37%	12.80%	18.33%	10.56%	15.18%
30	10.92%	15.58%	12.97%	18.57%	10.70%	15.39%
31	11.07%	15.79%	13.15%	18.83%	10.84%	15.59%
32	11.22%	16.01%	13.33%	19.09%	10.99%	15.81%
33	11.38%	16.23%	13.51%	19.35%	11.15%	16.03%
34	11.54%	16.46%	13.70%	19.63%	11.30%	16.26%
35	11.70%	16.70%	13.90%	19.91%	11.47%	16.49%
36	11.88%	16.94%	14.10%	20.20%	11.63%	16.73%
37	12.05%	17.19%	14.31%	20.50%	11.80%	16.98%
38	12.23%	17.45%	14.53%	20.81%	11.98%	17.23%
39	12.42%	17.71%	14.74%	21.12%	12.16%	17.49%
40	12.60%	17.97%	14.96%	21.42%	12.34%	17.74%
41	12.78%	18.22%	15.17%	21.73%	12.51%	18.00%
42	12.96%	18.49%	15.39%	22.05%	12.70%	18.26%
43	13.17%	18.78%	15.63%	22.39%	12.90%	18.55%
44	13.38%	19.09%	15.89%	22.76%	13.11%	18.85%

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

**Safety CalPEPRA Members' Contribution Rates from the December 31, 2015 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	13.60%	19.39%	16.14%	23.12%	13.32%	19.15%
46	13.81%	19.70%	16.40%	23.49%	13.53%	19.46%
47	13.99%	19.96%	16.62%	23.80%	13.71%	19.71%
48	14.15%	20.19%	16.80%	24.07%	13.86%	19.93%
49	14.25%	20.33%	16.92%	24.24%	13.96%	20.08%
50	14.31%	20.41%	16.99%	24.33%	14.01%	20.15%
51	14.27%	20.36%	16.95%	24.27%	13.98%	20.11%
52	14.13%	20.16%	16.78%	24.03%	13.84%	19.91%
53	13.87%	19.78%	16.47%	23.59%	13.59%	19.54%
54	13.42%	19.14%	15.93%	22.82%	13.14%	18.90%
55	13.86%	19.77%	16.45%	23.57%	13.57%	19.52%
56 and thereafter	14.32%	20.42%	17.00%	24.35%	14.03%	20.17%
<i>COLA Loading:</i>		<i>43.40%</i>		<i>43.45%</i>		<i>44.07%</i>
<i>Interest:</i>	<i>7.25%</i>					
<i>Salary Increases:</i>	<i>See Exhibit II, page 79</i>					
<i>Mortality:</i>	<i>See Exhibit II, page 70</i>					

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 2016 is equal to \$140,424 (reference: Section 7522.10). This amount should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016 (reference: Section 7522.10(d)).

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

Appendix C Funded Percentages

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

	Funded Percentage	
	December 31, 2015 Valuation	December 31, 2014 Valuation
<i>General Members</i>		
Rate Group #1 – Plans A, B and U (non-OCTA, non-OCSD)	78.87%	78.07%
Rate Group #2 – Plans I, J, O, P, S, T, U and W (County et al.)	70.00%	68.17%
Rate Group #3 – Plans B, G, H and U (Law Library, OCSD)	98.52%	90.01%
Rate Group #5 – Plans A, B and U (OCTA)	75.22%	74.03%
Rate Group #9 – Plans M, N and U (TCA)	70.00%	69.65%
Rate Group #10 – Plans I, J, M, N and U (OCFA)	68.09%	65.99%
Rate Group #11 – Plans M and N, future service, and U (Cemetery)	101.53%	100.94%
<i>Safety Members</i>		
Rate Group #6 – Plans E, F and V (Probation)	70.19%	67.21%
Rate Group #7 – Plans E, F, Q, R and V (Law Enforcement)	69.08%	68.26%
Rate Group #8 – Plans E, F, Q, R and V (Fire Authority)	75.19%	72.25%

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 are as follows:

	Rate Group						
	#1	#2	#3	#5	#9	#10	#11
1. Aggregate Recommended Contribution Rate as of December 31, 2014 (before UAAL credit)	18.01% ⁽¹⁾	34.00%	18.38%	25.15%	25.32%	32.97%	11.79%
2. Adjustment for FY16-17 for additional UAAL contributions from OCSD	0.00%	0.00%	-5.47%	0.00%	0.00%	0.00%	0.00%
3. Effect of 3-year phase-in of the cost impact 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>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
4. Aggregate Recommended Contribution Rate as of December 31, 2014 (after UAAL credit)	18.01% ⁽¹⁾	34.00%	12.91%	25.15%	25.32%	32.97%	11.79%
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 (another one-third remains to be recognized)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(b) Effect of investment loss (after smoothing)	0.61%	0.91%	1.20% ⁽²⁾	0.82%	0.56%	0.76%	N/A ⁽³⁾
(c) Effect of additional UAAL contributions from OCFA	0.00%	0.00%	0.00%	0.00%	0.00%	-0.80%	N/A ⁽³⁾
(d) Effect of actual contributions less/(more) than expected	-0.08%	0.09%	-0.28%	0.13%	0.10%	-0.19%	N/A ⁽³⁾
(e) Effect of less than expected COLA increases	-0.31%	-0.48%	-0.44%	-0.39%	-0.24%	-0.34%	N/A ⁽³⁾
(f) Effect of less than expected salary increases	-0.51%	-1.42%	-0.60%	-0.99%	-0.07%	-0.51%	N/A ⁽³⁾
(g) Effect of growth in total payroll less/(greater) than expected	0.31%	0.98%	0.42%	0.99%	0.02%	-0.15%	N/A ⁽³⁾
(h) Effect of higher/(lower) than expected retirement experience	0.15%	0.36%	0.51%	0.63%	1.02%	1.08%	N/A ⁽³⁾
(i) Effect of other experience (gain)/loss ⁽⁴⁾⁽⁵⁾	<u>0.39%</u>	<u>0.26%</u>	<u>-0.09%</u>	<u>-0.14%</u>	<u>-0.29%</u>	<u>0.22%</u>	<u>-0.39%</u>
(j) Subtotal	0.56%	0.70%	0.72%	1.05%	1.10%	0.07%	-0.39%
6. Aggregate Recommended Contribution Rate as of December 31, 2015	18.57% ⁽⁶⁾	34.70%	13.63%	26.20%	26.42%	33.04%	11.40%

⁽¹⁾ As of December 31, 2014, the net contribution rate for County and IHSS Public Authority after reflecting Board's new UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 15.06%.

⁽²⁾ Investment loss for Rate Group #3 is bigger than the other General Rate Groups because as that Rate Group gets better funded (through additional UAAL contributions), it is more impacted by adverse or favorable investment experience.

⁽³⁾ 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 rate would have been -0.54% if the overfunded amount is amortized over 30 years.

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

⁽⁵⁾ Includes changes in form of payment for retirees provided using new Vitech Pension Administration System, application of additional cashout assumption to current deferred vested members, effect of additional cashout assumptions on estimating rates of retirement from active employment, etc.

⁽⁶⁾ As of December 31, 2015, the net contribution rate for County and IHSS Public Authority after reflecting Board's new UAAL contribution rate policy for employers with declining payroll (i.e., U.C.I. and DOE) is 14.92%.

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, 2014 (before UAAL credit)	47.07%	62.55%	50.60%
2. Adjustment for FY16-17 for additional UAAL contributions from OCSD	0.00%	0.00%	0.00%
3. Effect of 3-year phase-in of the cost impact of changes in actuarial assumptions for Safety Rate Groups	<u>-4.34%</u>	<u>-4.25%</u>	<u>-2.82%</u>
4. Aggregate Recommended Contribution Rate as of December 31, 2014 (after UAAL credit)	42.73%	58.30%	47.78%
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 (another one-third remains to be recognized)	2.17%	2.13%	1.41%
(b) Effect of investment loss (after smoothing)	1.03%	1.52%	1.25%
(c) Effect of additional UAAL contributions from OCFA	0.00%	0.00%	-0.99%
(d) Effect of actual contributions less/(more) than expected	0.87%	0.65%	0.40%
(e) Effect of less than expected COLA increases	-0.39%	-0.91%	-0.59%
(f) Effect of less than expected salary increases	-2.73%	-0.46%	-1.47%
(g) Effect of growth in total payroll less/(greater) than expected	1.95%	1.09%	0.93%
(h) Effect of higher/(lower) than expected retirement experience	-0.23%	-0.31%	0.24%
(i) Effect of other experience (gain)/loss ⁽¹⁾⁽²⁾	<u>-0.43%</u>	<u>-0.12%</u>	<u>-0.58%</u>
(j) Subtotal	2.24%	3.59%	0.60%
6. Aggregate Recommended Contribution Rate as of December 31, 2015	44.97%	61.89%	48.38%

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

⁽²⁾ Includes changes in form of payment for retirees provided using new Vitech Pension Administration System, application of additional cashout assumption to current deferred vested members, effect of additional cashout assumptions on estimating rates of retirement from active employment, etc.

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
1. UAAL as of December 31, 2014	\$91,994	\$2,941,139	\$55,823	\$203,694	\$10,690	\$61,870	-\$73
2. Total normal cost at middle of year	13,519	241,133	15,765	20,823	1,436	5,526	266
3. Expected employer and member contributions	-20,356	-459,290	-20,238	-35,913	-2,226	-10,118	-266
4. Interest	<u>6,445</u>	<u>206,110</u>	<u>3,882</u>	<u>14,274</u>	<u>747</u>	<u>4,335</u>	<u>-5</u>
5. Expected UAAL as of December 31, 2015	\$91,602	\$2,929,092	\$55,232	\$202,878	\$10,647	\$61,613	-\$78
6. Actuarial (gain)/loss and other changes:							
(a) Gain from additional UAAL contributions	\$0	\$0	-\$51,154	\$0	\$0	-\$2,616	\$0
(b) (Gain)/loss from actual contributions less than expected	-846	12,890	-697	1,764	90	-595	-4
(c) Loss from investment return	6,372	125,225	10,864	11,485	500	2,488	155
(d) Gain on lower than expected COLA increases	-3,216	-66,585	-3,956	-5,491	-216	-1,107	-38
(e) Gain from lower than expected salary increases	-5,290	-195,720	-5,401	-13,936	-63	-1,659	-248
(f) (Gain)/loss from lower/higher than expected retirement experience	1,578	49,201	4,613	8,869	917	3,536	99
(g) Other experience (gain)/loss	<u>905</u>	<u>9,926</u>	<u>-779</u>	<u>-3,624</u>	<u>-450</u>	<u>579</u>	<u>-11</u>
Total Changes	-\$497	-\$65,063	-\$46,510	-\$933	\$778	\$626	-\$47
7. UAAL as of December 31, 2015	<u>\$91,105</u>	<u>\$2,864,029</u>	<u>\$8,722</u>	<u>\$201,945</u>	<u>\$11,425</u>	<u>\$62,239</u>	<u>-\$125</u>

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, 2014	\$212,596	\$1,005,027	\$380,453
2. Total normal cost at middle of year	24,238	83,746	48,653
3. Expected employer and member contributions	-39,860	-157,832	-76,764
4. Interest	<u>14,905</u>	<u>70,445</u>	<u>26,666</u>
5. Expected UAAL as of December 31, 2015	\$211,879	\$1,001,386	\$379,008
6. Actuarial (gain)/loss and other changes:			
(a) Gain from additional UAAL contributions	\$0	\$0	-\$16,082
(b) (Gain)/loss from actual contributions less than expected	7,458	18,295	6,605
(c) Loss from investment return	8,877	42,908	20,264
(d) Gain on lower than expected COLA increases	-3,390	-25,898	-9,470
(e) Gain from lower than expected salary increases	-23,463	-13,112	-23,804
(f) (Gain)/loss from lower/higher than expected retirement experience	-1,978	-8,673	3,908
(g) Other experience (gain)/loss	<u>1,793</u>	<u>10,146</u>	<u>-3,649</u>
Total Changes	-\$10,703	\$23,666	-\$22,228
7. UAAL as of December 31, 2015	<u>\$201,176</u>	<u>\$1,025,052</u>	<u>\$356,780</u>

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