

# **Contra Costa County Employees' Retirement Association**

**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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*October 12, 2016*

*Board of Retirement  
Contra Costa County Employees' Retirement Association  
1335 Willow Way, Suite 221  
Concord, CA 94520*

*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 the fiscal year beginning July 1, 2017 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 information on which our calculations were based was prepared by CCCERA and the financial information was provided by the Association's staff. 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 John Monroe, ASA, MAAA, 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*

By:

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

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Vice President and Actuary

*JEM/gxk*

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## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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### PURPOSE AND SCOPE

This report has been prepared by Segal Consulting to present a valuation of the Contra Costa County Employees' Retirement Association (CCCERA) as of December 31, 2015. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution rate requirements presented in this report are based on:

- The benefit provisions of the Retirement Association, as administered by the Board;
- The characteristics of covered active members, terminated members, and retired members and beneficiaries as of December 31, 2015, provided by the Association's staff;
- The assets of the Plan as of December 31, 2015, provided by the Association's staff;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee 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.

The actuarial valuation required for the Contra Costa County Employees' Retirement Association has been prepared as of December 31, 2015 by Segal Consulting. In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Association's assets, liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Association's staff. This information has not been audited by us, but it has been reviewed and found to be reasonably consistent, both internally and with prior years' information.

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In 2008, the Board elected to amortize the remaining balance of the Association's unfunded actuarial accrued liability (UAAL) through December 31, 2007 over a decreasing 15 year period with 7 years remaining as of December 31, 2015. Any change in the UAAL that arises at each valuation after December 31, 2007 is amortized over its own separate declining 18-year period.

Effective with the December 31, 2013 valuation, any change in UAAL that arises due to plan amendments is amortized over its own declining 10-year period (with the exception of a change due to retirement incentives, which is to be funded in full upon adoption of the incentive).

We recommend that the rates calculated in this report be adopted by the Board for the fiscal year that extends from July 1, 2017 through June 30, 2018.

### SIGNIFICANT ISSUES IN VALUATION YEAR

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

*Ref: Pg. 88*

- The results of this valuation reflect changes in the actuarial assumptions as adopted by the Board for the December 31, 2015 valuation. These changes were documented in our Actuarial Experience Study and Review of Economic Assumptions and are also outlined in Section 4, Exhibit II of this report. These assumption changes resulted in an increase in the average employer contribution rate of 2.56% of payroll and an increase in the average member rate of 0.40% of payroll.

*Ref: Pg. 17*

- These assumption changes include that we no longer develop the investment return assumption as net of administrative expenses, and instead include an explicit administrative expense load. The explicit administrative expense load is based on the ratio of actual administrative expenses to actual compensation for the calendar year preceding the valuation date. For this valuation, the administrative expense load is 1.14% of payroll. The administrative expense load has been allocated to both the employer and member rates based on the employer and member components of the total average normal cost contribution rate before expenses. This results in an explicit administrative expense load of 0.67% and 0.47% of payroll allocated to the employer and the member rates, respectively. All contribution rates shown in this report reflect these explicit loadings for administrative expenses.

*Ref: Pg. 35*

*Ref: Pg. 69*

- The ratio of the valuation value of assets to the actuarial accrued liability increased from 81.7% to 84.5% while the ratio of the market value of assets to the actuarial accrued liability decreased from 86.1% to 82.6%. The Association's UAAL (which is based on the valuation value of assets) has decreased from \$1.5 billion to \$1.3 billion. This decrease is due to an

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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investment return on actuarial value (i.e. after smoothing) greater than the 7.25% assumed rate (based on the December 31, 2014 valuation), actual contributions greater than expected and lower than expected COLA increases for retirees and beneficiaries all offset to some degree by the changes in actuarial assumptions. A reconciliation of the Association's UAAL is provided in Section 3, Exhibit I.

*Ref: Pg. 32*

- The average employer rate calculated in this valuation (excluding any employer subvention of member rates or member subvention of employer rates) has decreased from 40.06% of payroll to 39.23% of payroll. This decrease is due an investment return on actuarial value (i.e. after smoothing) greater than the 7.25% assumed rate, lower than expected COLA increases for retirees and beneficiaries and other experience gains all offset to some degree by the changes in actuarial assumptions (including the explicit administrative expense load). A complete reconciliation of the Association's aggregate employer rate is provided in Section 2, Subsection D (see Chart 15).

Separate employer contribution rates are shown in Chart 14 for members with membership dates before January 1, 2013 (non-PEPRA members) and on or after January 1, 2013 (PEPRA members). However, the average employer contribution rates shown on page v are based on all members regardless of their membership date. The schedule of the employer contribution rates is provided in Section 2, Subsection D, Chart 14.

*Ref: Pg. 33*

- The average member rate calculated in this valuation has increased from 11.84% of payroll to 12.09% of payroll. This increase is due to the changes in actuarial assumptions (including the explicit administrative expense load) offset to some degree by changes in the demographics of the active membership. A complete reconciliation of the Association's aggregate member rate is provided in Section 2, Subsection D (see Chart 16).

The detailed member rates are provided in Appendix A and B of this report. They are shown by cost group.

*Ref: Pg. 5*

- The total unrecognized net investment loss as of December 31, 2015 is about \$175 million as compared to an unrecognized net investment gain of \$336 million in the previous valuation. The net investment loss of \$175 million will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years as shown in the footnote in Chart 7.
- The net deferred losses of \$175 million represent about 2.5% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the \$175 million market losses is expected to have an impact on the Association's future funded ratio and contribution rate requirements. This potential impact may be illustrated as follows:
  - If the net deferred losses were recognized immediately in the valuation value of assets, the funded percentage would decrease from 84.5% to 82.4%.

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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For comparison purposes, if all the deferred gains in the December 31, 2014 valuation had been recognized immediately in the December 31, 2014 valuation, the funded percentage would have increased from 81.7% to 85.9%.

- If the net deferred losses were recognized immediately in the valuation value of assets, the average employer contribution rate would increase from 39.2% to about 41.0% of payroll.

For comparison purposes, if all the deferred gains in the December 31, 2014 valuation had been recognized immediately in the December 31, 2014 valuation, the aggregate employer contribution rate would have decreased from 40.1% to 36.5% of payroll.

- The actuarial valuation report as of December 31, 2015 is based on financial information as of that date. Changes in the assets subsequent to that date, to the extent that they exist, are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.
- The PEPRA Tier 4 (2% COLA) in Cost Group #1 continues to not have any actual members as of December 31, 2015. The contribution rates for this cost group have been developed based on generally the same methodology used to estimate contribution rates for all of the PEPRA tiers in the December 31, 2012 valuation. We have assumed in this valuation that the demographic profiles (e.g., entry age, composition of male versus female, etc.) for this cost group can be approximated by the data profiles of current active members with membership dates on and after January 1, 2011.
- This valuation reflects the \$2.5 million additional contribution made by the Central Contra Costa Sanitary District on December 30, 2015 towards their UAAL. Based on CCCERA's funding policy, this amount will be amortized as a level percent of pay over a period of eighteen years beginning with the December 31, 2014 valuation.

### Impact of Future Experience on Contribution Rates

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

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

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

### Summary of Key Valuation Results

	December 31, 2015		December 31, 2014	
		Estimated		Estimated
<b>Average Employer Contribution Rates<sup>(1)</sup>:</b>				
<b>General</b>	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1 and 4)	32.49%	\$7,512,572	33.14%	\$7,471,910
Cost Group #2 – County and Small Districts (Tier 3 and 5)	28.67%	154,482,818	29.36%	147,184,037
Cost Group #3 – Central Contra Costa Sanitary District	52.90%	16,024,427	55.71%	15,653,379
Cost Group #4 – Contra Costa Housing Authority	42.21%	2,206,611	41.76%	2,138,471
Cost Group #5 – Contra Costa County Fire Protection District	31.16%	1,162,968	31.59%	1,124,433
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	25.38%	210,590	26.62%	220,891
<b>Safety</b>				
Cost Group #7 – County (Tier A and D)	76.40%	47,859,008	77.77%	47,801,788
Cost Group #8 – Contra Costa and East Fire Protection Districts	81.96%	26,136,961	78.93%	24,149,147
Cost Group #9 – County (Tier C and E)	68.42%	15,800,464	70.63%	13,024,297
Cost Group #10 – Moraga-Orinda Fire District	70.17%	4,709,426	69.66%	4,887,061
Cost Group #11 – San Ramon Valley Fire District	83.14%	14,556,108	83.79%	13,965,831
Cost Group #12 – Rodeo-Hercules Fire Protection District	86.23%	2,120,310	89.27%	1,977,156
<b>All Employers combined</b>	39.23%	\$292,782,263	40.06%	\$279,598,401
<b>Average Member Contribution Rates<sup>(1)</sup>:</b>				
<b>General</b>	Total Rate	Annual Amount	Total Rate	Annual Amount
Cost Group #1 – County and Small Districts (Tier 1 and 4)	10.77%	\$2,489,883	10.63%	\$2,396,574
Cost Group #2 – County and Small Districts (Tier 3 and 5)	10.84%	58,411,126	10.54%	52,834,487
Cost Group #3 – Central Contra Costa Sanitary District	11.65%	3,528,812	11.65%	3,273,422
Cost Group #4 – Contra Costa Housing Authority	11.40%	595,980	10.95%	560,790
Cost Group #5 – Contra Costa County Fire Protection District	10.99%	410,238	10.86%	386,572
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	13.03%	108,119	12.37%	102,637
<b>Safety</b>				
Cost Group #7 – County (Tier A and D)	17.74%	11,112,405	17.52%	10,768,805
Cost Group #8 – Contra Costa and East Fire Protection Districts	17.28%	5,511,118	17.19%	5,259,475
Cost Group #9 – County (Tier C and E)	15.34%	3,542,648	14.08%	2,596,473
Cost Group #10 – Moraga-Orinda Fire District	17.12%	1,148,954	17.10%	1,199,666
Cost Group #11 – San Ramon Valley Fire District	16.91%	2,960,537	17.28%	2,880,327
Cost Group #12 – Rodeo-Hercules Fire Protection District	16.28%	400,294	16.16%	357,914
<b>All Categories Combined</b>	12.09%	\$90,220,114	11.84%	\$82,617,142

<sup>(1)</sup> Based on projected payroll as of each valuation date shown. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions. The rates shown are averages based on all members regardless of their membership date.

Note: Pages 19 and 20 contain a summary that shows which employers are in each cost group.



**SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association**

**Summary of Key Valuation Results (continued)**

	December 31, 2015		December 31, 2014	
<b>Refundability Factors</b>				
<b>General</b>	<b>Legacy Tiers</b>	<b>PEPRA Tiers</b>	<b>Legacy Tiers</b>	<b>PEPRA Tiers</b>
Cost Group #1 – County and Small Districts (Tier 1)	0.9598		0.9601	
PEPRA Tier 4 (2% COLA)		0.9599		0.9605
PEPRA Tier 4 (3% COLA)		0.9594		0.9634
Cost Group #2 – County and Small Districts (Tier 3)	0.9570		0.9575	
PEPRA Tier 5 (2% COLA)		0.9623		0.9640
PEPRA Tier 5 (3%/4% COLA)		0.9642		0.9650
Cost Group #3 – Central Contra Costa Sanitary District	0.9580	0.9640	0.9581	0.9624
Cost Group #4 – Contra Costa Housing Authority	0.9562	0.9680	0.9564	0.9753
Cost Group #5 – Contra Costa County Fire Protection District	0.9586		0.9592	
PEPRA Tier 4 (2% COLA)		0.9643		0.9727
PEPRA Tier 4 (3% COLA)		0.9657		0.9664
Cost Group #6 – Small Districts (Non-Enhanced Tier 1 and 4)	0.9509	0.9672	0.9560	0.9717
<b>Safety</b>				
Cost Group #7 – County (Tier A and D)	0.9654	0.9739	0.9741	0.9772
Cost Group #8 – Contra Costa and East Fire Protection Districts	0.9668		0.9749	
PEPRA Tier D (3% COLA)		0.9768		0.9821
PEPRA Tier E (2% COLA)		0.9693		0.9809
Cost Group #9 – County (Tier C and E)	0.9670	0.9748	0.9755	0.9802
Cost Group #10 – Moraga-Orinda Fire District	0.9680	0.9783	0.9764	0.9837
Cost Group #11 – San Ramon Valley Fire District	0.9676	0.9784	0.9763	0.9837
Cost Group #12 – Rodeo-Hercules Fire Protection District	0.9679	0.9806	0.9757	0.9852
<b>Funded Status:</b>				
Actuarial accrued liability (AAL)	\$8,448,624,096		\$8,027,438,213	
Valuation value of assets (VVA)	\$7,136,801,380		\$6,557,496,101	
Market value of assets (MVA)	\$6,976,582,428		\$6,908,910,230	
Funded percentage on VVA basis (VVA/AAL)	84.5%		81.7%	
Funded percentage on MVA basis (MVA/AAL)	82.6%		86.1%	
Unfunded Actuarial Accrued Liability (UAAL) on VVA basis	\$1,311,822,716		\$1,469,942,112	
Unfunded Actuarial Accrued Liability (UAAL) on MVA basis	\$1,472,041,668		\$1,118,527,983	
<b>Key Assumptions:</b>				
Interest rate	7.00%		7.25%	
Inflation rate	2.75%		3.25%	
Across the board salary increase	0.50%		0.75%	

*Note: Pages 19 and 20 contain a summary that shows which employers are in each cost group.*

**SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association**

**Summary of Key Valuation Demographic and Financial Data**

	<b>December 31, 2015</b>	<b>December 31, 2014</b>	<b>Percentage Change</b>
<b>Active Members:</b>			
Number of members	9,642	9,159	5.3%
Average age	45.9	45.8	N/A
Average service	9.9	9.9	N/A
Projected total payroll (compensation)	\$746,352,665	\$697,831,837	7.0%
Average projected payroll	\$77,406	\$76,191	1.6%
<b>Retired Member and Beneficiaries:</b>			
Number of members:			
Service retired	6,738	6,665	1.1%
Disability retired	925	921	0.4%
Beneficiaries	1,405	1,285	9.3%
Total	9,068	8,871	2.2%
Average age	69.9	69.4	N/A
Average Monthly Benefit	\$3,706	\$3,669	1.0%
<b>Vested Terminated Members:</b>			
Number of terminated vested members <sup>(1)</sup>	2,790	2,647	5.4%
Average age	46.5	46.7	N/A
<b>Summary of Financial Data:</b>			
Market value of assets	\$6,976,582,428	\$6,908,910,230	1.0%
Return on market value of assets	0.95%	7.35%	N/A
Actuarial value of assets	\$7,151,936,096	\$6,572,560,432	8.8%
Return on actuarial value of assets	8.78%	11.39%	N/A
Valuation value of assets	\$7,136,801,380	\$6,557,496,101	8.8%
Return on valuation value of assets	8.79%	11.40%	N/A

<sup>(1)</sup> Includes 1,244 terminated members with member contributions on deposit as of December 31, 2015 and 1,176 as of December 31, 2014.

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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### 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 (as well as the plan summary included in our funding valuation report) to confirm that Segal has correctly interpreted the plan of benefits.
- **Participant data** An actuarial valuation for a plan is based on data provided to the actuary by the Association. 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 the Association.
- **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 CCCERA. 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.

## SECTION 1: Valuation Summary for the Contra Costa County Employees' Retirement Association

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

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

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**A. MEMBER DATA**

The Actuarial Valuation and Review considers the number and demographics 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, C and D.

*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**

<b>Year Ended December 31</b>	<b>Active Members</b>	<b>Vested Terminated Members<sup>(1)</sup></b>	<b>Retired Members and Beneficiaries</b>	<b>Ratio of Non-Actives to Actives</b>
2006	9,210	1,919	6,646	0.93
2007	9,421	2,008	6,911	0.95
2008	9,385	2,153	7,012	0.98
2009	8,938	2,209	7,292	1.06
2010	8,811	2,231	7,559	1.11
2011	8,629	2,214	8,085	1.19
2012	8,640	2,288	8,517	1.25
2013	9,124	2,345	8,625	1.20
2014	9,159	2,647	8,871	1.26
2015	9,642	2,790	9,068	1.23

<sup>(1)</sup> Includes members who terminate and leave accumulated contributions on deposit.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**Active Members**

Plan costs are affected by the age, years of service and payroll of active members. In this year's valuation, there are 9,642 active members with an average age of 45.9, average years of service of 9.9 years and average payroll of \$77,406. The 9,159 active members in the prior valuation had an average age of 45.8, average service of 9.9 years and average payroll of \$76,191.

Among the active members, there were none with unknown age or service information.

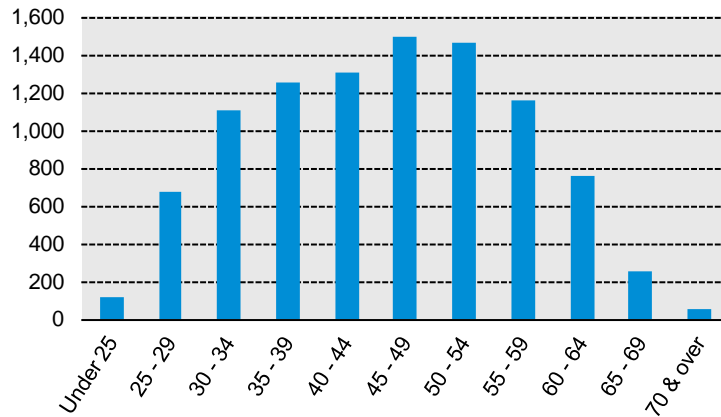
**Inactive Members**

In this year's valuation, there were 2,790 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their employee contributions versus 2,647 in the prior valuation.

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

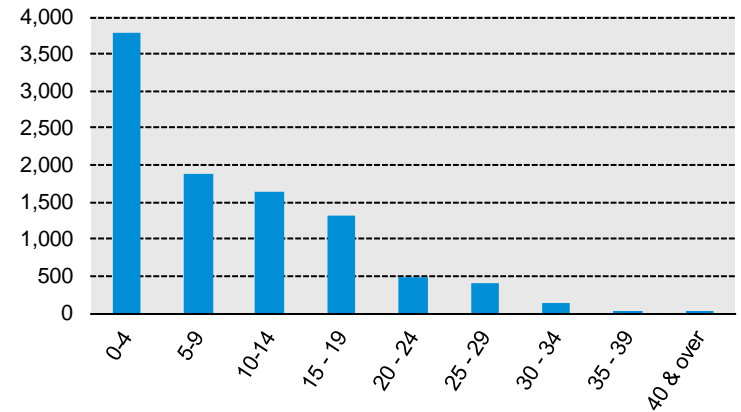
**CHART 2**

**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 Contra Costa County Employees' Retirement Association**

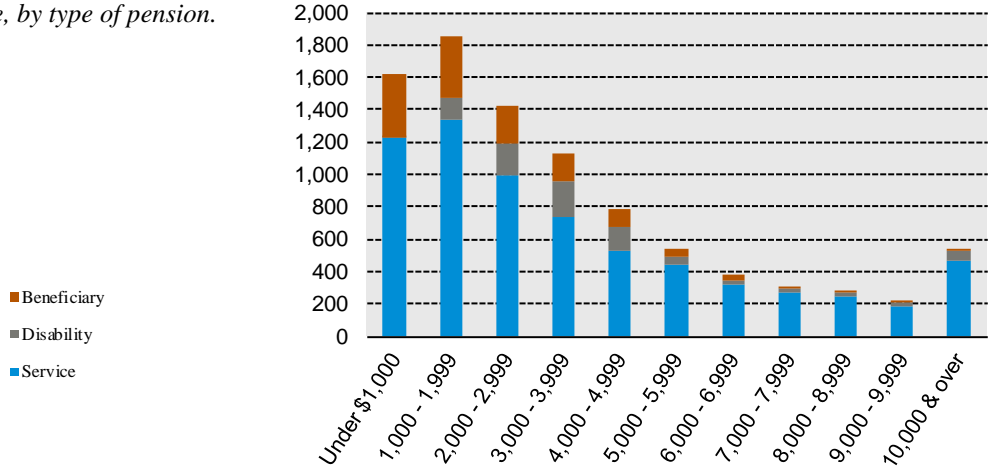
**Retired Members and Beneficiaries**

As of December 31, 2015, 7,663 retired members and 1,405 beneficiaries were receiving total monthly benefits of \$33,609,454. For comparison, in the previous valuation, there were 7,586 retired members and 1,285 beneficiaries receiving monthly benefits of \$32,543,254.

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

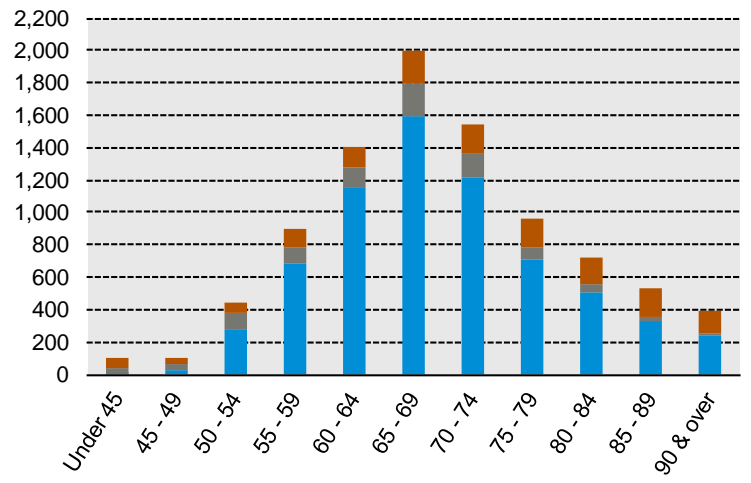
**CHART 4**

**Distribution of Retired Members and Beneficiaries by Type and by Monthly Amount as of December 31, 2015**



**CHART 5**

**Distribution of Retired Members and Beneficiaries by Type and by Age as of December 31, 2015**



**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**B. FINANCIAL INFORMATION**

Retirement plan funding anticipates that, over the long term, both contributions (net of administrative expenses starting in 2016) and net investment earnings (less investment fees) 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 investment 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 E and F.

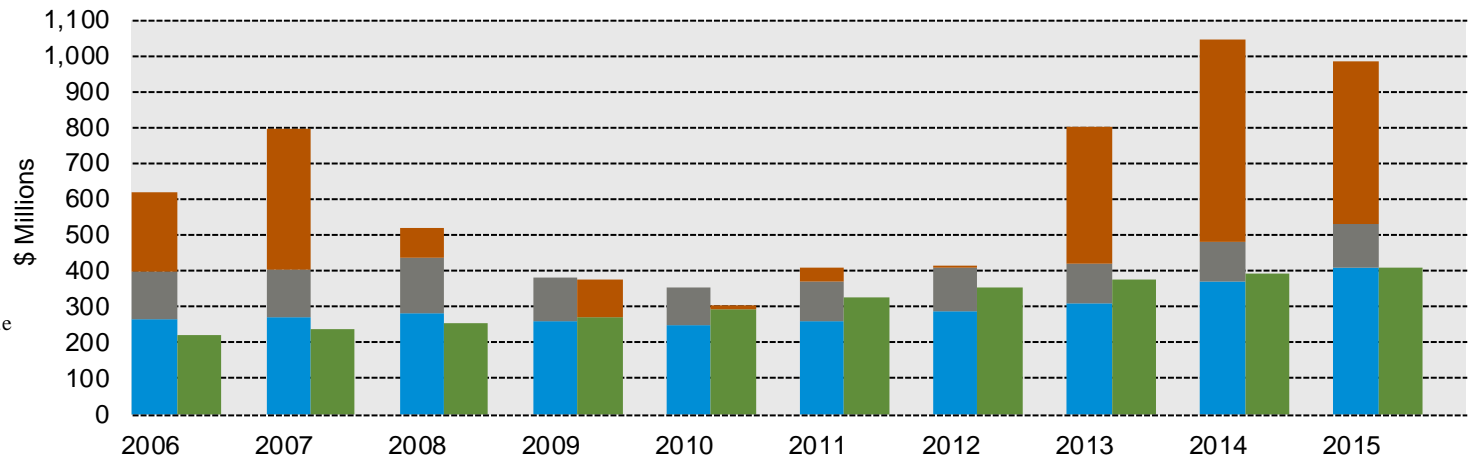
It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Retirement has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuation is not recognized in a single year 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 has no immediate effect on the actuarial value.

*The chart depicts the components of changes in the actuarial value of assets over the last ten years. Pension Obligation Bonds in the amount of \$11.7 million for 2006 are included in the contributions. Also included are UAAL prepayments of \$8.6 million for 2006, \$3.0 million for 2007, \$7.0 million for 2013, \$5.0 million for 2014 and \$2.5 million for 2015.*

**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 Contra Costa County Employees' Retirement Association**

**CHART 7**

**Determination of Actuarial and Valuation Value of Assets for Year Ended December 31, 2015**

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

Six Month Period		Total Actual Market	Expected Market	Investment	Deferred Factor	Deferred
From	To	Return (net)	Return (net)	Gain (Loss)		Return
7/2010	12/2010	\$687,503,854	\$169,679,293	\$517,824,561	0.0	\$0
1/2011	6/2011	292,872,483	195,544,414	97,328,069	0.0	0
7/2011	12/2011	(205,242,203)	204,284,793	(409,526,996)	0.1	(40,952,700)
1/2012	6/2012	296,675,568	195,294,521	101,381,047	0.2	20,276,209
7/2012	12/2012	371,057,645	205,350,894	165,706,751	0.3	49,712,025
1/2013	6/2013	281,608,945	218,386,047	63,222,898	0.4	25,289,159
7/2013	12/2013	588,758,958	227,909,702	360,849,256	0.5	180,424,628
1/2014	6/2014	347,257,106	249,636,410	97,620,696	0.6	58,572,417
7/2014	12/2014	125,727,585	241,361,743	(115,634,158)	0.7	(80,943,911)
1/2015	6/2015	207,439,920	246,283,585	(38,843,665)	0.8	(31,074,932)
7/2015	12/2015	(142,612,600)	253,672,471	(396,285,071)	0.9	<u>(356,656,563)</u>
1. Total Deferred Return <sup>(1)</sup>						\$(175,353,668)
2. Market Value of Assets						6,976,582,428
3. Actuarial Value of Assets (Item 2 – Item 1)						7,151,936,096
4. Actuarial Value as Percentage of Market Value (Item 3 / Item 2)						102.5%
5. Non-valuation Reserves and Designations:						
a. Post Retirement Death Benefit						\$15,134,716
b. Statutory Contingency						0
c. Additional One Percent Contingency						0
d. Unrestricted Designation						<u>0</u>
e. Total						\$15,134,716
6. Valuation Value of Assets (Item 3 – Item 5e)						<u>\$7,136,801,380</u>

<sup>(1)</sup> Deferred return recognized in each of the next 5 years:

(a) Amount recognized during 2016	\$6,650,849
(b) Amount recognized during 2017	10,756,667
(c) Amount recognized during 2018	(54,543,514)
(d) Amount recognized during 2019	(98,589,163)
(e) Amount recognized during 2020	<u>(39,628,507)</u>
(f) Subtotal	\$(175,353,668)

Note: Results may not add due to rounding.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 8**

**Allocation of Valuation Value of Assets as of December 31, 2015**

The calculation of the valuation value of assets from December 31, 2014 to December 31, 2015 by cost groups is provided below.

		General				
		Cost Groups #1 and #2	Cost Group #3	Cost Group #4	Cost Group #5	Cost Group #6
		General County and Small Districts	Central Contra Costa Sanitary District	Contra Costa Housing Authority	Contra Costa County Fire Protection District	Small Districts (General Non-Enhanced)
1	Allocated Valuation Value of Assets As of Beginning of Plan Year	\$3,679,300,803	\$240,138,196	\$43,323,548	\$41,437,350	\$5,434,865
2	Contributions:					
a.	Total Member Contributions	54,878,454	2,176,999	389,672	386,153	69,756
b.	Employer Contributions - Excludes POB and other Special Contributions	183,141,271	20,125,174	2,316,871	1,363,537	261,457
c.	Employer Contributions - Special (POB, Termination, etc.)	1,042,628	2,500,000	0	0	0
d.	Total Contributions	239,062,353	24,802,173	2,706,543	1,749,690	331,213
3	Total Payments Excluding Post- Retirement Death	227,500,392	17,196,363	3,274,765	2,712,659	331,376
4	Total Transfers Into or Out of Valuation Assets	0	0	0	0	0
5	Subtotal (Item 1 + 2d - 3 + 4)	3,690,862,764	247,744,006	42,755,326	40,474,381	5,434,702
6	Weighted Average Fund Balance	3,684,840,034	242,691,101	43,039,437	40,955,866	5,434,784
7	Earnings Allocated in Proportion to Item 6	323,751,251	21,322,920	3,781,459	3,598,396	477,502
8	Allocated Valuation Value of Assets As of End of Plan Year (Item 5 + 7)	\$4,014,614,015	\$269,066,926	\$46,536,785	\$44,072,777	\$5,912,204

Note: Results may not add due to rounding.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 8 (continued)**

**Allocation of Valuation Value of Assets as of December 31, 2015**

	Safety					<b>Total</b>
	Cost Groups #7 & 9 Safety County	Cost Group #8 Contra Costa & East Fire Protection Districts	Cost Group #10 Moraga-Orinda Fire District	Cost Group #11 San Ramon Valley Fire District	Cost Group #12 Rodeo-Hercules Fire Protection District	
1 Allocated Valuation Value of Assets As of Beginning of Plan Year	\$1,356,376,189	\$755,268,899	\$136,574,372	\$275,426,679	\$24,215,200	\$6,557,496,101
2 Contributions:						
a. Total Member Contributions	14,236,508	7,052,399	1,619,692	4,183,028	367,976	85,360,637
b. Employer Contributions - Excludes POB and other Special Contributions	66,833,301	25,040,801	4,214,404	13,962,741	2,170,558	319,430,115
c. Employer Contributions – Special (POB, Termination, etc.)	747,527	0	0	0	0	4,290,155
d. Total Contributions	81,817,336	32,093,200	5,834,096	18,145,769	2,538,534	409,080,907
3 Total Payments Excluding Post- Retirement Death	78,164,593	52,133,093	9,163,011	13,709,397	1,741,224	405,926,873
4 Total Transfers Into or Out of Valuation Assets	0	0	0	0	0	0
5 Subtotal (Item 1 + 2d – 3 + 4)	1,360,028,932	735,229,006	133,245,457	279,863,051	25,012,510	6,560,650,135
6 Weighted Average Fund Balance	1,358,202,561	745,248,953	134,909,915	277,644,865	24,613,855	6,557,581,369
7 Earnings Allocated in Proportion to Item 6	119,332,121	65,477,817	11,853,229	24,393,969	2,162,581	576,151,245
8 Allocated Valuation Value of Assets As of End of Plan Year (Item 5 + 7)	\$1,479,361,053	\$800,706,823	\$145,098,686	\$304,257,020	\$27,175,091	\$7,136,801,380

*Note: Results may not add due to rounding.*

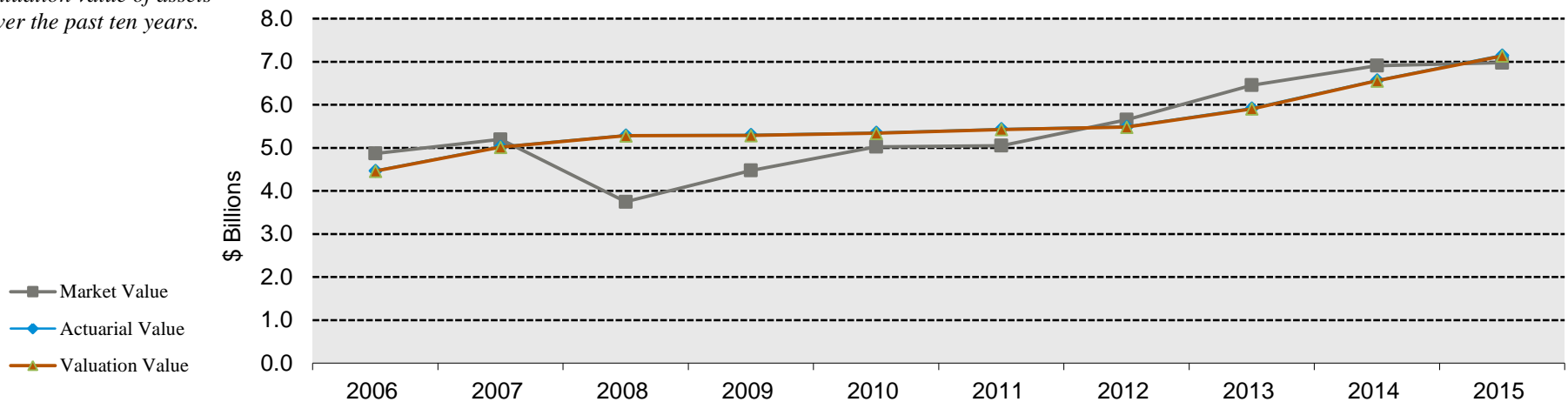
**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

The market value, actuarial value and valuation value of assets are representations of the Plan's 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 the Plan's liabilities are compared to this measure of its assets to determine what portion, if any, remains unfunded. Amortization of the unfunded liability is an important element in determining the contribution requirement.

*This chart shows the change in the relative values of market value, actuarial value and valuation value of assets over the past ten years.*

**CHART 9**  
**Relative Values of Market Value, Actuarial Value and Valuation Value of Assets for Years Ended December 31, 2006 – 2015**



## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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### C. ACTUARIAL EXPERIENCE

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

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

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

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

The total experience gain was \$213.1 million, a gain of \$100.7 million from investments, a gain of \$48.3 million from contribution experience (includes a gain of \$2.3 million from additional UAAL payments and a gain of \$45.9 million from all other contribution experience) and a gain of \$64.1 million from all other sources. A discussion of the major components of the actuarial experience is on the following pages.

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

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### CHART 10

#### Actuarial Experience for Year Ended December 31, 2015

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1. Net gain/(loss) from investments <sup>(1)</sup>	\$100,726,596
2. Net gain/(loss) from contribution experience	48,268,231
3. Net gain/(loss) from other experience <sup>(2)</sup>	<u>64,108,493</u>
4. Net experience gain/(loss): (1) + (2) + (3)	<u>\$213,103,320</u>

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<sup>(1)</sup> Details in Chart 11

<sup>(2)</sup> See Section 3, Exhibit I. Does not include the effect of plan or assumption changes, if any.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**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 CCCERA's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets during 2015 was 7.25% (based on the December 31, 2014 actuarial valuation). The actual rate of return on the actuarial value for the 2015 Plan Year was 8.78%.

The market value return reflects the entire impact of the investment performance during the current year and ignores returns from prior years.

The actuarial and valuation value returns reflect the fact that investment gains and losses are gradually taken into account. This is because these returns reflect only a portion of the investment gain or loss from the current year as well as portions of the gains and losses from prior years in accordance with the Board's asset valuation method.

Since the actual return for the year was greater than the assumed return, the Plan experienced an actuarial gain on the actuarial and valuation value of assets during the year ended December 31, 2015.

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

**CHART 11**

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

	<b>Market Value</b>	<b>Actuarial Value</b>	<b>Valuation Value</b>
1. Actual return	\$65,495,657	\$577,199,123	\$576,151,245
2. Average value of assets	6,908,506,751	6,572,156,953	6,557,581,369
3. Actual rate of return: (1) ÷ (2)	0.95%	8.78%	8.79%
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	500,866,739	476,481,379	475,424,649
6. Actuarial gain/(loss): (1) – (5)	<u>(\$435,371,082)</u>	<u>\$100,717,744</u>	<u>\$100,726,596</u>

## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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 rates of return on an actuarial, valuation and market value basis for the last ten years.

### CHART 12

#### Investment Return – Market Value, Actuarial Value, and Valuation Value: 2006 – 2015

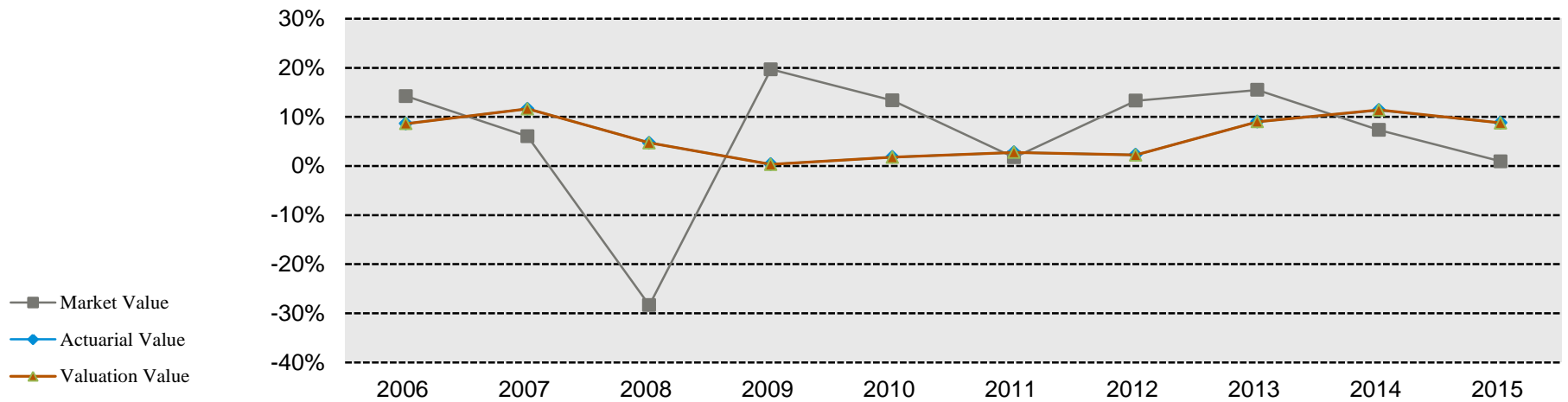
Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
	Amount	Percent of Assets	Amount	Percent of Assets	Amount	Percent of Assets
2006	603,899,378	14.23%	353,776,306	8.63%	352,838,472	8.64%
2007	294,694,885	6.03%	522,206,583	11.63%	521,211,436	11.64%
2008	(1,477,705,765)	(28.35%)	238,397,117	4.73%	237,402,129	4.72%
2009	736,956,891	19.68%	18,226,933	0.34%	17,021,116	0.32%
2010	594,637,090	13.35%	95,918,913	1.82%	94,835,030	1.80%
2011	88,042,268	1.76%	148,058,548	2.78%	146,988,614	2.77%
2012	668,138,997	13.31%	121,921,302	2.25%	120,826,177	2.24%
2013	870,984,744	15.50%	492,503,802	9.01%	491,324,308	9.02%
2014	473,522,261	7.35%	673,040,867	11.39%	671,957,212	11.40%
2015	65,495,657	0.95%	577,199,123	8.78%	576,151,245	8.79%
Total	\$2,918,666,406		\$3,241,249,494		\$3,230,555,739	
<i>Five-Year Average Return</i>		7.48%		7.01%		7.02%
<i>Ten-Year Average Return</i>		5.67%		6.12%		6.12%

*Note: Each year's yield is weighted by the average asset value in that year.*

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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.

**CHART 13**  
**Market, Actuarial and Valuation Value Rates of Return for Years Ended December 31, 2006 - 2015**





## **SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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### **Other Experience**

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

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

Please see Exhibit I in Section 3 for a detailed reconciliation of changes in the Unfunded Actuarial Accrued Liability.

## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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### D. RECOMMENDED CONTRIBUTION

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.

*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 UAAL ) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) 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 combined annual inflation and "across the board" salary increase rate of 3.25% along with expected payroll. The remaining balance of the December 31, 2007 UAAL is being amortized over a 7-year declining period as of December 31, 2015. Any change in the UAAL that arises at each valuation after December 31, 2007 is amortized over its own separate declining 18-year period. Effective with the December 31, 2013 valuation, any change in the UAAL that arises due to plan amendments is amortized over its own declining 10-year period (with the exception of a change due to retirement incentives, which is to be funded in full upon adoption of the incentive).

*Employer Contribution Rates*

The current and recommended employer contribution rates are shown in Chart 14. County contribution rates also include the Superior Court.

For the PEPRA cost groups without actual membership data, we have assumed in this valuation that their demographic profiles can be approximated by the data profiles of current active members with membership dates on or after January 1, 2011.

The amortization cost for the UAAL has been expressed as a percentage of total future payroll, including members with membership dates on or after January 1, 2013. This

## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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has been done in order to continue the open group level percent of payroll amortization methodology for the UAAL associated with members with membership dates before January 1, 2013. It is also consistent with the methodology applied when Safety Tier C was implemented.

The employer contribution rates shown in Chart 14 are the aggregate rates before reflecting the under and over \$350 of monthly compensation contribution provisions for members integrated with Social Security. The detailed contribution rates reflecting these provisions will be provided in the contribution rate packet that goes to the Board of Supervisors.

### *Member Contributions*

#### *Non-PEPRA 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 non-PEPRA General and Safety members, respectively. The basic contribution rate is determined as that percentage of compensation which if paid annually from a member's first year of membership through the prescribed retirement age would accumulate to the amount necessary to fund a prescribed annuity.

The annuity is equal to:

- 1/120 of one year Final Average Salary per year of service at age 55 for General Tier 1 and Tier 3 Non-enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Non-enhanced members
- 1/120 of one year Final Average Salary per year of service at age 60 for General Tier 1 and Tier 3 Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Enhanced
- 1/100 of three year Final Average Salary per year of service at age 50 for Safety Tier C Enhanced members

Member contributions are accumulated at an annual interest rate adopted annually by the Board. Note that recently negotiated MOU's for County General members no

## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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longer include the 50% employer subvention of the members' basic contributions. Districts pay varying portions, of the members' basic contributions on a nonrefundable basis. Members also pay 50% of the cost-of-living benefit. For most Safety Tier A employers, Safety members also subvent a portion of the employer rate, currently up to 9% of compensation (depending on their MOU). Chart 14 does not include any employer subvention of member contributions or any member subvention of employer contributions.

Effective with the December 31, 2014 valuation, for determining the cost of the total benefit (i.e., basic and COLA components), the leave cashout assumptions are recognized in the valuation as an employer and member cost. Prior to the December 31, 2014 valuation, for determining the cost of the basic benefit (i.e., non-COLA component), the leave cashout assumptions were recognized in the valuation only as an employer cost and did not affect member contribution rates. In other words, the leave cashout assumptions were only used in establishing COLA member contribution rates.

As a result of including the leave cashout assumptions in the basic member rates for the members of each specific cost group, the COLA member rates are no longer pooled across all members of the same tier. This results in twelve different sets of member contribution rates for each specific cost group.

The age specific contribution rates are provided in Appendix A.

### *PEPRA Members*

Pursuant to Section 7522.30(a) of the Government Code, PEPRA members 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 PEPRA members. In addition, we have calculated the total Normal Cost rate for the PEPRA tiers to the nearest one-fiftieth of one percent (i.e., the nearest even one-hundredth) as that will allow the Normal Cost rate to be shared exactly 50:50 without going beyond two decimal places.

Member contribution rates are provided in Appendix B.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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*Administrative Expense*

The Board adopted an explicit administrative expense assumption effective with the December 31, 2015 actuarial valuation. The explicit administrative expense assumption is based on the prior year actual administration expenses, expressed as a percent of actual compensation for that year. For the 2015 calendar year the actual administrative expenses were \$8,115,359 and actual compensation was \$709,818,858. This results in an administrative expense load of 1.14% of compensation for the December 31, 2015 valuation.

The explicit assumption is allocated to both the employers and members based on the portions of the total Normal Cost rate (before expenses) for the employers and members. This results in an administrative expense load allocation as shown in the table below.

	<b><u>Average Normal Cost Rates Before Administrative Expense</u></b>	<b><u>Weighting</u></b>	<b><u>Total Loading</u></b>
Employer	16.63%	58.87%	0.67%
Member	11.62%	<u>41.13%</u>	<u>0.47%</u>
		100.00%	1.14%

Under this approach, the employer Normal Cost rate is then increased by the same percent of payroll as the member rate with the remaining employer loading allocated to the employer UAAL rate. This is done to maintain a 50/50 sharing of Normal Cost for those in the PEPRA tiers. The table below shows this allocation.

<b><u>Allocation of Administrative Expense Load as % of Payroll</u></b>	
Addition to Employer Basic Normal Cost Rate	0.47%
Addition to Employer Basic UAAL Rate	0.20%
Addition to Member Basic Rate	<u>0.47%</u>
Total Addition to Contribution Rates	1.14%

The administrative expense load is added to the Basic rates for employers and members.

*Cost Sharing Adjustments*

Starting with the December 31, 2009 Actuarial Valuation, the Board took action to depool CCCERA's assets, liabilities and normal cost by employer when determining employer contribution rates. The Board action included a review of experience back to

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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December 31, 2002. This did not involve recalculation of any employer rates prior to December 31, 2009. However, it did involve reflecting the separate experience of the employers in each individual cost group back from December 31, 2002 through December 31, 2009. The cost groups are detailed on pages 19 and 20. In addition, the Board action called for a discontinuation of certain cost sharing adjustments for both member and employer contribution rates for General Tier 1 and Safety Tier A. Even under the depooling structure, there are a few remaining cost sharing arrangements. Here is a summary of the cost sharing arrangements that were implemented in the December 31, 2009 Actuarial Valuation:

- Smaller employers (less than 50 active members as of December 31, 2009) were pooled with the applicable County tier. Safety members from the East Contra Costa Fire Protection District were pooled with Safety members of the Contra Costa County Fire Protection District.
- Due to a statutory requirement, the Superior Court was pooled with the County regardless of how many members the Court has.
- UAAL costs are pooled between Cost Group #1 and Cost Group #2 which represent General County and Small Districts. UAAL costs are also pooled for Cost Groups #7 and #9 which are Safety County tiers.

*Other Adjustments*

Other adjustments made in the determination of rates are as follows:

- Adjustments are made to some UAAL amounts for the County, the Contra Costa County Fire Protection District (CCCFPD), the Moraga-Orinda Fire District (Moraga) and First 5 – Children & Families Commission (First Five) to account for Pension Obligation Bonds (POBs) and any other special contributions that they previously made. These adjustments serve to reduce the UAAL contribution rate for these employers. The outstanding balances of these adjustments as of December 31, 2015 are as follows:

	County General	Moraga General	First Five General	CCCFPD Safety
Basic	\$183,935,182	\$323,916	\$738,183	\$52,796,047
COL	\$147,389,108	\$187,997	\$558,376	\$40,264,630

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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**Summary of Cost Groups and Employers**

**GENERAL**

<b>Cost Group</b>	<b>Employer Name</b>	<b>Benefit Structure</b>	<b>Special Adjustment</b>
(1)	County General	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Local Agency Formation Commission	Tier 1 Enhanced/PEPRA Tier 4	
	Contra Costa Mosquito and Vector Control District	Tier 1 Enhanced/PEPRA Tier 4	
	Bethel Island Municipal District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	First 5-Children & Families Commission	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced/PEPRA Tier 4	
	Superior Court	Tier 1 Enhanced/PEPRA Tier 4	Yes
	East Contra Costa Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	Moraga-Orinda Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Rodeo-Hercules Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
San Ramon Valley Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4		
(2)	County General	Tier 3 Enhanced/PEPRA Tier 5	Yes
	In-Home Supportive Services Authority	Tier 3 Enhanced/PEPRA Tier 5	
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced/PEPRA Tier 5	
	Superior Court	Tier 3 Enhanced/PEPRA Tier 5	Yes
(3)	Central Contra Costa Sanitary District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
(4)	Contra Costa Housing Authority	Tier 1 Enhanced/PEPRA Tier 4	
(5)	Contra Costa County Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
(6)	Rodeo Sanitary District	Tier 1 Non-Enhanced/PEPRA Tier 4	
	Byron Brentwood Cemetery	Tier 1 Non-Enhanced/PEPRA Tier 4	

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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**Summary of Cost Groups and Employers (continued)**

**SAFETY**

<b>Cost Group</b>	<b>Employer Name</b>	<b>Benefit Structure</b>	<b>Special Adjustment</b>
(7)	County Safety	Tier A Enhanced/PEPRA Tier D	
(8)	Contra Costa County Fire Protection District East Contra Costa Fire Protection District	Tier A Enhanced/PEPRA Tier D/E Tier A Enhanced/PEPRA Tier D	Yes
(9)	County Safety	Tier C Enhanced/PEPRA Tier E (Members hired on or after January 1, 2007)	
(10)	Moraga-Orinda Fire District	Tier A Enhanced/PEPRA Tier D	
(11)	San Ramon Valley Fire District	Tier A Enhanced/PEPRA Tier D	
(12)	Rodeo-Hercules Fire Protection District	Tier A Non-Enhanced/PEPRA Tier D	

A special adjustment is made for employers that have a remaining balance of a Pension Obligation Bond or any other special contributions as described on page 18.



**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14  
Components of Current and Recommended Employer Contribution Rates**

Cost Group #1	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>County General Tier 1 w/Courts</b>								
Normal Cost	12.09%	3.47%	15.56%	\$2,039,140	11.68%	3.71%	15.39%	\$2,016,968
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>1,859,601</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>1,975,029</u>
Total Contributions	23.93%	5.82%	29.75%	\$3,898,741	23.16%	7.30%	30.46%	\$3,991,997
	Payroll = \$13,105,014				Payroll = \$13,105,703			
<b>Cost Group #1 District General Tier 1 w/o POB</b>								
Normal Cost	12.09%	3.47%	15.56%	\$1,007,866	11.68%	3.71%	15.39%	\$991,372
UAAL	<u>17.36%</u>	<u>6.77%</u>	<u>24.13%</u>	<u>1,562,969</u>	<u>17.10%</u>	<u>8.10%</u>	<u>25.20%</u>	<u>1,623,299</u>
Total Contributions	29.45%	10.24%	39.69%	\$2,570,835	28.78%	11.81%	40.59%	\$2,614,671
	Payroll = \$6,477,285				Payroll = \$6,441,663			
<b>Cost Group #1 District General Tier 1 w/ POB (Moraga)</b>								
Normal Cost	12.09%	3.47%	15.56%	\$75,963	11.68%	3.71%	15.39%	\$74,512
UAAL	<u>7.31%</u>	<u>0.94%</u>	<u>8.25%</u>	<u>40,276</u>	<u>7.32%</u>	<u>2.42%</u>	<u>9.74%</u>	<u>47,157</u>
Total Contributions	19.40%	4.41%	23.81%	\$116,239	19.00%	6.13%	25.13%	\$121,669
	Payroll = \$488,196				Payroll = \$484,159			
<b>Cost Group #1 District General Tier 1 w/ UAAL Prepayment (First Five)</b>								
Normal Cost	12.09%	3.47%	15.56%	\$273,155	11.68%	3.71%	15.39%	\$259,722
UAAL	<u>11.25%</u>	<u>2.16%</u>	<u>13.41%</u>	<u>235,412</u>	<u>9.94%</u>	<u>2.69%</u>	<u>12.63%</u>	<u>213,144</u>
Total Contributions	23.34%	5.63%	28.97%	\$508,567	21.62%	6.40%	28.02%	\$472,866
	Payroll = \$1,755,494				Payroll = \$1,687,601			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #1</b>								
<b>County General Tier 4 (3% COLA) w/ Courts</b>								
Normal Cost	9.14%	3.07%	12.21%	\$0	7.98%	2.96%	10.94%	\$0
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>0</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>0</u>
Total Contributions	20.98%	5.42%	26.40%	\$0	19.46%	6.55%	26.01%	\$0
		Payroll = \$0				Payroll = \$0		
<b>Cost Group #1</b>								
<b>District General Tier 4 (3% COLA) w/o POB</b>								
Normal Cost	9.14%	3.07%	12.21%	\$101,563	7.98%	2.96%	10.94%	\$66,934
UAAL	<u>17.36%</u>	<u>6.77%</u>	<u>24.13%</u>	<u>200,714</u>	<u>17.10%</u>	<u>8.10%</u>	<u>25.20%</u>	<u>154,180</u>
Total Contributions	26.50%	9.84%	36.34%	\$302,277	25.08%	11.06%	36.14%	\$221,114
		Payroll = \$831,803				Payroll = \$611,824		
<b>Cost Group #1</b>								
<b>District General Tier 4 (3% COLA) w/ POB (Moraga)</b>								
Normal Cost	9.14%	3.07%	12.21%	\$5,132	7.98%	2.96%	10.94%	\$3,596
UAAL	<u>7.31%</u>	<u>0.94%</u>	<u>8.25%</u>	<u>3,468</u>	<u>7.32%</u>	<u>2.42%</u>	<u>9.74%</u>	<u>3,202</u>
Total Contributions	16.45%	4.01%	20.46%	\$8,600	15.30%	5.38%	20.68%	\$6,798
		Payroll = \$42,033				Payroll = \$32,871		
<b>Cost Group #1</b>								
<b>District General Tier 4 (3% COLA) with UAAL Prepayment (First Five)</b>								
Normal Cost	9.14%	3.07%	12.21%	\$51,143	7.98%	2.96%	10.94%	\$19,863
UAAL	<u>11.25%</u>	<u>2.16%</u>	<u>13.41%</u>	<u>56,170</u>	<u>9.94%</u>	<u>2.69%</u>	<u>12.63%</u>	<u>22,932</u>
Total Contributions	20.39%	5.23%	25.62%	\$107,313	17.92%	5.65%	23.57%	\$42,795
		Payroll = \$418,863				Payroll = \$181,564		

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #1</b>								
<b>County General Tier 4 (2% COLA) w/ Courts</b>								
Normal Cost	8.84%	2.02%	10.86%	\$0	8.17%	1.84%	10.01%	\$0
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>0</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>0</u>
Total Contributions	20.68%	4.37%	25.05%	\$0	19.65%	5.43%	25.08%	\$0
		Payroll = \$0				Payroll = \$0		
<b>Cost Group #2</b>								
<b>County General Tier 3 w/ Courts</b>								
Normal Cost	12.08%	3.37%	15.45%	\$65,306,348	11.44%	3.48%	14.92%	\$63,876,948
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>59,980,394</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>64,519,142</u>
Total Contributions	23.92%	5.72%	29.64%	\$125,286,742	22.92%	7.07%	29.99%	\$128,396,090
		Payroll = \$422,694,810				Payroll = \$428,129,676		
<b>Cost Group #2</b>								
<b>District General Tier 3 w/o POB</b>								
Normal Cost	12.08%	3.37%	15.45%	\$480,631	11.44%	3.48%	14.92%	\$473,816
UAAL	<u>17.36%</u>	<u>6.77%</u>	<u>24.13%</u>	<u>750,655</u>	<u>17.10%</u>	<u>8.10%</u>	<u>25.20%</u>	<u>800,280</u>
Total Contributions	29.44%	10.14%	39.58%	\$1,231,286	28.54%	11.58%	40.12%	\$1,274,096
		Payroll = \$3,110,880				Payroll = \$3,175,713		
<b>Cost Group #2</b>								
<b>County General Tier 5 (3%/4% COLA) w/ Courts</b>								
Normal Cost	8.28%	2.77%	11.05%	\$6,394,827	7.63%	2.76%	10.39%	\$5,251,849
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>8,212,000</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>7,617,456</u>
Total Contributions	20.12%	5.12%	25.24%	\$14,606,827	19.11%	6.35%	25.46%	\$12,869,305
		Payroll = \$57,871,738				Payroll = \$50,547,155		

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #2</b>								
<b>District General Tier 5</b>								
<b>(3%/4% COLA) w/o POB</b>								
Normal Cost	8.28%	2.77%	11.05%	\$21,607	7.63%	2.76%	10.39%	\$16,472
UAAL	<u>17.36%</u>	<u>6.77%</u>	<u>24.13%</u>	<u>47,183</u>	<u>17.10%</u>	<u>8.10%</u>	<u>25.20%</u>	<u>39,952</u>
Total Contributions	25.64%	9.54%	35.18%	\$68,790	24.73%	10.86%	35.59%	\$56,424
				Payroll = \$195,536				Payroll = \$158,538
<b>Cost Group #2</b>								
<b>County General Tier 5</b>								
<b>(2% COLA) w/ Courts</b>								
Normal Cost	8.11%	1.85%	9.96%	\$5,462,794	7.12%	1.61%	8.73%	\$1,679,171
UAAL	<u>11.84%</u>	<u>2.35%</u>	<u>14.19%</u>	<u>7,782,836</u>	<u>11.48%</u>	<u>3.59%</u>	<u>15.07%</u>	<u>2,898,638</u>
Total Contributions	19.95%	4.20%	24.15%	\$13,245,630	18.60%	5.20%	23.80%	\$4,577,809
				Payroll = \$54,847,327				Payroll = \$19,234,491
<b>Cost Group #2</b>								
<b>District General Tier 5</b>								
<b>(2% COLA) w/o POB</b>								
Normal Cost	8.11%	1.85%	9.96%	\$12,722	7.12%	1.61%	8.73%	\$2,653
UAAL	<u>17.36%</u>	<u>6.77%</u>	<u>24.13%</u>	<u>30,821</u>	<u>17.10%</u>	<u>8.10%</u>	<u>25.20%</u>	<u>7,660</u>
Total Contributions	25.47%	8.62%	34.09%	\$43,543	24.22%	9.71%	33.93%	\$10,313
				Payroll = \$127,729				Payroll = \$30,395

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #3</b>								
<b>CCCSD General Tier 1</b>								
Normal Cost	13.24%	3.84%	17.08%	\$4,705,205	12.91%	4.08%	16.99%	\$4,521,945
UAAL	<u>25.42%</u>	<u>10.89%</u>	<u>36.31%</u>	<u>10,002,694</u>	<u>26.17%</u>	<u>12.81%</u>	<u>38.98%</u>	<u>10,374,657</u>
Total Contributions	38.66%	14.73%	53.39%	\$14,707,899	39.08%	16.89%	55.97%	\$14,896,602
	Payroll = \$27,548,041				Payroll = \$26,615,333			
<b>Cost Group #3</b>								
<b>CCCSD General Tier 4 (3% COLA)</b>								
Normal Cost	8.71%	2.99%	11.70%	\$320,837	8.80%	3.26%	12.06%	\$178,815
UAAL	<u>25.42%</u>	<u>10.89%</u>	<u>36.31%</u>	<u>995,691</u>	<u>26.17%</u>	<u>12.81%</u>	<u>38.98%</u>	<u>577,962</u>
Total Contributions	34.13%	13.88%	48.01%	\$1,316,528	34.97%	16.07%	51.04%	\$756,777
	Payroll = \$2,742,196				Payroll = \$1,482,714			
<b>Cost Group #4</b>								
<b>Contra Costa Housing Authority General Tier 1</b>								
Normal Cost	12.98%	3.65%	16.63%	\$708,240	12.64%	3.86%	16.50%	\$753,889
UAAL	<u>16.70%</u>	<u>9.77%</u>	<u>26.47%</u>	<u>1,127,308</u>	<u>15.48%</u>	<u>10.52%</u>	<u>26.00%</u>	<u>1,187,947</u>
Total Contributions	29.68%	13.42%	43.10%	\$1,835,548	28.12%	14.38%	42.50%	\$1,941,836
	Payroll = \$4,258,812				Payroll = \$4,569,026			
<b>Cost Group #4</b>								
<b>Contra Costa Housing Authority General Tier 4 (3% COLA)</b>								
Normal Cost	8.82%	3.00%	11.82%	\$114,546	6.96%	2.64%	9.60%	\$53,025
UAAL	<u>16.70%</u>	<u>9.77%</u>	<u>26.47%</u>	<u>256,517</u>	<u>15.48%</u>	<u>10.52%</u>	<u>26.00%</u>	<u>143,610</u>
Total Contributions	25.52%	12.77%	38.29%	\$371,063	22.44%	13.16%	35.60%	\$196,635
	Payroll = \$969,086				Payroll = \$552,345			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #5</b>								
<b>CCCFPD General Tier 1</b>								
Normal Cost	12.08%	3.47%	15.55%	\$529,826	11.77%	3.74%	15.51%	\$531,351
UAAL	<u>10.32%</u>	<u>5.54%</u>	<u>15.86%</u>	<u>540,388</u>	<u>9.60%</u>	<u>6.61%</u>	<u>16.21%</u>	<u>555,332</u>
Total Contributions	22.40%	9.01%	31.41%	\$1,070,214	21.37%	10.35%	31.72%	\$1,086,683
	Payroll = \$3,407,238				Payroll = \$3,425,859			
<b>Cost Group #5</b>								
<b>CCCFPD General Tier 4 (3% COLA)</b>								
Normal Cost	10.97%	3.78%	14.75%	\$14,045	10.26%	3.88%	14.14%	\$11,688
UAAL	<u>10.32%</u>	<u>5.54%</u>	<u>15.86%</u>	<u>15,102</u>	<u>9.60%</u>	<u>6.61%</u>	<u>16.21%</u>	<u>13,399</u>
Total Contributions	21.29%	9.32%	30.61%	\$29,147	19.86%	10.49%	30.35%	\$25,087
	Payroll = \$95,223				Payroll = \$82,656			
<b>Cost Group #5</b>								
<b>CCCFPD General Tier 4 (2% COLA)</b>								
Normal Cost	9.54%	2.21%	11.75%	\$27,069	6.99%	1.59%	8.58%	\$4,383
UAAL	<u>10.32%</u>	<u>5.54%</u>	<u>15.86%</u>	<u>36,538</u>	<u>9.60%</u>	<u>6.61%</u>	<u>16.21%</u>	<u>8,280</u>
Total Contributions	19.86%	7.75%	27.61%	\$63,607	16.59%	8.20%	24.79%	\$12,663
	Payroll = \$230,376				Payroll = \$51,082			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #6</b>								
<b>Non-Enhanced District</b>								
<b>General Tier 1</b>								
Normal Cost	13.08%	3.84%	16.92%	\$116,077	11.77%	3.83%	15.60%	\$125,572
UAAL	<u>9.73%</u>	<u>-0.55%</u>	<u>9.18%</u>	<u>62,978</u>	<u>9.91%</u>	<u>1.23%</u>	<u>11.14%</u>	<u>89,671</u>
Total Contributions	22.81%	3.29%	26.10%	\$179,055	21.68%	5.06%	26.74%	\$215,243
	Payroll = \$686,034				Payroll = \$804,948			
<b>Cost Group #6</b>								
<b>Non-Enhanced District General</b>								
<b>Tier 4 (3% COLA)</b>								
Normal Cost	9.46%	3.30%	12.76%	\$18,340	8.41%	3.24%	11.65%	\$2,887
UAAL	<u>9.73%</u>	<u>-0.55%</u>	<u>9.18%</u>	<u>13,195</u>	<u>9.91%</u>	<u>1.23%</u>	<u>11.14%</u>	<u>2,761</u>
Total Contributions	19.19%	2.75%	21.94%	\$31,535	18.32%	4.47%	22.79%	\$5,648
	Payroll = \$143,734				Payroll = \$24,781			
<b>Cost Group #7</b>								
<b>County Safety Tier A</b>								
Normal Cost	22.71%	7.20%	29.91%	\$17,847,901	21.57%	7.42%	28.99%	\$17,338,168
UAAL	<u>26.43%</u>	<u>20.44%</u>	<u>46.87%</u>	<u>27,968,275</u>	<u>26.93%</u>	<u>22.02%</u>	<u>48.95%</u>	<u>29,275,728</u>
Total Contributions	49.14%	27.64%	76.78%	\$45,816,176	48.50%	29.44%	77.94%	\$46,613,896
	Payroll = \$59,672,019				Payroll = \$59,807,411			
<b>Cost Group #7</b>								
<b>County Safety Tier D</b>								
Normal Cost	15.61%	6.34%	21.95%	\$651,557	15.99%	6.69%	22.68%	\$376,119
UAAL	<u>26.43%</u>	<u>20.44%</u>	<u>46.87%</u>	<u>1,391,275</u>	<u>26.93%</u>	<u>22.02%</u>	<u>48.95%</u>	<u>811,773</u>
Total Contributions	42.04%	26.78%	68.82%	\$2,042,832	42.92%	28.71%	71.63%	\$1,187,892
	Payroll = \$2,968,370				Payroll = \$1,658,372			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

Cost Group #8	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>CCCFPD Safety Tier A</b>								
Normal Cost	21.66%	7.04%	28.70%	\$7,887,405	20.97%	7.32%	28.29%	\$7,506,340
UAAL	<u>21.27%</u>	<u>27.91%</u>	<u>49.18%</u>	<u>13,515,769</u>	<u>18.81%</u>	<u>27.45%</u>	<u>46.26%</u>	<u>12,274,418</u>
Total Contributions	42.93%	34.95%	77.88%	\$21,403,174	39.78%	34.77%	74.55%	\$19,780,758
	Payroll = \$27,482,247				Payroll = \$26,533,545			
<b>Cost Group #8</b>								
<b>East CCCFPD Safety Tier A</b>								
Normal Cost	21.66%	7.04%	28.70%	\$782,496	20.97%	7.32%	28.29%	\$755,486
UAAL	<u>51.05%</u>	<u>50.63%</u>	<u>101.68%</u>	<u>2,772,271</u>	<u>48.46%</u>	<u>50.07%</u>	<u>98.53%</u>	<u>2,631,251</u>
Total Contributions	72.71%	57.67%	130.38%	\$3,554,767	69.43%	57.39%	126.82%	\$3,386,737
	Payroll = \$2,726,466				Payroll = \$2,670,507			
<b>Cost Group #8</b>								
<b>CCCFPD Safety Tier D</b>								
Normal Cost	14.57%	6.10%	20.67%	\$309,996	13.64%	6.01%	19.65%	\$249,434
UAAL	<u>21.27%</u>	<u>27.91%</u>	<u>49.18%</u>	<u>737,573</u>	<u>18.81%</u>	<u>27.45%</u>	<u>46.26%</u>	<u>587,216</u>
Total Contributions	35.84%	34.01%	69.85%	\$1,047,569	32.45%	33.46%	65.91%	\$836,650
	Payroll = \$1,499,741				Payroll = \$1,269,382			
<b>Cost Group #8</b>								
<b>East CCCFPD Safety Tier D</b>								
Normal Cost	14.57%	6.10%	20.67%	\$1,061	13.64%	6.01%	19.65%	\$24,110
UAAL	<u>51.05%</u>	<u>50.63%</u>	<u>101.68%</u>	<u>5,219</u>	<u>48.46%</u>	<u>50.07%</u>	<u>98.53%</u>	<u>120,892</u>
Total Contributions	65.62%	56.73%	122.35%	\$6,280	62.10%	56.08%	118.18%	\$145,002
	Payroll = \$5,133				Payroll = \$122,696			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.



**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #8</b>								
<b>CCCFPD Safety Tier E</b>								
Normal Cost	16.17%	4.40%	20.57%	\$36,914	12.63%	3.32%	15.95%	\$0
UAAL	<u>21.27%</u>	<u>27.91%</u>	<u>49.18%</u>	<u>88,257</u>	<u>18.81%</u>	<u>27.45%</u>	<u>46.26%</u>	<u>0</u>
Total Contributions	37.44%	32.31%	69.75%	\$125,171	31.44%	30.77%	62.21%	\$0
	Payroll = \$179,457				Payroll = \$0			
<b>Cost Group #9</b>								
<b>County Safety Tier C</b>								
Normal Cost	20.42%	4.37%	24.79%	\$3,317,342	19.30%	3.98%	23.28%	\$3,304,519
UAAL	<u>26.43%</u>	<u>20.44%</u>	<u>46.87%</u>	<u>6,272,037</u>	<u>26.93%</u>	<u>22.02%</u>	<u>48.95%</u>	<u>6,948,291</u>
Total Contributions	46.85%	24.81%	71.66%	\$9,589,379	46.23%	26.00%	72.23%	\$10,252,810
	Payroll = \$13,381,773				Payroll = \$14,194,670			
<b>Cost Group #9</b>								
<b>County Safety Tier E</b>								
Normal Cost	13.37%	3.71%	17.08%	\$1,658,879	12.93%	3.39%	16.32%	\$692,978
UAAL	<u>26.43%</u>	<u>20.44%</u>	<u>46.87%</u>	<u>4,552,206</u>	<u>26.93%</u>	<u>22.02%</u>	<u>48.95%</u>	<u>2,078,509</u>
Total Contributions	39.80%	24.15%	63.95%	\$6,211,085	39.86%	25.41%	65.27%	\$2,771,487
	Payroll = \$9,712,409				Payroll = \$4,246,187			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #10</b>								
<b>Moraga-Orinda FD Safety Tier A</b>								
Normal Cost	21.02%	6.92%	27.94%	\$1,709,761	20.30%	7.23%	27.53%	\$1,738,868
UAAL	<u>17.83%</u>	<u>25.17%</u>	<u>43.00%</u>	<u>2,631,343</u>	<u>18.40%</u>	<u>24.67%</u>	<u>43.07%</u>	<u>2,720,415</u>
Total Contributions	38.85%	32.09%	70.94%	\$4,341,104	38.70%	31.90%	70.60%	\$4,459,283
	Payroll = \$6,119,403				Payroll = \$6,316,265			
<b>Cost Group #10</b>								
<b>Moraga-Orinda FD Safety Tier D</b>								
Normal Cost	13.53%	5.71%	19.24%	\$113,858	12.55%	5.55%	18.10%	\$126,578
UAAL	<u>17.83%</u>	<u>25.17%</u>	<u>43.00%</u>	<u>254,464</u>	<u>18.40%</u>	<u>24.67%</u>	<u>43.07%</u>	<u>301,200</u>
Total Contributions	31.36%	30.88%	62.24%	\$368,322	30.95%	30.22%	61.17%	\$427,778
	Payroll = \$591,777				Payroll = \$699,327			
<b>Cost Group #11</b>								
<b>San Ramon FD Safety Tier A</b>								
Normal Cost	21.54%	6.97%	28.51%	\$4,859,497	20.83%	7.36%	28.19%	\$4,573,493
UAAL	<u>34.10%</u>	<u>20.77%</u>	<u>54.87%</u>	<u>9,352,529</u>	<u>33.55%</u>	<u>22.30%</u>	<u>55.85%</u>	<u>9,061,000</u>
Total Contributions	55.64%	27.74%	83.38%	\$14,212,026	54.38%	29.66%	84.04%	\$13,634,493
	Payroll = \$17,044,886				Payroll = \$16,223,813			
<b>Cost Group #11</b>								
<b>San Ramon FD Safety Tier D</b>								
Normal Cost	13.70%	5.79%	19.49%	\$90,185	12.91%	5.74%	18.65%	\$82,946
UAAL	<u>34.10%</u>	<u>20.77%</u>	<u>54.87%</u>	<u>253,897</u>	<u>33.55%</u>	<u>22.30%</u>	<u>55.85%</u>	<u>248,392</u>
Total Contributions	47.80%	26.56%	74.36%	\$344,082	46.46%	28.04%	74.50%	\$331,338
	Payroll = \$462,724				Payroll = \$444,748			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 14 (continued)  
Components of Current and Recommended Employer Contribution Rates**

	December 31, 2015 (Recommended Rates for FY 17-18) <sup>(1)</sup>				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
<b>Cost Group #12</b>								
<b>Non-Enhanced Rodeo-Hercules</b>								
<b>FPD Safety Tier A</b>								
Normal Cost	17.68%	5.70%	23.38%	\$464,184	16.88%	5.91%	22.79%	\$434,567
UAAL	<u>39.26%</u>	<u>24.81%</u>	<u>64.07%</u> <sup>(2)</sup>	<u>1,272,039</u>	<u>40.78%</u>	<u>26.57%</u>	<u>67.35%</u> <sup>(3)</sup>	<u>1,284,250</u>
Total Contributions	56.94%	30.51%	87.45%	\$1,736,223	57.66%	32.48%	90.14%	\$1,718,817
	Payroll = \$1,985,389				Payroll = \$1,906,830			
<b>Cost Group #12</b>								
<b>Non-Enhanced Rodeo-Hercules</b>								
<b>FPD Safety Tier D</b>								
Normal Cost	11.96%	5.10%	17.06%	\$80,766	11.43%	5.10%	16.53%	\$50,910
UAAL	<u>39.26%</u>	<u>24.81%</u>	<u>64.07%</u> <sup>(2)</sup>	<u>303,321</u>	<u>40.78%</u>	<u>26.57%</u>	<u>67.35%</u> <sup>(3)</sup>	<u>207,429</u>
Total Contributions	51.22%	29.91%	81.13%	\$384,087	52.21%	31.67%	83.88%	\$258,339
	Payroll = \$473,421				Payroll = \$307,987			
<b>Total All Employers Combined</b>								
<b>(Aggregate)</b>								
Normal Cost	13.25%	3.85%	17.10%	\$127,598,878	12.87%	4.06%	16.93%	\$118,171,947
UAAL	<u>15.34%</u>	<u>6.79%</u>	<u>22.13%</u>	<u>165,183,385</u>	<u>15.07%</u>	<u>8.06%</u>	<u>23.13%</u>	<u>161,426,454</u>
Total Contributions	28.59%	10.64%	39.23%	\$292,782,263	27.94%	12.12%	40.06%	\$279,598,401
	Payroll = \$746,352,663				Payroll = \$697,831,837			

<sup>(1)</sup> The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.20% of payroll, respectively.

<sup>(2)</sup> Total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,652,779 for FY 17-18. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 17-18. The estimated payroll for FY 17-18 was determined by increasing payroll amounts shown above for 2016 by 18-months of assumed wage inflation.

<sup>(3)</sup> Total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,582,069 for FY 16-17. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 16-17. The estimated payroll for FY 16-17 was determined by increasing payroll amounts shown above for 2015 by 18-months of assumed wage inflation.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

The employer 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.

**Reconciliation of Recommended Employer Contribution Rate**

The chart below details the changes in the recommended employer contribution rate from the prior valuation to the current year's valuation.

**CHART 15**  
**Reconciliation of Recommended Average Employer Contribution from December 31, 2014 to December 31, 2015 Valuation**

	Contribution Rate <sup>(1)</sup>	Estimated Annual Dollar Cost <sup>(2)</sup>
<b>Recommended Average Employer Contribution Rate in December 31, 2014 Valuation</b>	40.06%	\$279,598,401
Effect of investment (gain)/loss <sup>(3)</sup>	(0.99%)	(7,388,891)
Effect of additional UAAL contributions from Sanitary District	(0.02%)	(149,271)
Effect of difference in actual versus expected contributions due to delay in implementation of contribution rates calculated in 12/31/2014 valuation	(0.45%)	(3,358,587)
Effect of lower than expected individual salary increases	(0.09%)	(671,717)
Effect of amortizing prior year's UAAL over a greater than expected projected total payroll	(0.72%)	6,456,340 <sup>(4)</sup>
Effect of lower than expected COLA increases for retirees and beneficiaries	(0.29%)	(2,164,423)
Effect of changes in member demographics on Normal Cost	(0.57%)	(4,254,210)
Effect of mortality gain for retirees and beneficiaries	(0.18%)	(1,343,435)
Effect of net other experience (gains)/losses <sup>(5)</sup>	(0.08%)	6,951,428
Effect of changes in actuarial assumptions	1.89%	14,106,065
Effect of administrative expense load	0.67%	5,000,563
<b>Total change</b>	<b>(0.83%)</b>	<b>13,183,862</b>
<b>Recommended Average Employer Contribution Rate in December 31, 2015 Valuation</b>	<b>39.23%</b>	<b>\$292,782,263</b>

<sup>(1)</sup> These rates *do not* include any employer subvention of member contributions, or member subvention of employer contributions.

<sup>(2)</sup> Based on projected total payroll for each valuation date shown.

<sup>(3)</sup> Return on the valuation value of assets of 8.79% was greater than the 7.25% assumed in the 2014 valuation.

<sup>(4)</sup> Represents the dollar increase in UAAL amortization payments for amortization bases established prior to the December 31, 2015 valuation.

<sup>(5)</sup> Other differences in actual versus expected experience including (but not limited to) disability, withdrawal, retirement and leave cashout experience. Estimated annual dollar cost also reflects change in payroll from prior valuation.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

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, actuarial gains and losses and changes in the actuarial assumptions.

**Reconciliation of Recommended Member Contribution Rate**

The chart below details the changes in the recommended average 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 Recommended Average Member Contribution from December 31, 2014 to December 31, 2015 Valuation**

	Contribution Rate <sup>(1)</sup>	Estimated Annual Dollar Cost <sup>(2)</sup>
<b>Recommended Average Member Contribution Rate in December 31, 2014 Valuation</b>	11.84%	\$82,617,142
Effect of changes in actuarial assumptions	(0.07%)	(522,447)
Effect of administrative expense load	0.47%	3,507,858
Effect of changes in member demographics <sup>(3)</sup>	<u>(0.15%)</u>	<u>4,617,561</u>
<b>Total change</b>	<u>0.25%</u>	<u>\$7,602,972</u>
<b>Recommended Average Member Contribution Rate in December 31, 2015 Valuation</b>	12.09%	\$90,220,114

<sup>(1)</sup> These rates *do not* include any employer subvention of member contributions, or member subvention of employer contributions.

<sup>(2)</sup> Based on projected total payroll for each valuation date shown.

<sup>(3)</sup> Includes changes in demographic profile of active membership. Estimated annual dollar cost also reflects change in payroll from prior valuation.

## SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

### E. FUNDED RATIO

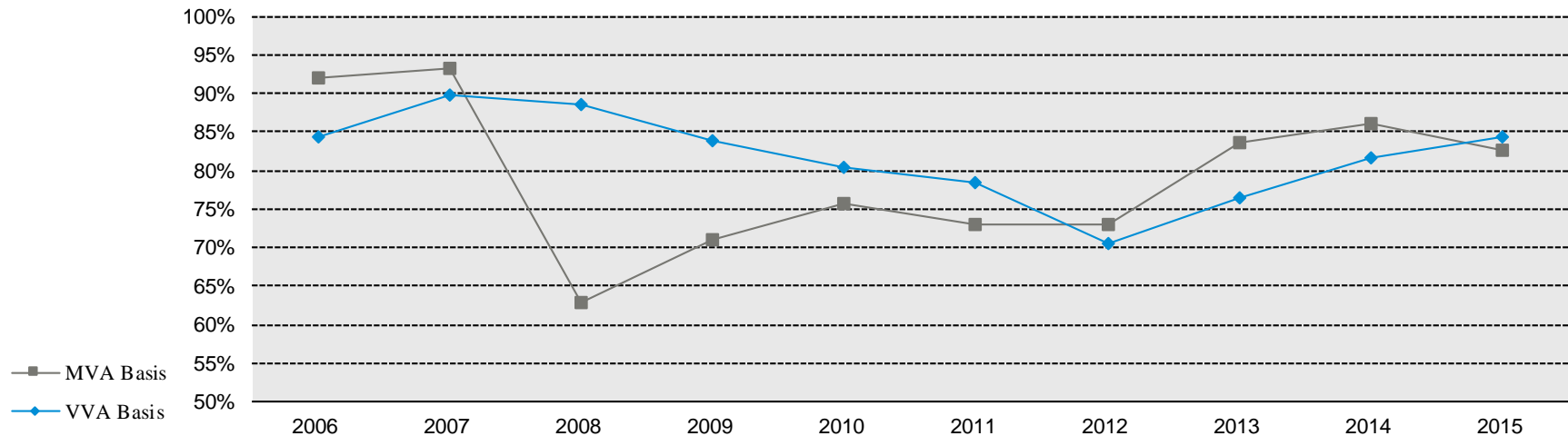
A critical piece of information regarding the Plan's financial status is the funded ratio. The ratios compare the valuation value of assets and market value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover 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 18 on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the valuation or market value of assets is used.

**CHART 17**

**Funded Ratio for Plan Years Ending December 31, 2006 – 2015**



**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**CHART 18  
Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Valuation Value of Assets<sup>(1)</sup> (a)</b>	<b>Actuarial Accrued Liability (AAL)<sup>(2)</sup> (b)</b>	<b>Unfunded/ (Overfunded) AAL (UAAL) (b) – (a)</b>	<b>Funded Ratio (a) / (b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll [(b) – (a)] / (c)</b>
12/31/2006	\$4,460,871,033	\$5,293,977,010	\$883,105,977	84.26%	\$653,953,163	127.40%
12/31/2007	5,016,136,535	5,581,048,225	564,911,690	89.88%	671,617,932	84.11%
12/31/2008	5,282,505,159	5,972,471,074	689,965,915	88.45%	704,947,668	97.87%
12/31/2009	5,290,114,102	6,314,787,187	1,024,673,085	83.77%	694,443,999	147.55%
12/31/2010	5,341,821,711	6,654,036,801	1,312,215,090	80.28%	687,443,206	190.88%
12/31/2011	5,426,719,066	6,915,311,649	1,488,592,583	78.47%	666,394,146	223.38%
12/31/2012	5,482,257,062	7,761,315,535	2,279,058,473	70.64%	652,312,180	349.38%
12/31/2013	5,907,416,432	7,731,097,407	1,823,680,975	76.41%	679,428,911	268.41%
12/31/2014	6,557,496,101	8,027,438,213	1,469,942,112	81.69%	697,831,837	210.64%
12/31/2015	7,136,801,380	8,448,624,096	1,311,822,716	84.47%	746,352,663	175.76%

<sup>(1)</sup> Excludes assets for non-valuation reserves.

<sup>(2)</sup> Excludes liabilities for non-valuation reserves.

**SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association**

**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 CCCERA, the current AVR is about 9.3. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 9.3% of one-year's payroll. Since CCCERA amortizes actuarial gains and losses over a 18-year period, there would be a 0.7% 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 CCCERA, the current LVR is about 11.3. This is about 22% 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, both for the plan in total and separately for General and Safety.*

**CHART 19**  
**Volatility Ratios for Years Ended December 31, 2008 – 2015**

Year Ended December 31	<u>Asset Volatility Ratios</u>			<u>Liability Volatility Ratios</u>		
	General	Safety	Total	General	Safety	Total
2008	4.5	8.1	5.3	6.5	15.0	8.5
2009	5.0	11.4	6.4	7.0	16.0	9.1
2010	5.6	13.1	7.3	7.5	17.2	9.7
2011	5.9	13.6	7.6	8.0	18.6	10.4
2012	6.7	16.2	8.7	9.0	22.5	11.9
2013	7.3	18.2	9.5	8.6	22.3	11.4
2014	7.5	19.7	9.9	8.6	23.5	11.5
2015	7.1	18.7	9.3	8.4	23.3	11.3



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A**

**Table of Plan Coverage**

**i. General Tier 1**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	590	606	-2.6%
Average age	49.9	49.1	N/A
Average service	15.2	14.4	N/A
Projected total payroll <sup>(1)</sup>	\$57,604,252	\$57,134,291	0.8%
Projected average payroll	\$97,634	\$94,281	3.6%
Account balances	\$56,845,843	\$51,259,202	10.9%
Total active members with at least five years of service	518	518	0.0%
<b>Vested terminated members</b>	238	239	-0.4%
<b>Retired members</b>			
Number in pay status	2,574	2,610	-1.4%
Average age	74.4	74.0	N/A
Average monthly benefit	\$3,958	\$3,855	2.7%
<b>Disabled members</b>			
Number in pay status <sup>(2)</sup>	275	283	-2.8%
Average age	71.0	70.5	N/A
Average monthly benefit	\$2,744	\$2,665	3.0%
<b>Beneficiaries</b>			
Number in pay status	738	685	7.7%
Average age	78.0	77.2	N/A
Average monthly benefit	\$2,129	\$2,055	3.6%

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale.

<sup>(2)</sup> For 2015, includes 204 members receiving a service-connected disability and 71 members receiving an ordinary disability.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**ii. General Tier 2**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number <sup>(1)</sup>	0	0	N/A
Average age	N/A	N/A	N/A
Average service	N/A	N/A	N/A
Projected total payroll <sup>(2)</sup>	N/A	N/A	N/A
Projected average payroll	N/A	N/A	N/A
Account balances	N/A	N/A	N/A
Total active members with at least five years of service	0	0	N/A
<b>Vested terminated members</b>	220	248	-11.3%
<b>Retired members</b>			
Number in pay status	428	417	2.6%
Average age	74.1	73.6	N/A
Average monthly benefit	\$845	\$824	2.5%
<b>Disabled members</b>			
Number in pay status <sup>(3)</sup>	46	42	9.5%
Average age	69.8	70.5	N/A
Average monthly benefit	\$2,237	\$2,074	7.9%
<b>Beneficiaries</b>			
Number in pay status	101	98	3.1%
Average age	67.1	66.9	N/A
Average monthly benefit	\$828	\$834	-0.7%

<sup>(1)</sup> As of the December 31, 2005 valuation, there are no longer any Tier 2 Active Members since they have all transferred to Tier 3.

<sup>(2)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale.

<sup>(3)</sup> For 2015, includes 26 members receiving a service-connected disability and 20 members receiving an ordinary disability.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**iii. General Tier 3**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2015</b>	<b>2014</b>	
<b>Active members in valuation</b>			
Number	5,441	5,729	-5.0%
Average age	49.3	48.4	N/A
Average service	12.3	11.4	N/A
Projected total payroll <sup>(1)</sup>	\$425,927,553	\$431,305,388	-1.2%
Projected average payroll	\$78,281	\$75,285	4.0%
Account balances	\$452,009,665	\$407,046,962	11.0%
Total active members with at least five years of service	4,420	4,425	-0.1%
<b>Vested terminated members</b>			
	1,590	1,613	-1.4%
<b>Retired members</b>			
Number in pay status	2,525	2,412	4.7%
Average age	66.7	66.1	N/A
Average monthly benefit	\$2,656	\$2,616	1.5%
<b>Disabled members</b>			
Number in pay status <sup>(2)</sup>	86	85	1.2%
Average age	61.3	61.8	N/A
Average monthly benefit	\$2,250	\$2,185	3.0%
<b>Beneficiaries</b>			
Number in pay status	170	134	26.9%
Average age	61.2	60.5	N/A
Average monthly benefit	\$1,582	\$1,590	-0.5%

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale.

<sup>(2)</sup> For 2015, include 24 members receiving a service-connected disability and 62 members receiving an ordinary disability.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**iv. General Tier 4 – 2% COLA**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	5	2	150.0%
Average age	40.4	31.8	N/A
Average service	0.9	0.3	N/A
Projected total payroll <sup>(1)</sup>	\$230,376	\$51,082	351.0%
Projected average payroll	\$46,075	\$25,541	80.4%
Account balances	\$15,146	\$2,106	619.2%
Total active members with at least five years of service	0	0	N/A
<b>Vested terminated members</b>			
	0	0	N/A
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**v. General Tier 4 – 3% COLA**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	78	44	77.3%
Average age	41.3	38.8	N/A
Average service	1.0	0.7	N/A
Projected total payroll <sup>(1)</sup>	\$5,242,937	\$2,968,756	76.6%
Projected average payroll	\$67,217	\$67,472	-0.4%
Account balances	\$473,152	\$166,976	183.4%
Total active members with at least five years of service	0	0	N/A
<b>Vested terminated members</b>	4	3	33.3%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**vi. General Tier 5 – 2% COLA**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	1,151	439	162.2%
Average age	38.5	37.1	N/A
Average service	0.6	0.3	N/A
Projected total payroll <sup>(1)</sup>	\$54,975,056	\$19,264,886	185.4%
Projected average payroll	\$47,763	\$43,884	8.8%
Account balances	\$3,677,402	\$667,597	450.8%
Total active members with at least five years of service	7	1	600.0%
<b>Vested terminated members</b>	132	23	473.9%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**vii. General Tier 5 – 3% COLA**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	948	954	-0.6%
Average age	40.8	39.6	N/A
Average service	1.9	1.1	N/A
Projected total payroll <sup>(1)</sup>	\$58,067,274	\$50,705,693	14.5%
Projected average payroll	\$61,252	\$53,151	15.2%
Account balances	\$9,632,112	\$5,038,418	91.2%
Total active members with at least five years of service	5	0	N/A
<b>Vested terminated members</b>	209	140	49.3%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**viii. Safety Tier A**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	1,048	1,064	-1.5%
Average age	43.9	43.0	N/A
Average service	14.5	13.8	N/A
Projected total payroll <sup>(1)</sup>	\$115,030,411	\$113,458,371	1.4%
Projected average payroll	\$109,762	\$106,634	2.9%
Account balances	\$333,257,056	\$301,928,599	10.4%
Total active members with at least five years of service	987	1,003	-1.6%
<b>Vested terminated members</b>			
	307	317	-3.2%
<b>Retired members</b>			
Number in pay status	1,211	1,226	-1.2%
Average age	65.7	65.4	N/A
Average monthly benefit	\$7,455	\$7,346	1.5%
<b>Disabled members</b>			
Number in pay status <sup>(2)</sup>	514	509	1.0%
Average age	62.8	62.3	N/A
Average monthly benefit	\$5,710	\$5,542	3.0%
<b>Beneficiaries</b>			
Number in pay status	396	368	7.6%
Average age	68.4	67.9	N/A
Average monthly benefit	\$3,540	\$3,437	3.0%

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale.

<sup>(2)</sup> For 2015, include 493 members receiving a service-connected disability and 21 members receiving an ordinary disability.



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**ix. Safety Tier C**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	147	164	-10.4%
Average age	35.1	34.0	N/A
Average service	5.9	5.0	N/A
Projected total payroll <sup>(1)</sup>	\$13,381,773	\$14,194,670	-5.7%
Projected average payroll	\$91,032	\$86,553	5.2%
Account balances	\$9,277,790	\$7,816,546	18.7%
Total active members with at least five years of service	77	68	13.2%
<b>Vested terminated members</b>			
	61	51	19.6%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status <sup>(2)</sup>	4	2	100.0%
Average age	40.5	37.6	N/A
Average monthly benefit	\$3,624	\$3,588	1.0%
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale.

<sup>(2)</sup> For 2015, include 4 members receiving a service-connected disability.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**x. Safety Tier D**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2015</b>	<b>2014</b>	
<b>Active members in valuation</b>			
Number	92	81	13.6%
Average age	33.4	33.3	N/A
Average service	1.5	0.8	N/A
Projected total payroll <sup>(1)</sup>	\$6,001,166	\$4,502,513	33.3%
Projected average payroll	\$65,230	\$55,587	17.3%
Account balances	\$1,626,968	\$653,931	148.8%
Total active members with at least five years of service	0	0	N/A
<b>Vested terminated members</b>			
	13	10	30.0%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPPRA formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT A (continued)**

**Table of Plan Coverage**

**xi. Safety Tier E**

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
<b>Active members in valuation</b>			
Number	142	76	86.8%
Average age	31.2	31.0	N/A
Average service	1.3	1.0	N/A
Projected total payroll <sup>(1)</sup>	\$9,891,867	\$4,246,187	133.0%
Projected average payroll	\$69,661	\$55,871	24.7%
Account balances	\$1,675,580	\$560,378	199.0%
Total active members with at least five years of service	0	0	N/A
<b>Vested terminated members</b>			
	16	3	433.3%
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

<sup>(1)</sup> Calculated by increasing actual calendar year salaries by the assumed salary scale. Projected compensation for 2016 has been limited. It is our understanding that in the determination of pension benefits under the PEPRAs formulas, the compensation that can be taken into account for 2016 is equal to \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$117,020, or \$140,424). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2016. (reference: Section 7522.10(d))

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**i. General Tier 1 Non-Enhanced**

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	--	--	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--	--	--
30 - 34	2	2	--	--	--	--	--	--	--	--
35 - 39	\$27,235	\$27,235	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
45 - 49	3	--	--	2	1	--	--	--	--	--
50 - 54	104,014	--	--	\$120,428	\$71,184	--	--	--	--	--
55 - 59	2	1	1	--	--	--	--	--	--	--
60 - 64	67,460	44,725	\$90,194	--	--	--	--	--	--	--
65 - 69	2	1	1	--	--	--	--	--	--	--
70 & over	72,534	55,938	89,130	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
	1	--	1	--	--	--	--	--	--	--
	39,537	--	39,537	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
<b>Total</b>	<b>10</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
	\$68,603	\$38,783	\$72,954	\$120,428	\$71,184	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**ii. General Tier 1 Enhanced**

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	1	1	--	--	--	--	--	--	--	--
	\$78,923	\$78,923	--	--	--	--	--	--	--	--
25 - 29	14	11	3	--	--	--	--	--	--	--
	93,595	96,567	\$82,700	--	--	--	--	--	--	--
30 - 34	39	14	19	6	--	--	--	--	--	--
	93,526	79,238	102,984	\$96,912	--	--	--	--	--	--
35 - 39	51	15	15	18	3	--	--	--	--	--
	98,516	96,248	97,460	106,449	\$67,532	--	--	--	--	--
40 - 44	66	10	15	23	16	2	--	--	--	--
	92,668	89,450	94,843	88,355	103,101	\$58,589	--	--	--	--
45 - 49	92	8	17	28	21	12	5	1	--	--
	102,398	118,730	99,333	112,548	94,938	90,977	\$82,968	\$130,499	--	--
50 - 54	128	9	24	29	34	10	18	2	2	--
	101,520	133,761	93,563	95,271	103,378	93,517	110,505	112,630	\$58,992	--
55 - 59	106	11	16	19	24	13	14	4	5	--
	99,741	94,942	97,523	103,314	96,537	101,392	113,080	119,041	62,105	--
60 - 64	58	6	11	15	12	5	3	3	3	--
	95,971	76,800	88,676	115,025	95,696	104,776	88,931	94,348	60,877	--
65 - 69	20	--	3	11	2	2	1	--	--	1
	93,996	--	57,549	88,133	89,987	124,926	79,520	--	--	\$228,462
70 & over	5	3	--	1	1	--	--	--	--	--
	61,434	58,211	--	82,180	50,359	--	--	--	--	--
Total	580	88	123	150	113	44	41	10	10	1
	\$98,135	\$95,707	\$95,382	\$101,226	\$97,844	\$96,270	\$105,692	\$111,497	\$61,114	\$228,462

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**iii. General Tier 3 Enhanced**

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	3	3	--	--	--	--	--	--	--	--
	\$50,290	\$50,290	--	--	--	--	--	--	--	--
25 - 29	100	82	18	--	--	--	--	--	--	--
	58,468	58,388	\$58,835	--	--	--	--	--	--	--
30 - 34	391	176	180	35	--	--	--	--	--	--
	72,518	72,579	73,067	\$69,382	--	--	--	--	--	--
35 - 39	632	183	260	153	36	--	--	--	--	--
	77,993	77,555	81,585	75,683	\$64,094	--	--	--	--	--
40 - 44	709	140	226	196	139	8	--	--	--	--
	81,574	78,204	78,557	84,800	85,567	\$77,341	--	--	--	--
45 - 49	902	148	221	217	221	53	40	2	--	--
	80,372	71,213	77,117	87,038	81,951	86,199	\$80,744	\$58,206	--	--
50 - 54	1,012	140	170	230	219	109	108	35	1	--
	80,349	69,547	74,242	77,252	79,500	100,764	92,070	79,857	\$55,462	--
55 - 59	840	102	181	168	170	81	93	39	6	--
	78,850	71,565	72,446	76,688	80,446	82,736	94,878	84,194	75,477	--
60 - 64	595	78	121	118	125	63	63	24	3	--
	78,011	75,468	72,734	71,474	84,929	85,813	80,659	80,019	90,349	--
65 - 69	216	32	59	51	37	20	13	3	1	--
	70,058	55,079	66,427	77,167	75,458	69,119	79,489	69,663	98,673	--
70 & over	41	7	10	11	10	--	2	1	--	--
	69,675	61,373	96,258	72,785	53,614	--	43,018	41,662	--	--
Total	5,441	1,091	1,446	1,179	957	334	319	104	11	--
	\$78,281	\$71,960	\$75,820	\$79,167	\$80,818	\$88,805	\$88,394	\$80,443	\$79,822	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**iv. General Tier 4 – 2% COLA**

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 \$35,993	2 \$35,993	--	--	--	--	--	--	--	--
35 - 39	1 35,630	1 35,630	--	--	--	--	--	--	--	--
40 - 44	1 63,387	1 63,387	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	1 59,373	1 59,373	--	--	--	--	--	--	--	--
55 - 59	--	--	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	5 \$46,075	5 \$46,075	--	--	--	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**v. General Tier 4 – 3% COLA**

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	3	3	--	--	--	--	--	--	--	--
	\$54,431	\$54,431	--	--	--	--	--	--	--	--
25 - 29	11	11	--	--	--	--	--	--	--	--
	56,318	56,318	--	--	--	--	--	--	--	--
30 - 34	15	15	--	--	--	--	--	--	--	--
	80,330	80,330	--	--	--	--	--	--	--	--
35 - 39	8	8	--	--	--	--	--	--	--	--
	57,291	57,291	--	--	--	--	--	--	--	--
40 - 44	12	12	--	--	--	--	--	--	--	--
	65,556	65,556	--	--	--	--	--	--	--	--
45 - 49	8	8	--	--	--	--	--	--	--	--
	84,889	84,889	--	--	--	--	--	--	--	--
50 - 54	11	11	--	--	--	--	--	--	--	--
	59,341	59,341	--	--	--	--	--	--	--	--
55 - 59	9	9	--	--	--	--	--	--	--	--
	71,889	71,889	--	--	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--	--	--
	31,328	31,328	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	78	78	--	--	--	--	--	--	--	--
	\$67,217	\$67,217	--	--	--	--	--	--	--	--



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**vi. General Tier 5 – 2% COLA**

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	74	74	--	--	--	--	--	--	--	--
	\$37,366	\$37,366	--	--	--	--	--	--	--	--
25 - 29	240	240	--	--	--	--	--	--	--	--
	44,037	44,037	--	--	--	--	--	--	--	--
30 - 34	229	229	--	--	--	--	--	--	--	--
	52,209	52,209	--	--	--	--	--	--	--	--
35 - 39	175	175	--	--	--	--	--	--	--	--
	48,157	48,157	--	--	--	--	--	--	--	--
40 - 44	118	118	--	--	--	--	--	--	--	--
	50,912	50,912	--	--	--	--	--	--	--	--
45 - 49	104	104	--	--	--	--	--	--	--	--
	47,187	47,187	--	--	--	--	--	--	--	--
50 - 54	79	79	--	--	--	--	--	--	--	--
	50,576	50,576	--	--	--	--	--	--	--	--
55 - 59	82	82	--	--	--	--	--	--	--	--
	47,195	47,195	--	--	--	--	--	--	--	--
60 - 64	38	37	1	--	--	--	--	--	--	--
	48,555	48,583	\$47,514	--	--	--	--	--	--	--
65 - 69	7	7	--	--	--	--	--	--	--	--
	50,110	50,110	--	--	--	--	--	--	--	--
70 & over	5	5	--	--	--	--	--	--	--	--
	56,229	56,229	--	--	--	--	--	--	--	--
Total	1,151	1,150	1	--	--	--	--	--	--	--
	\$47,763	\$47,763	\$47,514	--	--	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**vii. General Tier 5 – 3% COLA**

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	15	15	--	--	--	--	--	--	--	--
	\$46,939	\$46,939	--	--	--	--	--	--	--	--
25 - 29	139	139	--	--	--	--	--	--	--	--
	54,478	54,478	--	--	--	--	--	--	--	--
30 - 34	206	206	--	--	--	--	--	--	--	--
	61,519	61,519	--	--	--	--	--	--	--	--
35 - 39	164	164	--	--	--	--	--	--	--	--
	64,152	64,152	--	--	--	--	--	--	--	--
40 - 44	119	119	--	--	--	--	--	--	--	--
	67,949	67,949	--	--	--	--	--	--	--	--
45 - 49	89	89	--	--	--	--	--	--	--	--
	61,532	61,532	--	--	--	--	--	--	--	--
50 - 54	86	86	--	--	--	--	--	--	--	--
	63,586	63,586	--	--	--	--	--	--	--	--
55 - 59	73	72	1	--	--	--	--	--	--	--
	56,082	56,151	\$51,115	--	--	--	--	--	--	--
60 - 64	44	44	--	--	--	--	--	--	--	--
	59,159	59,159	--	--	--	--	--	--	--	--
65 - 69	10	10	--	--	--	--	--	--	--	--
	75,267	75,267	--	--	--	--	--	--	--	--
70 & over	3	3	--	--	--	--	--	--	--	--
	38,900	38,900	--	--	--	--	--	--	--	--
Total	948	947	1	--	--	--	--	--	--	--
	\$61,252	\$61,263	\$51,115	--	--	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**viii. Safety Tier A Non-Enhanced**

Age	Total	Years of Service						
		0-4	5-9	10-14	15-19	20-24	25-29	30 & over
Under 25	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
30 - 34	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
35 - 39	3	2	--	1	--	--	--	--
	\$126,009	\$119,456	--	\$139,114	--	--	--	--
40 - 44	2	--	--	--	2	--	--	--
	137,137	--	--	--	\$137,137	--	--	--
45 - 49	5	1	--	--	1	--	3	--
	134,941	123,669	--	--	134,187	--	\$138,950	--
50 - 54	1	--	--	--	--	--	1	--
	136,323	--	--	--	--	--	136,323	--
55 - 59	3	--	1	--	--	1	--	1
	174,021	--	\$218,348	--	--	\$167,331	--	\$136,383
60 - 64	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
<b>Total</b>	<b>14</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>1</b>
	<b>\$141,814</b>	<b>\$120,860</b>	<b>\$218,348</b>	<b>\$139,114</b>	<b>\$136,153</b>	<b>\$167,331</b>	<b>\$138,293</b>	<b>\$136,383</b>

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**ix. Safety Tier A Enhanced**

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	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	23	20	3	--	--	--	--	--	--	--
	\$78,281	\$73,373	\$110,998	--	--	--	--	--	--	--
30 - 34	115	31	76	8	--	--	--	--	--	--
	101,585	88,626	105,476	\$114,842	--	--	--	--	--	--
35 - 39	177	19	64	79	15	--	--	--	--	--
	103,687	87,978	104,469	105,433	\$111,051	--	--	--	--	--
40 - 44	249	9	35	114	85	6	--	--	--	--
	107,607	103,060	108,185	105,772	109,703	\$116,237	--	--	--	--
45 - 49	281	6	29	67	89	60	30	--	--	--
	116,082	128,521	103,865	110,140	112,157	121,366	\$139,747	--	--	--
50 - 54	126	7	9	31	40	19	15	5	--	--
	118,126	100,981	101,978	108,840	112,368	133,582	143,785	\$139,137	--	--
55 - 59	38	2	9	6	7	9	4	1	--	--
	110,702	110,750	101,074	86,476	91,753	144,965	130,934	85,947	--	--
60 - 64	22	--	7	9	4	1	--	1	--	--
	109,406	--	100,569	110,610	108,032	117,356	--	157,969	--	--
65 - 69	1	--	1	--	--	--	--	--	--	--
	118,344	--	118,344	--	--	--	--	--	--	--
70 & over	2	2	--	--	--	--	--	--	--	--
	90,345	90,345	--	--	--	--	--	--	--	--
Total	1,034	96	233	314	240	95	49	7	--	--
	\$109,328	\$90,564	\$105,080	\$106,923	\$110,590	\$125,679	\$140,264	\$134,229	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**x. Safety Tier C**

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	--	--	--	--	--	--	--	--	--	--
25 - 29	43	33	10	--	--	--	--	--	--	--
	\$88,800	\$86,886	\$95,115	--	--	--	--	--	--	--
30 - 34	46	23	23	--	--	--	--	--	--	--
	90,402	86,872	93,933	--	--	--	--	--	--	--
35 - 39	28	10	17	1	--	--	--	--	--	--
	88,254	83,598	90,661	\$93,909	--	--	--	--	--	--
40 - 44	13	3	10	--	--	--	--	--	--	--
	89,699	89,624	89,722	--	--	--	--	--	--	--
45 - 49	9	3	6	--	--	--	--	--	--	--
	96,227	93,345	97,668	--	--	--	--	--	--	--
50 - 54	5	4	1	--	--	--	--	--	--	--
	123,069	130,025	95,245	--	--	--	--	--	--	--
55 - 59	2	1	1	--	--	--	--	--	--	--
	95,997	97,202	94,792	--	--	--	--	--	--	--
60 - 64	1	--	1	--	--	--	--	--	--	--
	94,270	--	94,270	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	147	77	69	1	--	--	--	--	--	--
	\$91,032	\$89,188	\$93,049	\$93,909	--	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015  
By Age and Years of Service**

**xi. Safety Tier D**

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	2	2	--	--	--	--	--	--	--	--
	\$62,445	\$62,445	--	--	--	--	--	--	--	--
25 - 29	34	34	--	--	--	--	--	--	--	--
	51,705	51,705	--	--	--	--	--	--	--	--
30 - 34	33	33	--	--	--	--	--	--	--	--
	71,944	71,944	--	--	--	--	--	--	--	--
35 - 39	6	6	--	--	--	--	--	--	--	--
	69,645	69,645	--	--	--	--	--	--	--	--
40 - 44	7	7	--	--	--	--	--	--	--	--
	71,763	71,763	--	--	--	--	--	--	--	--
45 - 49	3	3	--	--	--	--	--	--	--	--
	72,853	72,853	--	--	--	--	--	--	--	--
50 - 54	4	4	--	--	--	--	--	--	--	--
	75,212	75,212	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	91,645	91,645	--	--	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--	--	--
	121,264	121,264	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
<b>Total</b>	<b>92</b>	<b>92</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
	<b>\$65,230</b>	<b>\$65,230</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT B (continued)**

**Members in Active Service and Projected Payroll as of December 31, 2015**

**By Age and Years of Service**

**xii. Safety Tier E**

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	19	19	--	--	--	--	--	--	--	--
	\$72,564	\$72,564	--	--	--	--	--	--	--	--
25 - 29	70	70	--	--	--	--	--	--	--	--
	67,963	67,963	--	--	--	--	--	--	--	--
30 - 34	23	23	--	--	--	--	--	--	--	--
	68,924	68,924	--	--	--	--	--	--	--	--
35 - 39	12	12	--	--	--	--	--	--	--	--
	66,780	66,780	--	--	--	--	--	--	--	--
40 - 44	6	6	--	--	--	--	--	--	--	--
	67,682	67,682	--	--	--	--	--	--	--	--
45 - 49	3	3	--	--	--	--	--	--	--	--
	76,195	76,195	--	--	--	--	--	--	--	--
50 - 54	5	5	--	--	--	--	--	--	--	--
	72,086	72,086	--	--	--	--	--	--	--	--
55 - 59	4	4	--	--	--	--	--	--	--	--
	93,512	93,512	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
65 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	142	142	--	--	--	--	--	--	--	--
	\$69,661	\$69,661	--	--	--	--	--	--	--	--

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT C**

**Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries**

**i. General Tier 1 as of December 31, 2015**

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
25 - 29	4	2	--	--	--	2	--	--	--	--
30 - 34	\$689	\$968	--	--	--	\$410	--	--	--	--
35 - 39	3	1	--	--	1	1	--	--	--	--
40 - 44	889	969	--	--	\$1,288	410	--	--	--	--
45 - 49	5	1	--	--	--	3	--	1	--	--
50 - 54	866	\$1,214	--	--	--	718	--	\$961	--	--
55 - 59	3	1	--	1	--	1	--	--	--	--
60 - 64	1,570	\$1,843	--	\$2,305	--	562	--	--	--	--
65 - 69	9	2	--	1	1	5	--	--	--	--
70 - 74	1,518	2,296	--	1,544	2,195	1,066	--	--	--	--
75 - 80	37	21	4	3	4	4	--	1	--	--
80 - 84	1,382	1,504	\$1,665	563	1,219	1,370	--	829	--	--
85 - 89	179	100	44	11	6	11	3	3	--	1
90 & over	3,001	3,555	2,667	2,129	2,473	1,461	\$2,007	1,224	--	\$377
	410	153	165	54	11	9	9	5	1	3
	3,968	4,765	4,263	2,050	2,836	2,826	1,762	1,452	\$2,091	657
	658	87	196	222	97	25	10	12	5	4
	4,195	4,798	5,544	4,178	2,151	2,438	2,260	1,906	1,874	1,056
	595	17	84	241	130	70	27	15	9	2
	4,051	4,208	4,841	5,173	3,261	1,968	2,307	2,742	2,152	582
	497	2	9	100	180	104	67	19	11	5
	3,625	667	2,741	5,142	4,311	2,701	1,845	2,144	2,595	2,293
	450	--	1	15	97	142	100	72	16	7
	3,095	--	5,795	4,109	4,425	3,645	2,197	1,599	2,086	1,484
	396	--	--	1	17	102	116	93	49	18
	2,716	--	--	2,915	3,003	3,894	2,951	1,770	1,623	2,114
	341	--	--	1	6	10	63	120	103	38
	2,433	--	--	1,193	3,345	2,851	3,214	2,391	2,246	1,560
Total	3,587	387	503	650	550	489	395	341	194	78
	\$3,489	\$4,178	\$4,674	\$4,452	\$3,570	\$3,025	\$2,519	\$2,006	\$2,081	\$1,627

Note: Total retired benefit \$12,514,056, average age 74.9 and average years retired 18.4.



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT C (continued)**

**Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries**

**ii. General Tier 2 as of December 31, 2015**

Age	Total	Years of Retirement								
		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	--	--	--	2	--	--	--	--	--
	\$776	--	--	--	\$776	--	--	--	--	--
35 - 39	2	--	--	--	1	1	--	--	--	--
	537	--	--	--	631	\$443	--	--	--	--
40 - 44	7	--	--	2	4	1	--	--	--	--
	794	--	--	\$727	600	1,705	--	--	--	--
45 - 49	11	--	1	--	4	5	1	--	--	--
	1,065	--	\$604	--	1,510	759	\$1,275	--	--	--
50 - 54	9	5	--	--	2	2	--	--	--	--
	1,019	\$152	--	--	2,491	1,712	--	--	--	--
55 - 59	30	11	12	2	3	2	--	--	--	--
	657	425	641	1,356	1,228	475	--	--	--	--
60 - 64	49	9	15	15	6	3	1	--	--	--
	893	473	794	662	1,639	1,877	2,202	--	--	--
65 - 69	111	11	22	34	36	6	2	--	--	--
	861	269	903	787	915	1,768	1,224	--	--	--
70 - 74	113	--	18	25	42	23	4	1	--	--
	907	--	515	1,340	743	970	1,281	\$1,057	--	--
75 - 80	87	--	4	29	39	13	2	--	--	--
	1,194	--	816	1,034	1,398	950	1,874	--	--	--
80 - 84	96	1	--	13	39	31	8	4	--	--
	1,054	878	--	771	1,264	729	1,988	621	--	--
85 - 89	45	--	--	2	13	25	4	1	--	--
	902	--	--	179	941	903	1,220	543	--	--
90 & over	13	--	--	--	2	8	3	--	--	--
	918	--	--	--	655	641	1,833	--	--	--
Total	575	37	72	122	193	120	25	6	--	--
	\$953	\$366	\$731	\$940	\$1,091	\$929	\$1,643	\$681	--	--

Note: Total retired benefit \$548,174, average age 72.5 and average years retired 16.0.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT C (continued)**

**Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries**

**iii. General Tier 3 as of December 31, 2015**

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	1	--	1	--	--	--	--	--	--	--
	\$1,700	--	\$1,700	--	--	--	--	--	--	--
25 - 29	1	--	--	1	--	--	--	--	--	--
	1,802	--	--	\$1,802	--	--	--	--	--	--
30 - 34	6	2	--	3	1	--	--	--	--	--
	1,172	\$1,147	--	1,336	\$729	--	--	--	--	--
35 - 39	8	2	2	4	--	--	--	--	--	--
	1,375	2,139	1,646	857	--	--	--	--	--	--
40 - 44	8	4	2	2	--	--	--	--	--	--
	1,264	1,404	1,008	1,239	--	--	--	--	--	--
45 - 49	14	6	2	5	1	--	--	--	--	--
	1,428	2,168	1,243	697	1,005	--	--	--	--	--
50 - 54	122	108	7	6	1	--	--	--	--	--
	1,824	1,746	2,989	1,868	1,813	--	--	--	--	--
55 - 59	363	268	85	9	1	--	--	--	--	--
	2,299	2,519	1,647	1,977	1,667	--	--	--	--	--
60 - 64	623	398	165	58	2	--	--	--	--	--
	2,834	3,058	2,714	1,672	1,764	--	--	--	--	--
65 - 69	827	428	279	108	11	1	--	--	--	--
	2,904	2,941	3,209	2,146	1,250	\$1,986	--	--	--	--
70 - 74	528	129	219	161	19	--	--	--	--	--
	2,551	2,421	2,860	2,385	1,276	--	--	--	--	--
75 - 80	212	18	77	86	30	--	1	--	--	--
	2,032	1,957	2,262	1,998	1,609	--	\$1,423	--	--	--
80 - 84	60	4	14	32	10	--	--	--	--	--
	1,673	2,321	2,259	1,328	1,697	--	--	--	--	--
85 - 89	7	1	4	1	1	--	--	--	--	--
	1,478	716	701	6,097	727	--	--	--	--	--
90 & over	1	--	1	--	--	--	--	--	--	--
	4,529	--	4,529	--	--	--	--	--	--	--
Total	2,781	1,368	858	476	77	1	1	--	--	--
	\$2,578	\$2,721	\$2,742	\$2,053	\$1,464	\$1,986	\$1,423	--	--	--

Note: Total retired benefit \$7,168,459, average age 66.2 and average years retired 6.2.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT C (continued)**

**Average Monthly Benefit and Membership Distribution of Retired Members and Beneficiaries  
iv. Safety Tier A and Tier C as of December 31, 2015**

Age	Total	Years of Retirement								
		0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40 & over
Under 25	6	--	--	3	--	2	--	1	--	--
	\$1,780	--	--	\$1,343	--	\$1,383	--	\$3,885	--	--
25 - 29	1	--	--	1	--	--	--	--	--	--
	840	--	--	840	--	--	--	--	--	--
30 - 34	4	3	--	--	--	1	--	--	--	--
	2,983	\$3,590	--	--	--	1,162	--	--	--	--
35 - 39	14	7	6	--	--	1	--	--	--	--
	3,552	3,912	3,531	--	--	1,162	--	--	--	--
40 - 44	24	4	9	10	--	1	--	--	--	--
	3,885	2,832	4,312	4,226	--	843	--	--	--	--
45 - 49	66	37	12	13	1	3	--	--	--	--
	4,351	5,069	4,175	3,321	\$3,818	835	--	--	--	--
50 - 54	273	202	28	19	18	6	--	--	--	--
	6,360	6,990	6,042	3,420	4,001	3,007	--	--	--	--
55 - 59	323	124	142	24	17	10	5	1	--	--
	6,782	7,095	7,679	3,931	4,039	3,483	\$3,814	3,318	--	--
60 - 64	318	40	111	117	24	17	5	2	2	--
	7,264	6,829	8,567	7,739	3,442	3,769	4,393	2,623	\$3,247	--
65 - 69	396	16	75	174	63	35	15	10	7	1
	6,756	4,393	8,459	8,452	4,334	3,536	3,053	3,064	3,624	\$1,356
70 - 74	306	6	22	72	115	44	19	14	9	5
	6,204	3,869	3,932	7,410	7,870	4,011	4,126	3,187	3,665	3,563
75 - 80	165	1	7	5	39	60	31	12	5	5
	5,902	4,138	3,603	4,288	6,442	7,341	4,863	3,396	4,371	3,585
80 - 84	114	--	--	--	11	29	32	25	11	6
	5,338	--	--	--	6,086	6,844	5,623	3,783	4,175	3,781
85 - 89	79	--	--	--	--	4	14	26	22	13
	4,717	--	--	--	--	1,845	5,929	5,007	4,802	3,570
90 & over	36	--	--	--	--	--	1	3	13	19
	4,438	--	--	--	--	--	3,666	7,076	4,688	3,891
<b>Total</b>	<b>2,125</b>	<b>440</b>	<b>412</b>	<b>438</b>	<b>288</b>	<b>213</b>	<b>122</b>	<b>94</b>	<b>69</b>	<b>49</b>
	<b>\$6,296</b>	<b>\$6,590</b>	<b>\$7,444</b>	<b>\$7,262</b>	<b>\$5,984</b>	<b>\$5,033</b>	<b>\$4,775</b>	<b>\$3,983</b>	<b>\$4,336</b>	<b>\$3,676</b>

*Note: Total retired benefit \$13,378,765, average age 65.5 and average years retired 14.5*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT D**

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

	<b>Active Participants</b>	<b>Vested Terminated Members</b>	<b>Pensioners</b>	<b>Disableds</b>	<b>Beneficiaries</b>	<b>Total</b>
Number as of December 31, 2014	9,159	2,647	6,665	921	1,285	20,677
New participants	1,135	89	0	0	125	1,349
Terminations – with vested rights	-330	330	0	0	0	0
Contribution refunds	-155	-169	0	0	0	-324
Retirements	-184	-60	244	0	0	0
New disabilities	-16	0	-9	25	0	0
Return to work	43	-42	-1	0	0	0
Died with or without beneficiary	-8	-2	-159	-21	-10	-200
Data adjustments	<u>-2</u>	<u>-3</u>	<u>-2</u>	<u>0</u>	<u>5</u>	<u>-2</u>
Number as of December 31, 2015	9,642	2,790	6,738	925	1,405	21,500

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT E**

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

	Year Ended December 31, 2015	Year Ended December 31, 2014
<b>Contribution income:</b>		
Employer contributions	\$323,720,270	\$293,760,413
Employee contributions	<u>85,360,637</u>	<u>78,257,665</u>
Net contribution income	\$409,080,907	\$372,018,078
<b>Investment income:</b>		
Interest, dividends and other income	\$173,789,634	\$160,135,921
Adjustment toward market value <sup>(1)</sup>	454,583,447	561,485,134
Less investment and administrative fees	<u>(51,173,958)</u>	<u>(48,580,188)</u>
Net investment income	<u>577,199,123</u>	<u>673,040,867</u>
<b>Total income available for benefits</b>	<b>\$986,280,030</b>	<b>\$1,045,058,945</b>
<b>Less benefit payments:</b>		
Benefits paid	\$(399,843,820)	\$(387,026,328)
Refunds of contributions	(5,348,722)	(6,798,277)
Adjustments/transfers/other expenses	<u>(1,711,824)</u>	<u>(1,123,100)</u>
Net benefit payments	\$(406,904,366)	\$(394,947,705)
<b>Change in reserve for future benefits</b>	<b>\$579,375,664</b>	<b>\$650,111,240</b>

<sup>(1)</sup> Equals the "non-cash" earnings on investments implicitly included in the Actuarial Value of Assets.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT F  
Summary Statement of Assets**

	Year Ended December 31, 2015	Year Ended December 31, 2014
<b>Cash equivalents</b>	\$583,481,915	\$613,763,830
<b>Other Assets</b>	484,248	1,408,938
<b>Accounts receivable:</b>		
Investment trades	\$494,428,756	\$772,963,134
Investment income	22,027,298	25,967,651
Employee and employer contributions	8,497,351	8,859,556
Additional contributions <sup>(1)</sup>	<u>17,229,968</u>	<u>18,774,112</u>
Total accounts receivable	542,183,373	826,564,453
<b>Investments:</b>		
Stocks	\$2,843,799,249	\$2,850,120,402
Bonds	2,269,753,558	2,051,100,371
Real estate	859,795,614	934,126,982
Alternative investments and real assets	<u>949,514,478</u>	<u>869,856,402</u>
Total investments at market value	<u>6,922,862,899</u>	<u>6,705,204,157</u>
<b>Total assets</b>	<b>\$8,049,012,435</b>	<b>\$8,146,941,378</b>
<b>Less accounts payable:</b>		
Investment trades	\$(618,461,974)	\$(778,448,185)
Security lending	(285,450,987)	(277,254,134)
Employer contributions unearned	(150,471,546)	(164,557,125)
Other	<u>(18,045,500)</u>	<u>(17,771,704)</u>
Total accounts payable	\$(1,072,430,007)	\$(1,238,031,148)
<b>Net assets at market value</b>	<u><b>\$6,976,582,428</b></u>	<u><b>\$6,908,910,230</b></u>
<b>Net assets at actuarial value</b>	<u><b>\$7,151,936,096</b></u>	<u><b>\$6,572,560,432</b></u>
<b>Net assets at valuation value</b>	<u><b>\$7,136,801,380</b></u>	<u><b>\$6,557,496,101</b></u>

<sup>(1)</sup> Equals the sum of additional contribution receivables for the final Paulson Settlement.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT G**

**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 are projected/anticipated to 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.

<b>Assets</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
1. Total valuation value of assets	\$4,441,945,292	\$2,694,856,088	\$7,136,801,380
2. Present value of future contributions by members	446,066,606	212,054,199	658,120,805
3. Present value of future employer contributions for:			
(a) entry age normal cost	681,077,412	204,529,187	885,606,599
(b) unfunded actuarial accrued liability	957,658,205	354,164,511	1,311,822,716
4. Total actuarial assets	\$6,526,747,515	\$3,465,603,985	\$9,992,351,500
<b>Liabilities</b>			
5. Present value of benefits for retirees and beneficiaries	\$3,277,596,188	\$2,247,615,377	\$5,525,211,565
6. Present value of benefits for vested terminated members <sup>(1)</sup>	177,945,696	62,169,215	240,114,911
7. Present value of benefits for active members	3,071,205,631	1,155,819,393	4,227,025,024
8. Total present value of benefits	\$6,526,747,515	\$3,465,603,985	\$9,992,351,500

<sup>(1)</sup> Includes nonvested terminated members.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT H**

**Summary of Total Allocated Reserves**

<b>Reserves</b>	<b>December 31, 2015</b>	<b>December 31, 2014</b>
Member Deposits <sup>(1)</sup>	\$659,742,501	\$586,388,103
Member Cost of Living <sup>(1)</sup>	351,691,660	312,832,275
Employer Advance <sup>(1)(2)</sup>	1,718,271,792	1,494,234,759
Employer Cost of Living <sup>(1)(2)</sup>	696,900,677	608,072,157
Retired Members <sup>(1)(2)</sup>	3,145,208,662	3,109,447,338
Retired Cost of Living <sup>(1)(2)</sup>	2,260,503,858	2,138,359,325
Dollar Power Cost of Living Supplement Pre-Funding <sup>(1)</sup>	6,867,388	8,503,154
Post Retirement Death Benefit <sup>(3)</sup>	15,134,716	15,064,331
Statutory Contingency (one percent) <sup>(3)</sup>	0	0
Additional One Percent Contingency Designation <sup>(3)</sup>	0	0
Contra Tracking Account <sup>(1)</sup>	(1,702,385,158)	(1,700,341,010)
<b>Total Allocated Reserves</b>	<b>7,151,936,096</b>	<b>\$6,572,560,432</b>
<b>Total Deferred Return</b>	<b>(175,353,668)</b>	<b>336,349,798</b>
<b>Net Market Value</b>	<b>\$6,976,582,428</b>	<b>\$6,908,910,230</b>

*Note: Results may not add due to rounding.*

<sup>(1)</sup> *Included in valuation value of assets.*

<sup>(2)</sup> *Both December 31, 2015 and December 31, 2014 information reflect a "true-up" of retired reserves.*

<sup>(3)</sup> *Not included in valuation value of assets.*



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT I**

**Development of Unfunded Actuarial Accrued Liability**

	<b>Year Ended December 31, 2015</b>
1. Unfunded actuarial accrued liability at beginning of year	\$1,469,942,112
2. Total Normal Cost at middle of year	201,324,001
3. Expected employer and member contributions	(362,215,543)
4. Interest (whole year on (1) plus half year on (2) - (3) )	<u>100,738,485</u>
5. Expected unfunded actuarial accrued liability at end of year	<u>\$1,409,789,055</u>
6. Actuarial (gain)/loss due to all changes:	
(a) Investment return	\$(100,726,596)
(b) Gain from additional UAAL contributions by Sanitary District	(2,322,759)
(c) Actual contributions greater than expected	(45,945,472)
(d) Lower than expected individual salary increases	(9,036,459)
(e) Lower than expected COLA increases for retirees and beneficiaries	(28,923,103)
(f) Mortality gain for retirees and beneficiaries	(18,981,527)
(g) Other experience (gain)/loss <sup>(1)</sup>	(7,167,404)
(h) Changes in actuarial assumptions	<u>115,136,981</u>
(i) Total changes	<u>\$(97,966,339)</u>
7. Unfunded actuarial accrued liability at end of year	<u>\$1,311,822,716</u>

Note: The "net gain from other experience" of \$64,108,493 shown in Section 2, Chart 10 is equal to the sum of items 6 (d), (e), (f) and (g).

<sup>(1)</sup> Other differences in actual versus expected experience including (but not limited to) disability, withdrawal, retirement and leave cashout experience.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Groups #1 and #2</b>	December 31, 2007	Restart of Amortization	\$789,616,678	\$576,289,534	7	\$94,800,860
General County and	December 31, 2008	Actuarial (Gain)/Loss	80,496,792	72,496,501	11	8,119,441
Small Districts	December 31, 2009	Actuarial (Gain)/Loss	165,997,327	154,016,806	12	16,077,083
	December 31, 2009	Assumption Change <sup>(2)</sup>	39,793,000	36,921,021	12	3,854,010
	December 31, 2009	Depooling Implementation	(75,134,625)	(69,711,936)	12	(7,276,898)
	December 31, 2010	Actuarial (Gain)/Loss	153,957,206	146,180,573	13	14,319,890
	December 31, 2011	Actuarial (Gain)/Loss	95,298,919	92,058,070	14	8,512,451
	December 31, 2012	Actuarial (Gain)/Loss	117,707,008	115,100,712	15	10,096,932
	December 31, 2012	Assumption Change <sup>(2)</sup>	290,475,776	284,043,993	15	24,917,074
	December 31, 2013	Actuarial (Gain)/Loss	(135,591,002)	(134,075,409)	16	(11,206,458)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(108,176,293)	(106,967,133)	16	(8,940,660)
	December 31, 2014	Actuarial (Gain)/Loss	(172,894,538)	(172,217,063)	17	(13,767,581)
	December 31, 2015	Actuarial (Gain)/Loss	(105,611,767)	(105,611,767)	18	(8,102,446)
	December 31, 2015	Assumption Change <sup>(2)</sup>	40,045,512	<u>40,045,512</u>	18	<u>3,072,258</u>
<b>Total for Cost Groups #1 and #2</b>				\$928,569,413		\$134,475,956

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #3</b>	December 31, 2007	Restart of Amortization	\$36,185,000	\$26,409,063	7	\$4,344,347
Central Contra Costa	December 31, 2008	Actuarial (Gain)/Loss	3,709,835	3,341,128	11	374,199
Sanitary District	December 31, 2009	Actuarial (Gain)/Loss	10,118,261	9,387,996	12	979,968
	December 31, 2009	Assumption Change <sup>(2)</sup>	2,003,000	1,858,438	12	193,993
	December 31, 2009	Depooling Implementation	20,037,235	18,591,088	12	1,940,635
	December 31, 2010	Actuarial (Gain)/Loss	18,178,489	17,260,264	13	1,690,820
	December 31, 2010	Assumption Change <sup>(3)</sup>	11,479,648	10,899,792	13	1,067,747
	December 31, 2011	Actuarial (Gain)/Loss	10,514,535	10,156,965	14	939,197
	December 31, 2012	Actuarial (Gain)/Loss	12,564,241	12,286,041	15	1,077,763
	December 31, 2012	Assumption Change <sup>(2)</sup>	22,455,342	21,958,131	15	1,926,224
	December 31, 2012	UAAL Prepayment	(4,666,477)	(4,563,151)	15	(400,291)
	December 31, 2013	Actuarial (Gain)/Loss	582,962	576,446	16	48,181
	December 31, 2013	Assumption Change <sup>(3)</sup>	(14,950,866)	(14,783,750)	16	(1,235,674)
	December 31, 2013	UAAL Prepayment	(4,662,899)	(4,610,779)	16	(385,384)
	December 31, 2014	Actuarial (Gain)/Loss	(11,848,823)	(11,802,395)	17	(943,521)
	December 31, 2014	UAAL Prepayment	(2,331,896)	(2,322,759)	17	(185,689)
	December 31, 2015	Actuarial (Gain)/Loss	(6,504,510)	(6,504,510)	18	(499,021)
	December 31, 2015	Assumption Change <sup>(2)</sup>	44,220	<u>44,220</u>	18	<u>3,393</u>
<b>Total for Cost Group #3</b>				\$88,182,228		\$10,936,887

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #4</b>	December 31, 2007	Restart of Amortization	\$7,770,000	\$5,670,814	7	\$932,861
Contra Costa Housing Authority	December 31, 2008	Actuarial (Gain)/Loss	1,573,513	1,417,127	11	158,715
	December 31, 2009	Actuarial (Gain)/Loss	1,277,079	1,184,908	12	123,687
	December 31, 2009	Assumption Change <sup>(2)</sup>	425,000	394,326	12	41,162
	December 31, 2009	Depooling Implementation	(189,275)	(175,614)	12	(18,332)
	December 31, 2010	Actuarial (Gain)/Loss	619,697	588,395	13	57,639
	December 31, 2010	Assumption Change <sup>(3)</sup>	(920,656)	(874,152)	13	(85,632)
	December 31, 2011	Actuarial (Gain)/Loss	1,059,328	1,023,304	14	94,623
	December 31, 2012	Actuarial (Gain)/Loss	1,912,999	1,870,641	15	164,097
	December 31, 2012	Assumption Change <sup>(2)</sup>	3,722,862	3,640,430	15	319,348
	December 31, 2013	Actuarial (Gain)/Loss	(2,220,704)	(2,195,882)	16	(183,539)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(1,077,289)	(1,065,247)	16	(89,037)
	December 31, 2014	Actuarial (Gain)/Loss	(1,360,021)	(1,354,692)	17	(108,298)
	December 31, 2015	Actuarial (Gain)/Loss	(875,294)	(875,294)	18	(67,152)
	December 31, 2015	Assumption Change <sup>(2)</sup>	432,801	<u>432,801</u>	18	<u>33,204</u>
<b>Total for Cost Group #4</b>				\$9,681,865		\$1,373,346

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #5</b>	December 31, 2007	Restart of Amortization	\$(1,011,000)	\$(737,863)	7	\$(121,380)
Contra Costa County Fire Protection District	December 31, 2008	Actuarial (Gain)/Loss	45,963	41,395	11	4,636
	December 31, 2009	Actuarial (Gain)/Loss	1,614,180	1,497,680	12	156,336
	December 31, 2009	Assumption Change <sup>(2)</sup>	336,000	311,750	12	32,542
	December 31, 2009	Depooling Implementation	2,142,538	1,987,905	12	207,508
	December 31, 2010	Actuarial (Gain)/Loss	2,722,306	2,584,798	13	253,208
	December 31, 2011	Actuarial (Gain)/Loss	1,350,620	1,304,689	14	120,642
	December 31, 2012	Actuarial (Gain)/Loss	1,787,426	1,747,848	15	153,326
	December 31, 2012	Assumption Change <sup>(2)</sup>	3,184,172	3,113,667	15	273,139
	December 31, 2013	Actuarial (Gain)/Loss	(2,500,665)	(2,472,714)	16	(206,677)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(985,653)	(974,636)	16	(81,463)
	December 31, 2014	Actuarial (Gain)/Loss	(2,215,758)	(2,207,076)	17	(176,440)
	December 31, 2015	Actuarial (Gain)/Loss	(756,551)	(756,551)	18	(58,042)
	December 31, 2015	Assumption Change <sup>(2)</sup>	355,946	<u>355,946</u>	18	<u>27,308</u>
<b>Total for Cost Group #5</b>				\$5,796,839		\$584,643

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #6</b>	December 31, 2007	Restart of Amortization	\$1,028,000	\$750,270	7	\$123,421
Small Districts	December 31, 2008	Actuarial (Gain)/Loss	61,240	55,153	11	6,177
(General Non-enhanced)	December 31, 2009	Actuarial (Gain)/Loss	385,148	357,351	12	37,302
	December 31, 2009	Assumption Change <sup>(2)</sup>	126,000	116,906	12	12,203
	December 31, 2009	Depooling Implementation	(1,028,581)	(954,345)	12	(99,620)
	December 31, 2010	Actuarial (Gain)/Loss	194,488	184,664	13	18,090
	December 31, 2011	Actuarial (Gain)/Loss	(137,086)	(132,425)	14	(12,245)
	December 31, 2012	Actuarial (Gain)/Loss	177,439	173,510	15	15,221
	December 31, 2012	Assumption Change <sup>(2)</sup>	225,958	220,955	15	19,383
	December 31, 2013	Actuarial (Gain)/Loss	59,503	58,838	16	4,918
	December 31, 2013	Assumption Change <sup>(3)</sup>	(152,973)	(151,263)	16	(12,643)
	December 31, 2014	Actuarial (Gain)/Loss	(190,513)	(189,767)	17	(15,170)
	December 31, 2015	Actuarial (Gain)/Loss	(327,285)	(327,285)	18	(25,109)
	December 31, 2015	Assumption Change <sup>(2)</sup>	33,272	<u>33,272</u>	18	<u>2,553</u>
<b>Total for Cost Group #6</b>				\$195,835		\$74,481

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Groups #7 and #9</b>	December 31, 2007	Restart of Amortization	\$129,233,744	\$94,319,252	7	\$15,515,718
County Safety	December 31, 2008	Actuarial (Gain)/Loss	25,934,594	23,357,047	11	2,615,935
	December 31, 2009	Actuarial (Gain)/Loss	55,813,557	51,785,326	12	5,405,624
	December 31, 2009	Assumption Change <sup>(2)</sup>	11,213,000	10,403,724	12	1,085,995
	December 31, 2009	Depooling Implementation	24,145,656	22,402,992	12	2,338,542
	December 31, 2010	Actuarial (Gain)/Loss	57,993,092	55,063,765	13	5,394,062
	December 31, 2011	Actuarial (Gain)/Loss	45,765,799	44,209,433	14	4,087,970
	December 31, 2012	Actuarial (Gain)/Loss	53,914,024	52,720,247	15	4,624,757
	December 31, 2012	Assumption Change <sup>(2)</sup>	140,056,457	136,955,294	15	12,014,073
	December 31, 2013	Actuarial (Gain)/Loss	(35,456,009)	(35,059,693)	16	(2,930,403)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(44,310,461)	(43,815,173)	16	(3,662,214)
	December 31, 2014	Actuarial (Gain)/Loss	(62,576,234)	(62,331,033)	17	(4,982,941)
	December 31, 2014	Assumption Change <sup>(4)</sup>	(52,337)	(52,132)	17	(4,168)
	December 31, 2015	Actuarial (Gain)/Loss	(59,209,877)	(59,209,877)	18	(4,542,532)
	December 31, 2015	Assumption Change <sup>(2)</sup>	39,775,019	<u>39,775,019</u>	18	<u>3,051,506</u>
<b>Total for Cost Groups #7 and #9</b>				\$330,524,191		\$40,011,924

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #8</b>	December 31, 2007	Restart of Amortization	\$124,138,710	\$90,600,720	7	\$14,904,012
Contra Costa and East Fire	December 31, 2008	Actuarial (Gain)/Loss	6,780,436	6,106,553	11	683,920
Protection Districts	December 31, 2009	Actuarial (Gain)/Loss	27,018,706	25,068,686	12	2,616,801
	December 31, 2009	Assumption Change <sup>(2)</sup>	4,945,000	4,588,105	12	478,930
	December 31, 2009	Depooling Implementation	47,818,666	44,367,451	12	4,631,307
	December 31, 2010	Actuarial (Gain)/Loss	38,165,445	36,237,645	13	3,549,850
	December 31, 2010	Assumption Change <sup>(3)</sup>	(1,599,051)	(1,518,280)	13	(148,731)
	December 31, 2011	Actuarial (Gain)/Loss	26,533,166	25,630,848	14	2,370,040
	December 31, 2012	Actuarial (Gain)/Loss	31,501,440	30,803,927	15	2,702,200
	December 31, 2012	Assumption Change <sup>(2)</sup>	68,193,356	66,683,403	15	5,849,641
	December 31, 2013	Actuarial (Gain)/Loss	(22,661,640)	(22,408,336)	16	(1,872,961)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(17,910,676)	(17,710,476)	16	(1,480,299)
	December 31, 2014	Actuarial (Gain)/Loss	(29,217,962)	(29,103,474)	17	(2,326,624)
	December 31, 2015	Actuarial (Gain)/Loss	(19,005,510)	(19,005,510)	18	(1,458,087)
	December 31, 2015	Assumption Change <sup>(2)</sup>	24,296,846	<u>24,296,846</u>	18	<u>1,864,034</u>
<b>Total for Cost Group #8</b>				\$264,638,107		\$32,364,033

*Note: Results may not add due to rounding.*



**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #10</b>	December 31, 2007	Restart of Amortization	\$(2,591,000)	\$(1,891,001)	7	\$(311,074)
Moraga-Orinda	December 31, 2008	Actuarial (Gain)/Loss	2,002,150	1,803,164	11	201,950
Fire District	December 31, 2009	Actuarial (Gain)/Loss	5,671,684	5,262,342	12	549,311
	December 31, 2009	Assumption Change <sup>(2)</sup>	1,012,000	938,961	12	98,014
	December 31, 2009	Depooling Implementation	4,873,631	4,521,887	12	472,018
	December 31, 2010	Actuarial (Gain)/Loss	5,334,964	5,065,486	13	496,216
	December 31, 2010	Assumption Change <sup>(3)</sup>	806,018	765,305	13	74,969
	December 31, 2011	Actuarial (Gain)/Loss	6,791,005	6,560,062	14	606,598
	December 31, 2012	Actuarial (Gain)/Loss	8,924,598	8,726,988	15	765,554
	December 31, 2012	Assumption Change <sup>(2)</sup>	12,149,892	11,880,866	15	1,042,220
	December 31, 2013	Actuarial (Gain)/Loss	(1,027,440)	(1,015,956)	16	(84,917)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(3,613,981)	(3,573,585)	16	(298,692)
	December 31, 2014	Actuarial (Gain)/Loss	(4,813,045)	(4,794,185)	17	(383,263)
	December 31, 2015	Actuarial (Gain)/Loss	(8,490,806)	(8,490,806)	18	(651,408)
	December 31, 2015	Assumption Change <sup>(2)</sup>	3,844,347	<u>3,844,347</u>	18	<u>294,935</u>
<b>Total for Cost Group #10</b>				\$29,603,874		\$2,872,431

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #11</b>	December 31, 2007	Restart of Amortization	\$58,766,000	\$42,889,457	7	\$7,055,407
San Ramon Valley	December 31, 2008	Actuarial (Gain)/Loss	10,216,694	9,201,293	11	1,030,524
Fire District	December 31, 2009	Actuarial (Gain)/Loss	9,262,105	8,593,631	12	897,048
	December 31, 2009	Assumption Change <sup>(2)</sup>	2,453,000	2,275,960	12	237,577
	December 31, 2009	Depooling Implementation	(20,174,500)	(18,718,446)	12	(1,953,930)
	December 31, 2010	Actuarial (Gain)/Loss	6,585,812	6,253,152	13	612,560
	December 31, 2010	Assumption Change <sup>(3)</sup>	5,093,420	4,836,143	13	473,750
	December 31, 2011	Actuarial (Gain)/Loss	5,513,071	5,325,587	14	492,448
	December 31, 2012	Actuarial (Gain)/Loss	14,600,741	14,277,448	15	1,252,455
	December 31, 2012	Assumption Change <sup>(2)</sup>	26,672,143	26,081,562	15	2,287,942
	December 31, 2013	Actuarial (Gain)/Loss	(4,492,900)	(4,442,679)	16	(371,334)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(12,984,002)	(12,838,871)	16	(1,073,114)
	December 31, 2014	Actuarial (Gain)/Loss	(13,850,852)	(13,796,579)	17	(1,102,942)
	December 31, 2015	Actuarial (Gain)/Loss	(9,008,582)	(9,008,582)	18	(691,131)
	December 31, 2015	Assumption Change <sup>(2)</sup>	5,533,144	<u>5,533,144</u>	18	<u>424,498</u>
<b>Total for Cost Group #11</b>				\$66,462,220		\$9,571,758

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Cost Group #12</b>	December 31, 2007	Restart of Amortization	\$3,960,000	\$2,890,145	7	\$475,435
Rodeo-Hercules Fire	December 31, 2008	Actuarial (Gain)/Loss	957,150	862,022	11	96,544
Protection District	December 31, 2009	Actuarial (Gain)/Loss	2,872,360	2,665,053	12	278,192
	December 31, 2009	Assumption Change <sup>(2)</sup>	1,154,000	1,070,712	12	111,767
	December 31, 2009	Depooling Implementation	(1,809,374)	(1,678,786)	12	(175,241)
	December 31, 2010	Actuarial (Gain)/Loss	1,502,503	1,426,610	13	139,751
	December 31, 2010	Assumption Change <sup>(3)</sup>	662,085	628,642	13	61,582
	December 31, 2011	Actuarial (Gain)/Loss	2,067,217	1,996,917	14	184,651
	December 31, 2012	Actuarial (Gain)/Loss	2,246,131	2,196,396	15	192,674
	December 31, 2012	Assumption Change <sup>(2)</sup>	3,018,796	2,951,953	15	258,953
	December 31, 2013	Actuarial (Gain)/Loss	413,088	408,471	16	34,141
	December 31, 2013	Assumption Change <sup>(3)</sup>	(1,169,821)	(1,156,745)	16	(96,685)
	December 31, 2014	Actuarial (Gain)/Loss	315,937	314,699	17	25,158
	December 31, 2015	Actuarial (Gain)/Loss	(990,379)	(990,379)	18	(75,981)
	December 31, 2015	Assumption Change <sup>(2)</sup>	775,874	<u>775,874</u>	18	<u>59,524</u>
<b>Total for Cost Group #12</b>				\$14,361,583		\$1,570,465

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>Special Adjustments<sup>(5)</sup></b>	December 31, 2007	County General POBs	\$(453,973,319)	\$(331,324,290)	7	\$(54,503,554)
	December 31, 2007	Moraga General POBs	(701,412)	(511,913)	7	(84,211)
	December 31, 2007	CCCFPD Safety POBs	(127,509,711)	(93,060,677)	7	(15,308,680)
	December 31, 2011	First Five UAAL Prepayment	(1,794,205)	<u>(1,296,559)</u>	7	<u>(233,191)</u>
<b>Total for Special Adjustments</b>				\$(426,193,439)		\$(70,129,636)

*Note: Results may not add due to rounding.*

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

**EXHIBIT J (continued)**

**Table of Amortization Bases**

	<b>Date Established</b>	<b>Source</b>	<b>Initial Amount</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment<sup>(1)</sup></b>
<b>All Cost Groups Combined</b>	December 31, 2007	Restart of Amortization	\$1,147,096,132	\$837,190,391	7	\$137,719,607
	December 31, 2007	County General POBs <sup>(5)</sup>	(453,973,319)	(331,324,290)	7	(54,503,554)
	December 31, 2007	Moraga General POBs <sup>(5)</sup>	(701,412)	(511,913)	7	(84,211)
	December 31, 2007	CCCFPD Safety POBs <sup>(5)</sup>	(127,509,711)	(93,060,677)	7	(15,308,680)
	December 31, 2008	Actuarial (Gain)/Loss	131,778,368	118,681,383	11	13,292,041
	December 31, 2009	Actuarial (Gain)/Loss	280,030,406	259,819,779	12	27,121,352
	December 31, 2009	Assumption Change <sup>(2)</sup>	63,460,000	58,879,903	12	6,146,193
	December 31, 2009	Depooling Implementation	681,371	632,194	12	65,989
	December 31, 2010	Actuarial (Gain)/Loss	285,254,002	270,845,351	13	26,532,086
	December 31, 2010	Assumption Change <sup>(3)</sup>	15,521,464	14,737,449	13	1,443,685
	December 31, 2011	Actuarial (Gain)/Loss	194,756,575	188,133,451	14	17,396,375
	December 31, 2011	First Five UAAL Prepayment <sup>(5)</sup>	(1,794,205)	(1,296,559)	7	(233,191)
	December 31, 2012	Actuarial (Gain)/Loss	245,336,047	239,903,758	15	21,044,979
	December 31, 2012	Assumption Change <sup>(2)</sup>	570,154,754	557,530,253	15	48,907,997
	December 31, 2012	Sanitary UAAL Prepayment	(4,666,477)	(4,563,151)	15	(400,291)
	December 31, 2013	Actuarial (Gain)/Loss	(202,894,807)	(200,626,914)	16	(16,769,049)
	December 31, 2013	Assumption Change <sup>(3)</sup>	(205,332,015)	(203,036,879)	16	(16,970,481)
	December 31, 2013	Sanitary UAAL Prepayment	(4,662,899)	(4,610,779)	16	(385,384)
	December 31, 2014	Actuarial (Gain)/Loss	(298,651,809)	(297,481,563)	17	(23,781,622)
	December 31, 2014	Assumption Change <sup>(4)</sup>	(52,337)	(52,132)	17	(4,168)
	December 31, 2014	Sanitary UAAL Prepayment	(2,331,896)	(2,322,759)	17	(185,689)
	December 31, 2015	Actuarial (Gain)/Loss	(210,780,561)	(210,780,561)	18	(16,170,909)
	December 31, 2015	Assumption Change <sup>(6)</sup>	115,136,981	<u>115,136,981</u>	18	<u>8,833,213</u>
<b>Total for All Cost Groups</b>				\$1,311,822,716		\$163,706,288

*Note: Results may not add due to rounding.*

### SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

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#### EXHIBIT J (continued)

#### Table of Amortization Bases

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- (1) *As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.*
- (2) *Changes in actuarial assumptions and methods from actuarial experience study.*
- (3) *The Board approved changes in actuarial assumptions. Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.*
- (4) *The Board approved changes in actuarial assumptions. Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group #9.*
- (5) *Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Contra Costa Fire Protection District that have been allocated to their Safety cost group.*

### SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

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#### EXHIBIT K

#### Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 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 generally be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions. Limits are also affected by the "grandfather" election under Section 415(b)(10).

For non-PEPRA members, benefits 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.

Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in actuarial gains as they occur.

**SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association**

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**EXHIBIT L**

**Definitions of Pension Terms**

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

**Assumptions or Actuarial Assumptions:**

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

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees 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 employees 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 of the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Unfunded Actuarial Accrued Liability:**

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan.



### SECTION 3: Supplemental Information for the Contra Costa County Employees' Retirement Association

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#### **Amortization of the Unfunded**

**Actuarial Accrued Liability:** Payments made over a period of years equal in value to the Plan's unfunded 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.

#### **Payroll or Compensation:**

Payroll for pension purposes expected to be paid to active members during the twelve months following the valuation date. Only pay that would possibly go into the determination of retirement benefits is included.

#### **Asset Volatility Ratio:**

Equal to the market value of assets divided by total projected payroll. This provides an indication of the potential contribution volatility for any given level of investment volatility.

#### **Liability Volatility Ratio:**

Equal to the Actuarial Accrued Liability divided by total projected payroll. This provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. It 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.

## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### EXHIBIT I

#### Summary of Actuarial Valuation Results

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

1. Retired members as of the valuation date (including 1,405 beneficiaries in pay status)	9,068
2. Members inactive during year ended December 31, 2015 with vested rights	2,790
3. Members active during the year ended December 31, 2015	9,642

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

1. Normal cost*	\$217,819
2. Present value of future benefits	9,992,352
3. Present value of future normal costs	1,543,728
4. Actuarial accrued liability**	8,448,624
Retired members and beneficiaries	\$5,525,212
Inactive members with vested rights	240,115
Active members	2,683,298
5. Valuation value of assets*** (\$6,976,582 at market value as reported by Retirement Association)	7,136,801
6. Unfunded actuarial accrued liability	\$1,311,823

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\* Includes administrative expense load.

\*\* Excludes liabilities for non-valuation reserves

\*\*\* Excludes assets for non-valuation reserves

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**EXHIBIT I (continued)**

**Summary of Actuarial Valuation Results**

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

	<b>Dollar Amount</b>	<b>% of Payroll</b>
1. Total normal cost	\$217,819	29.19%
2. Expected employee contributions	<u>(90,220)</u>	<u>(12.09%)</u>
3. Employer normal cost: (1) + (2)	\$127,599	17.10%
4. Amortization of unfunded actuarial accrued liability	<u>165,183</u>	<u>22.13%</u>
5. Total recommended average employer contribution: (3) + (4)	\$292,782	39.23%
6. Projected payroll	\$746,353	

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## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### EXHIBIT II

#### Actuarial Assumptions and Methods

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**Rationale for Assumptions:**

The information and analysis used in selecting each demographic (non-economic) assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2012 through December 31, 2014 Actuarial Experience Study dated June 1, 2016. The information and analysis used in selecting each economic assumption is shown in our Review of Economic Actuarial Assumptions dated April 19, 2016.

**Economic Assumptions**

**Net Investment Return:**

7.00%, net of investment expenses

**Administrative Expenses:**

1.14% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

**Employee Contribution  
Crediting Rate:**

7.00%, compounded semi-annually

**Consumer Price Index:**

Increase of 2.75% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year (valued as a 2.75% increase) except for Tier 3 and PEPRA Tier 5 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 2.75% increase). Safety Tier C benefits, Safety PEPRA Tier E benefits and benefits for PEPRA Tier 4 and Tier 5 members covered under certain memoranda of understanding are subject to a 2.00% maximum change per year. For members that have COLA banks, they are reflected in projected future COLA's.

**Payroll Growth:**

Inflation of 2.75% per year plus "across the board" real salary increases of 0.50% per year.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Increase in Internal Revenue**

**Code Section 401(a)(17)**

**Compensation Limit:**

Increase of 2.75% per year from the valuation date.

**Increase in Section 7522.10**

**Compensation Limit:**

Increase of 2.75% per year from the valuation date.

**Demographic Assumptions**

**Post – Retirement Mortality Rates:**

*Healthy:*

For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected generationally with the two-dimensional MP-2015 projection scale.

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back three years, projected generationally with the two-dimensional MP-2015 projection scale.

*Disabled:*

For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward eight years, projected generationally with the two-dimensional MP-2015 projection scale.

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set forward three years, projected generationally with the two-dimensional MP-2015 projection scale.

*Beneficiaries:*

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

The RP-2014 mortality tables and adjustments as shown above reflect the mortality experience as of the measurement date. The generational projection is a provision for future mortality improvement.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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*Member Contribution Rates:* For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**Pre – Retirement Mortality Rates:** Headcount-Weighted RP-2014 Employee Mortality Table times 75%, projected generationally with the two-dimensional MP-2015 projection scale.

**Termination Rates Before Retirement:**

Age	Rate (%)	
	Male	Female
25	0.05	0.02
30	0.05	0.02
35	0.05	0.03
40	0.06	0.04
45	0.09	0.06
50	0.16	0.10
55	0.26	0.16
60	0.42	0.23
65	0.73	0.33

*All pre-retirement deaths are assumed to be non-service connected. Note that generational projections beyond the base year (2014) are not reflected in the above mortality rates.*

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

Age	Rate (%)		
	Disability		
	General Tier 1 and Tier 4 <sup>(1)</sup>	General Tier 3 and Tier 5 <sup>(2)</sup>	Safety <sup>(3)</sup>
20	0.01	0.01	0.02
25	0.02	0.02	0.22
30	0.04	0.03	0.42
35	0.08	0.05	0.56
40	0.22	0.08	0.66
45	0.36	0.13	1.00
50	0.52	0.16	2.88
55	0.60	0.20	4.60
60	0.60	0.28	5.00
65	0.60	0.32	5.00
70	0.60	0.32	5.00

<sup>(1)</sup> 65% of General Tier 1 and Tier 4 disabilities are assumed to be duty disabilities. The other 35% are assumed to be ordinary disabilities.

<sup>(2)</sup> 30% of General Tier 3 and Tier 5 disabilities are assumed to be duty disabilities. The other 70% are assumed to be ordinary disabilities.

<sup>(3)</sup> 100% of Safety disabilities are assumed to be duty disabilities.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

Years of Service	Rate (%)	
	Withdrawal*	
	General	Safety
Less than 1	13.50	13.00
1	9.25	8.00
2	9.00	7.00
3	6.00	5.50
4	4.50	3.75
5	4.25	3.25
6	3.75	3.00
7	3.50	2.75
8	3.25	2.50
9	3.00	2.25
10	2.75	2.00
11	2.50	1.90
12	2.40	1.80
13	2.30	1.70
14	2.20	1.60
15	2.10	1.50
16	2.00	1.40
17	2.00	1.30
18	2.00	1.20
19	1.75	1.10
20 or more	1.50	1.00

\* *The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.*



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Retirement Rates (General):**

Rates (%)				
Age	General Tier 1 (Enhanced)	General Tier 3 (Enhanced)	General Tier 1 (Non-enhanced)	PEPRA General Tiers 4 and 5
50	5.00	4.00	3.00	0.00
51	4.00	3.00	3.00	0.00
52	5.00	3.00	3.00	2.00
53	5.00	5.00	3.00	3.00
54	14.00	6.00	3.00	3.00
55	20.00	10.00	10.00	5.00
56	20.00	10.00	10.00	5.00
57	20.00	10.00	10.00	6.00
58	20.00	12.00	10.00	8.00
59	25.00	13.00	10.00	9.00
60	28.00	15.00	25.00	10.00
61	35.00	20.00	15.00	14.00
62	35.00	25.00	40.00	20.00
63	30.00	25.00	35.00	20.00
64	30.00	30.00	30.00	20.00
65	35.00	35.00	40.00	25.00
66	40.00	35.00	35.00	30.00
67	40.00	35.00	35.00	30.00
68	40.00	35.00	35.00	30.00
69	40.00	35.00	35.00	30.00
70	50.00	40.00	50.00	50.00
71	50.00	40.00	50.00	50.00
72	50.00	40.00	50.00	50.00
73	50.00	40.00	50.00	50.00
74	50.00	40.00	50.00	50.00
75	100.00	100.00	100.00	100.00

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Retirement Rates (Safety):**

Rates (%)				
Age	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
45	4.00	2.00	0.00	0.00
46	3.00	1.00	0.00	0.00
47	10.00	4.00	0.00	0.00
48	10.00	4.00	0.00	0.00
49	25.00	12.00	0.00	0.00
50	30.00	18.00	5.00	5.00
51	30.00	18.00	4.00	4.00
52	25.00	15.00	4.00	4.00
53	25.00	15.00	5.00	5.00
54	25.00	15.00	8.00	6.00
55	28.00	18.00	10.00	10.00
56	25.00	15.00	10.00	10.00
57	25.00	15.00	12.00	18.00
58	35.00	25.00	18.00	18.00
59	35.00	25.00	20.00	18.00
60	35.00	30.00	20.00	18.00
61	35.00	30.00	20.00	20.00
62	35.00	30.00	20.00	20.00
63	35.00	30.00	20.00	20.00
64	50.00	40.00	100.00	30.00
65	100.00	100.00	100.00	30.00
66	100.00	100.00	100.00	100.00

#### SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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

For deferred vested benefits, we make the following retirement assumption:

General: Age 59

Safety: Age 54

We assume that 40% and 65% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 4.75% compensation increases per annum.

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**Future Benefit Accruals:**

1.0 year of service per year for the full-time employees. Continuation of current partial service accrual for part-time employees.

**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 pre-retirement death or retirement. There is no explicit assumption for children's benefits.

**Age of Spouse:**

Males are 3 years older than their spouses, and females are 2 years younger than their spouses.

**Offsets by Other Plans of the  
Employer for Disability Benefits:**

The Plan requires members who retire because of disability from General Tier 3 and PEPRA General Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Leave Cashout Assumptions:**

The following assumptions for leave cashouts as a percentage of final average pay are used:

*General Tiers 1, 2 and 3*  
*Safety Tiers A and C*

	Membership Date before January 1, 2013
	<hr/>
Cost Group 1:	1.25%
Cost Group 2:	0.50% for Tier 2 1.00% for Tier 3
Cost Group 3:	5.50%
Cost Group 4:	0.50%
Cost Group 5:	1.00%
Cost Group 6:	0.75%
Cost Group 7:	1.00%
Cost Group 8:	0.75%
Cost Group 9:	0.00%
Cost Group 10:	1.00%
Cost Group 11:	2.50%
Cost Group 12:	2.50%

The cost of this pay element is recognized in the valuation as an employer and member cost in both basic and COLA components.

*PEPRA General Tiers 4 and 5*  
*PEPRA Safety Tiers D and E*

None

## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### **Service From Accumulated Sick Leave Conversion:**

The following assumptions for additional service converted from accumulated sick leave as a percentage of service at retirement are used:

#### Service Retirements:

General:	1.20%
Safety:	1.90%

#### Disability Retirements:

General:	0.08%
Safety:	1.30%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Salary Increases:**

<b>Annual Rate of Compensation Increase</b>		
Inflation: 2.75% per year, plus “across the board” salary increases of 0.50% per year, plus the following merit and promotional increases:		
Years of Service	General	Safety
Less than 1	10.00%	10.50%
1	7.25	7.25
2	5.25	5.75
3	3.75	4.50
4	2.75	3.00
5	2.25	1.75
6	1.75	1.25
7	1.50	1.20
8	1.25	1.15
9	1.20	1.10
10	1.15	1.05
11	1.10	1.00
12	1.00	0.95
13	0.90	0.85
14	0.80	0.80
15	0.75	0.75
16	0.75	0.75
17	0.75	0.75
18	0.75	0.75
19	0.75	0.75
20 or more	0.75	0.75

The average total assumed salary increase for active members in the December 31, 2015 actuarial valuation is 5.3%

## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### Actuarial Methods

<b>Actuarial Cost Method:</b>	Entry Age Actuarial Cost Method. Entry Age is calculated as age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percent of compensation, as if the current benefit formulas have always been in effect (i.e., “replacement life”).
<b>Actuarial Value of Assets:</b>	Market value of assets less unrecognized returns in each of the last nine semi-annual accounting periods. Unrecognized return is equal to the difference between the actual market return and the expected return on the market value, and is recognized semi-annually over a five-year period.
<b>Valuation Value of Assets:</b>	Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
<b>Amortization Policy:</b>	<p>The UAAL (i.e., the difference between the AAL and the Valuation Value of Assets) as of December 31, 2014 will continue to be amortized over separate amortization layers based on the valuations during which each separate layer was previously established.</p> <p>Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years.</p> <p>Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.</p> <p>Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:</p> <ol style="list-style-type: none"><li>i. With the exception noted in ii., below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 10 years;</li><li>ii. The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive. If the increase in UAAL is due to the impact of benefits resulting from additional service permitted in Section</li></ol>

#### SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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31641.04 of the 1937 CERL (Golden Handshake), the entire increase in UAAL will be funded in full upon adoption of the Golden Handshake.

The UAAL will be amortized over “closed” amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

The UAAL will be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current assumption for general payroll increase (i.e., wage inflation).

If an overfunding or “surplus” exists (i.e., the Valuation Value of Assets exceeds the AAL, so that the total of all UAAL amortization layers become negative), any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

If the surplus exceeds 20% of the AAL per Section 7522.52 of the Government Code, then the amount of surplus in excess of 20% of the AAL (and any subsequent surpluses in excess of that amount) will be amortized over an “open” amortization period of 30 years, but only if the other conditions of Section 7522.52 have also been met. If those conditions are not met, then the surplus will not be amortized and the full Normal Cost will be contributed.

These amortization policy components will generally apply separately to each of CCCERA's UAAL cost groups with the exception that the conditions of Section 7522.52 apply to the total plan.



## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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

Based on the actuarial experience study and review of economic assumptions, the following assumptions were changed. Previously, these assumptions were as follows:

### **Economic Assumptions**

#### **Net Investment Return:**

7.25%, net of administration and investment expenses.

#### **Employee Contribution Crediting Rate:**

7.25%, compounded semi-annually.

#### **Consumer Price Index:**

Increase of 3.25% per year; retiree COLA increases due to CPI subject to a 3.00% maximum change per year except for Tier 3 and PEPRA Tier 5 disability benefits and Tier 2 benefits which are subject to a 4.00% maximum change per year (valued as a 3.25% increase). Safety Tier C benefits and benefits for PEPRA Tier 4 and Tier 5 members covered under certain memoranda of understanding are subject to a 2.00% maximum change per year.

#### **Payroll Growth:**

Inflation of 3.25% per year plus "across the board" real salary increases of 0.75% per year.

#### **Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:**

Increase of 3.25% per year from the valuation date.

#### **Increase in Section 7522.10 Compensation Limit:**

Increase of 3.25% per year from the valuation date.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Demographic Assumptions**

**Post – Retirement Mortality Rates:**

*Healthy:*

For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back one year.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back two years.

*Disabled:*

For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set forward six years for males and set forward seven years for females.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set forward three years.

*Beneficiaries:*

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

The mortality tables projected with Scale AA to 2015 and adjusted by the applicable set backs and set forwards shown above reasonably reflect the projected mortality experience as of the measurement date. The additional projection to 2030 is a provision for future mortality improvement.

*Member Contribution Rates:*

For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back one year, weighted 30% male and 70% female.

For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back two years, weighted 85% male and weighted 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Termination Rates Before Retirement:**

Age	Rate (%) Mortality			
	General		Safety	
	Male	Female	Male	Female
25	0.03	0.01	0.02	0.01
30	0.04	0.02	0.03	0.02
35	0.06	0.03	0.05	0.03
40	0.08	0.04	0.08	0.04
45	0.10	0.07	0.09	0.06
50	0.12	0.09	0.11	0.08
55	0.17	0.18	0.16	0.15
60	0.37	0.38	0.33	0.34
65	0.74	0.74	0.66	0.66

All pre-retirement deaths are assumed to be non-service connected.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

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

Age	Rate (%)		
	Disability		
	General Tier 1 <sup>(1)</sup>	General Tier 3 <sup>(2)</sup>	Safety <sup>(3)</sup>
20	0.01	0.01	0.02
25	0.02	0.02	0.22
30	0.04	0.03	0.42
35	0.08	0.05	0.56
40	0.16	0.08	0.66
45	0.32	0.13	0.94
50	0.52	0.17	2.54
55	0.66	0.21	4.10
60	0.70	0.27	4.80
65	0.70	0.36	5.00
70	0.70	0.44	5.00

<sup>(1)</sup> 70% of General Tier 1 disabilities are assumed to be duty disabilities. The other 30% are assumed to be ordinary disabilities.

<sup>(2)</sup> 35% of General Tier 3 disabilities are assumed to be duty disabilities. The other 65% are assumed to be ordinary disabilities.

<sup>(3)</sup> 100% of Safety disabilities are assumed to be duty disabilities.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

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

<b>Years of Service</b>	<b>Rate (%)</b>	
	<b>Withdrawal*</b>	
	<b>General</b>	<b>Safety</b>
Less than 1	13.50	11.50
1	9.00	6.50
2	9.00	5.00
3	6.00	4.00
4	4.50	3.50
5	4.00	3.00
6	3.75	2.75
7	3.50	2.50
8	3.25	2.25
9	3.00	2.00
10	2.75	1.90
11	2.50	1.80
12	2.40	1.70
13	2.30	1.60
14	2.20	1.50
15	2.10	1.40
16	2.00	1.30
17	2.00	1.20
18	2.00	1.10
19	2.00	1.00
20 or more	2.00	1.00

\* The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit. No withdrawal is assumed after a member is first assumed to retire.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Retirement Rates (General):**

<u>Age</u>	<u>Rate (%)</u>			
	<u>General Tier 1 (Enhanced)</u>	<u>General Tier 3 (Enhanced)</u>	<u>General Tier 1 (Non-enhanced)</u>	<u>PEPRA General Tiers 4 and 5</u>
50	5.00	4.00	3.00	0.00
51	4.00	3.00	3.00	0.00
52	6.00	3.00	3.00	2.00
53	6.00	5.00	3.00	3.00
54	12.00	5.00	3.00	3.00
55	20.00	10.00	10.00	5.00
56	20.00	10.00	10.00	5.00
57	20.00	10.00	10.00	6.00
58	22.00	12.00	10.00	8.00
59	25.00	12.00	10.00	9.00
60	30.00	15.00	25.00	10.00
61	35.00	20.00	15.00	14.00
62	35.00	27.00	40.00	21.00
63	35.00	27.00	25.00	21.00
64	35.00	30.00	30.00	21.00
65	40.00	40.00	40.00	27.00
66	40.00	40.00	35.00	33.00
67	40.00	40.00	35.00	33.00
68	40.00	40.00	35.00	33.00
69	40.00	40.00	35.00	33.00
70	100.00	40.00	100.00	50.00
71	100.00	40.00	100.00	50.00
72	100.00	40.00	100.00	50.00
73	100.00	40.00	100.00	50.00
74	100.00	40.00	100.00	50.00
75	100.00	100.00	100.00	100.00

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Retirement Rates (Safety):**

<b>Age</b>	<b>Rate (%)</b>			
	<b>Safety Tier A (Enhanced)</b>	<b>Safety Tier C (Enhanced)</b>	<b>Safety Tier A (Non-enhanced)</b>	<b>PEPRA Safety Tiers D and E</b>
45	2.00	1.00	0.00	0.00
46	2.00	1.00	0.00	0.00
47	7.00	3.00	0.00	0.00
48	7.00	3.00	0.00	0.00
49	20.00	10.00	0.00	0.00
50	25.00	15.00	5.00	5.00
51	25.00	15.00	4.00	4.00
52	25.00	15.00	4.00	4.00
53	25.00	15.00	5.00	5.00
54	25.00	15.00	5.00	5.00
55	30.00	20.00	6.00	6.00
56	25.00	15.00	8.00	8.00
57	25.00	15.00	12.00	12.00
58	35.00	25.00	18.00	18.00
59	35.00	25.00	20.00	20.00
60	40.00	35.00	20.00	20.00
61	40.00	35.00	20.00	20.00
62	40.00	35.00	20.00	20.00
63	40.00	35.00	20.00	20.00
64	40.00	35.00	100.00	100.00
65	100.00	100.00	100.00	100.00

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

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

For deferred vested benefits, we make the following retirement assumption:

General: Age 59

Safety: Age 54

We assume that 40% and 60% of future General and Safety deferred vested members, respectively, will continue to work for a reciprocal employer. For reciprocals, we assume 5.25% compensation increases per annum.

**Age of Spouse:**

Females are 3 years younger than their spouses.



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Leave Cashout Assumptions:** The following assumptions for leave cashouts as a percentage of final average pay are used:

*General Tiers 1, 2 and 3  
Safety Tiers A and C*

	Membership Date before January 1, 2013
Cost Group 1:	1.50%
Cost Group 2:	0.50% for Tier 2 0.75% for Tier 3
Cost Group 3:	6.50%
Cost Group 4:	0.25%
Cost Group 5:	1.50%
Cost Group 6:	1.25%
Cost Group 7:	0.75%
Cost Group 8:	0.75%
Cost Group 9:	0.00%
Cost Group 10:	1.50%
Cost Group 11:	3.00%
Cost Group 12:	3.50%

The cost of this pay element is recognized in the valuation as an employer and member cost in both basic and COLA components.

*PEPRA General Tiers 4 and 5  
PEPRA Safety Tiers D and E*

None

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Service From Accumulated**

**Sick Leave:**

The following assumptions for additional service due to accumulated sick leave as a percentage of service at retirement are used:

All Retirements Excluding Disability:

General:	1.25%
Safety:	2.00%

Disability Retirements:

General:	0.10%
Safety:	1.25%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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

**Salary Increases:**

<b>Annual Rate of Compensation Increase</b>		
Inflation: 3.25% per year, plus “across the board” salary increases of 0.75% per year, plus the following merit and promotional increases.		
<b>Years of Service</b>	<b>General</b>	<b>Safety</b>
Less than 1	9.50%	10.00%
1	6.50	6.50
2	4.75	5.25
3	3.25	4.00
4	2.25	2.25
5	1.50	1.00
6	1.25	0.75
7	1.00	0.75
8	0.75	0.75
9	0.75	0.75
10	0.75	0.75
11	0.75	0.75
12	0.75	0.75
13	0.75	0.75
14	0.75	0.75
15	0.75	0.75
16	0.75	0.75
17	0.75	0.75
18	0.75	0.75
19	0.75	0.75
20 & over	0.75	0.75

## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### EXHIBIT III

#### Summary of Plan Provisions

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

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#### Membership Eligibility:

<i>General Tier 1</i>	General members hired before July 1, 1980 and electing not to transfer to Tier 2 Plan. Certain General members with membership dates before January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 1.
<i>General Tier 2</i>	Most General members hired on or after August 1, 1980 and all General members hired before July 1, 1980 electing to transfer to the Tier 2 Plan. Effective October 1, 2002, for the County, Tier 2 was eliminated and all County employees (excluding CNA employees) in Tier 2 were placed in Tier 3. Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3.
<i>General Tier 3</i>	General members with membership dates before January 1, 2013 who are not placed in Tier 1 are placed in Tier 3.
<i>PEPRA General Tier 4</i>	General members with membership dates on or after January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 4.
<i>PEPRA General Tier 5</i>	General members with membership dates on or after January 1, 2013 who are not placed in Tier 4 are placed in Tier 5.
<i>Safety Tiers A and C</i>	Safety members with membership dates before January 1, 2013. County Sheriff's Department Safety members hired on or after January 1, 2007, but before January 1, 2013 are placed in Safety Tier C Enhanced.
<i>PEPRA Safety Tiers D and E</i>	Safety members with membership dates on or after January 1, 2013. Safety members from certain bargaining units are placed in Safety Tier E.

## SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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### Final Compensation for Benefit Determination:

<i>General Tier 1, Tier 3 (non-disability), and Safety Tier A</i>	Highest consecutive twelve months of compensation earnable. (FAS1) (§31462.1)
<i>General Tier 2, Tier 3 (disability), and Safety Tier C</i>	Highest consecutive thirty-six months of compensation earnable. (FAS3) (§31462)
<i>PEPRA General Tiers 4 and 5 PEPRA Safety Tiers D and E</i>	Highest consecutive thirty-six months of pensionable compensation. (FAS3) (§7522.10(c), §7522.32 and §7522.34)

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### Compensation Limit:

<i>Non-PEPRA Tiers</i>	For members with membership dates on or after January 1, 1996, Compensation Earnable is limited to Internal Revenue Code Section 401(a)(17). The limit is \$265,000 for calendar year 2016. The limit is indexed for inflation on an annual basis.
<i>PEPRA Tiers</i>	Pensionable Compensation is limited to \$117,020 for 2016 (\$140,424, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.

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### Social Security Primary Insurance Amount:

<i>General Tier 2</i>	Estimated Social Security award at age 62 assuming level future earnings. (PIA)
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### Service:

<i>All tiers</i>	Years of service*. (Yrs)
<i>General Tier 2</i>	Years of service up to a maximum of 30 years*. (Yrs30) *Includes accumulated sick leave as of the date of retirement (§31641.01).

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### Service Retirement Eligibility:

<i>General Tiers 1, 2 and 3</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service, regardless of age. (§31672)
<i>PEPRA General Tiers 4 and 5</i>	Age 52 with 5 years of service, or age 70 regardless of service. (§7522.20(a)) and §31672.3)
<i>Safety Tiers A and C</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years of service, regardless of age. (§31663.25)

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

*PEPRA Safety Tiers D and E* Age 50 with 5 years of service, or age 70 regardless of service. (§7522.25(a) and §31672.3)

**Benefit Formula:**

*General Tiers 1 and 3 (Non-enhanced)(§31676.11)*

Retirement Age	Benefit Formula
50	$(1.24\% \times \text{FAS1} - 1/3 \times 1.24\% \times \$350 \times 12) \times \text{Yrs}$
55	$(1.67\% \times \text{FAS1} - 1/3 \times 1.67\% \times \$350 \times 12) \times \text{Yrs}$
60	$(2.18\% \times \text{FAS1} - 1/3 \times 2.18\% \times \$350 \times 12) \times \text{Yrs}$
62	$(2.35\% \times \text{FAS1} - 1/3 \times 2.35\% \times \$350 \times 12) \times \text{Yrs}$
65 or later	$(2.61\% \times \text{FAS1} - 1/3 \times 2.61\% \times \$350 \times 12) \times \text{Yrs}$

*General Tier 1 and Tier 3 (Enhanced) (§31676.16)*

50	$(1.43\% \times \text{FAS1} - 1/3 \times 1.43\% \times \$350 \times 12) \times \text{Yrs}$
55	$(2.00\% \times \text{FAS1} - 1/3 \times 2.00\% \times \$350 \times 12) \times \text{Yrs}$
60	$(2.26\% \times \text{FAS1} - 1/3 \times 2.26\% \times \$350 \times 12) \times \text{Yrs}$
62	$(2.37\% \times \text{FAS1} - 1/3 \times 2.37\% \times \$350 \times 12) \times \text{Yrs}$
65 or later	$(2.42\% \times \text{FAS1} - 1/3 \times 2.42\% \times \$350 \times 12) \times \text{Yrs}$

For members previously covered under the non-enhanced §31676.11 formula, they are entitled to at least the benefits they could have received under §31676.11.

<i>General Tier 2 (§31752)</i>	50	$0.83\% \times \text{FAS3} \times \text{Yrs} - 0.57\% \times \text{Yrs} \times 30 \times \text{PIA}$
	55	$1.13\% \times \text{FAS3} \times \text{Yrs} - 0.87\% \times \text{Yrs} \times 30 \times \text{PIA}$
	60	$1.43\% \times \text{FAS3} \times \text{Yrs} - 1.37\% \times \text{Yrs} \times 30 \times \text{PIA}$
	62	$1.55\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs} \times 30 \times \text{PIA}$
	65 or later	$1.73\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs} \times 30 \times \text{PIA}$

The offsets shown in all of the above formulas only apply to members integrated with Social Security.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Benefit Formula:**

<i>PEPRA General Tiers 4 and 5</i> (§7522.20(a))	Retirement Age	Benefit Formula
	52	1.00% x FAS3xYrs
	55	1.30% x FAS3xYrs
	60	1.80% x FAS3xYrs
	62	2.00% x FAS3xYrs
	65	2.30% x FAS3xYrs
	67 or later	2.50% x FAS3xYrs
<i>Safety Tier A (Non-enhanced)(§31664)</i>	50	2.00% x FAS1xYrs
	55 or later	2.62% x FAS1xYrs
<i>Safety Tier A (Enhanced)(§31664.1)</i>	50 or later	3.00% x FAS1xYrs
<i>Safety Tier C (Enhanced)(§31664.1)</i>	50 or later	3.00% x FAS3xYrs
<i>PEPRA Safety Tiers D and E</i> (§7522.25(d))	50	2.00% x FAS3xYrs
	55	2.50% x FAS3xYrs
	57 or later	2.70% x FAS3xYrs

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**Maximum Benefit:**

<i>General Tiers 1 and 3</i> <i>Safety Tiers A and C</i>	100% of Final Compensation (§31676.11, §31676.16, §31664, §31664.1)
<i>General Tier 2</i> <i>PEPRA General Tiers 4 and 5</i> <i>PEPRA Safety Tiers D and E</i>	None

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Ordinary Disability:**

General Tiers 1 and 4

*Eligibility*

Five years of service (§31720).

*Benefit Formula*

1.5% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 65, but total benefit cannot be more than one-third of Final Compensation (§31727).

General Tiers 2, 3 and 5

*Eligibility*

Ten years of service (definition of disability is more strict than Tier 1 Plan) (§31720.1).

*Benefit Formula*

40% of Final Compensation plus 10% of Final Compensation used in the benefit determination for each minor child (maximum of three) (§31727.01).

*Offset*

Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.

Safety

*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 total benefit cannot be more than one-third of Final Compensation (§31727.2).

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**Line-of-Duty Disability:**

General Tiers 1 and 4, and Safety

*Eligibility*

No age or service requirements (§31720).

*Benefit Formula*

50% of the Final Compensation (§31727.4).

General Tiers 2, 3 and 5

*Eligibility*

No age or service requirements (§31720).

*Benefit Formula*

40% of Final Compensation plus 10% of Final Compensation for each minor child (maximum of three) (§31727.01).

*Offset*

Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Pre-Retirement Death:**

Non-General Tier 2

*Eligibility - A*

None.

*Benefit - A*

Refund of employee contributions with interest plus one month's compensation for each year of service to a maximum of six month's compensation (§31781); 50% of Final Compensation payable to spouse if Line of Duty death (§31787).

OR

*Eligibility - B*

Five years of service (Ten years for Tiers 3 and 5).

*Benefit - B*

Option 2 (100% continuation) of Service Retirement or Ordinary Disability benefit payable to designated beneficiary.

*Death in line of duty*

50% of Final compensation.

General Tier 2

*Eligibility - A*

None.

*Benefit - A*

Refund of employee contributions with interest plus \$2,000 lump sum benefit offset by any Social Security payment. (§31781.01); If a Line of Duty death, then 60% of Service or Disability Retirement Benefit (minimum benefit is 24% of Final Compensation) plus, for each minor child, 10% of the allowance otherwise paid to the member. Minimum family benefit is 60% of the member's allowance. Maximum family benefit is 100% of member's allowance.

OR

*Eligibility - B*

Ten years of service.

*Benefit - B*

Option 2 (100% continuation) of Service Retirement or Ordinary Disability benefit payable to designated beneficiary.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Death After Retirement:**

Non-General Tier 2

*Service or*

*Ordinary Disability Retirement*

60% of member's unmodified allowance continued to eligible spouse. An eligible spouse is a surviving spouse who was married to the member one year prior to member's retirement or at least two years prior to the date of death and has attained age 55 on or prior to the date of death (§31760.2). An additional lump sum benefit of \$5,000 is payable to the member's beneficiary (§31789.5).

*Line-of-Duty Disability*

100% of members allowance continued to eligible spouse (§31786). An additional lump sum benefit of \$5,000 is payable to the member's beneficiary (§31789.5).

General Tier 2

*Service or*

*Disability Retirement*

60% of member's unmodified allowance continued to eligible spouse plus 20% of allowance to each minor child (§31789.11). Minimum benefit is 60% of allowance. Maximum benefit is 100% of allowance. \$5,000 lump sum death benefit (§31789.5) plus \$2,000 less any Social Security Lump sum payment (§31789.01) are payable to member's beneficiary.

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**Withdrawal Benefits:**

*Less than Five Years of Service*

Refund of accumulated employee contributions with interest, or earned benefit at age 70 (§31628).

*Five or More Years of Service*

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

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Post-Retirement**

**Cost-of-Living Benefits:**

*General Tiers 1, 3, 4 and 5*

*Safety Tiers A and D*

Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked." Tier 3 and PEPPRA Tier 5 disability benefits have a maximum of 4% per year, excess "banked." Benefits for PEPPRA Tier 4 and Tier 5 members covered under certain memoranda of understanding have a maximum of 2% per year, excess "banked".

*General Tier 2*

Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked."

*Safety Tiers C and E*

Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked."

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**Member Contributions:**

Please refer to Appendices A and B for the specific rates.

General Tiers 1 and 3 (Non-enhanced)

*Basic*

Provide for one-half of the \$31676.11 benefit payable at age 55.

*Cost-of-Living*

Provide for one-half of future Cost-of-Living costs.

General Tiers 1 and 3 (Enhanced)

*Basic*

Provide for an average annuity at age 60 equal to 1/120 of FAS1.

*Cost-of-Living*

Provide for one-half of future Cost-of-Living costs.

PEPPRA General Tiers 4 and 5

50% of the total Normal Cost rate.

Safety Tier A (Non-enhanced)

*Basic*

Provide for one-half of the \$31664 benefit payable at age 50.

*Cost-of-Living*

Provide for one-half of future Cost-of-Living costs.

#### SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association

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##### Member Contributions (continued):

###### Safety Tier A (Enhanced)

*Basic*

Provide for an average annuity at age 50 equal to 1/100 of FAS1.

*Cost-of-Living*

Provide for one-half of future Cost-of-Living costs.

###### Safety Tier C (Enhanced)

*Basic*

Provide for an average annuity at age 50 equal to 1/100 of FAS3.

*Cost-of-Living*

Provide for one-half of future Cost-of-Living costs.

###### PEPRA Safety Tiers D and E

50% of the total Normal Cost rate.

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##### Other Information:

Transfers from the Tier 1 Plan to the Tier 2 Plan were made on an individual voluntary irrevocable basis. Credit is given under the Tier 2 Plan for future service only. The Cost-of-Living maximum is 4% only for the credit under the Tier 2 Plan. Transferred Tier 2 Plan members keep the five-year requirement for nonservice-connected disability. Those who were members on or before March 7, 1973 and Safety members under the enhanced benefit formula with membership dates on or before January 1, 2013 will be exempt from paying member contributions after 30 years of service.

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##### Plan Provisions Not Valued:

Additional \$5,000 lump sum post-retirement death benefit (except for \$2,000 for General Tier 2 members paid out of the Valuation Value of Assets) payable to a member's beneficiary. This benefit is paid from a reserve that is not included in the Valuation Value of Assets and is subject at all times to the availability of funds.

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##### Plan Changes:

There have been no changes in plan provisions since the previous actuarial valuation.

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

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Appendix A**

**Member Contribution Rates for Members with Membership Dates before January 1, 2013**

**General Cost Group #1 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.41%	1.74%	2.61%	5.50%	8.02%
16	3.82%	5.50%	1.77%	2.66%	5.59%	8.16%
17	3.88%	5.59%	1.81%	2.71%	5.69%	8.30%
18	3.94%	5.68%	1.84%	2.76%	5.78%	8.44%
19	4.00%	5.77%	1.87%	2.80%	5.87%	8.57%
20	4.06%	5.86%	1.90%	2.85%	5.96%	8.71%
21	4.13%	5.96%	1.94%	2.91%	6.07%	8.87%
22	4.19%	6.05%	1.97%	2.95%	6.16%	9.00%
23	4.26%	6.15%	2.01%	3.01%	6.27%	9.16%
24	4.32%	6.25%	2.04%	3.06%	6.36%	9.31%
25	4.39%	6.35%	2.07%	3.11%	6.46%	9.46%
26	4.46%	6.45%	2.11%	3.16%	6.57%	9.61%
27	4.53%	6.56%	2.15%	3.22%	6.68%	9.78%
28	4.60%	6.66%	2.19%	3.28%	6.79%	9.94%
29	4.67%	6.77%	2.22%	3.33%	6.89%	10.10%
30	4.74%	6.88%	2.26%	3.39%	7.00%	10.27%
31	4.82%	6.99%	2.30%	3.45%	7.12%	10.44%
32	4.89%	7.10%	2.34%	3.51%	7.23%	10.61%
33	4.96%	7.21%	2.38%	3.57%	7.34%	10.78%
34	5.04%	7.33%	2.42%	3.63%	7.46%	10.96%
35	5.12%	7.45%	2.46%	3.69%	7.58%	11.14%
36	5.20%	7.57%	2.51%	3.76%	7.71%	11.33%
37	5.28%	7.69%	2.55%	3.82%	7.83%	11.51%
38	5.37%	7.82%	2.59%	3.89%	7.96%	11.71%
39	5.46%	7.95%	2.64%	3.96%	8.10%	11.91%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #1 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.54%	8.08%	2.69%	4.03%	8.23%	12.11%
41	5.64%	8.22%	2.73%	4.10%	8.37%	12.32%
42	5.73%	8.36%	2.79%	4.18%	8.52%	12.54%
43	5.82%	8.50%	2.83%	4.25%	8.65%	12.75%
44	5.92%	8.65%	2.89%	4.33%	8.81%	12.98%
45	6.03%	8.81%	2.94%	4.41%	8.97%	13.22%
46	6.12%	8.95%	2.99%	4.49%	9.11%	13.44%
47	6.22%	9.10%	3.05%	4.57%	9.27%	13.67%
48	6.32%	9.25%	3.10%	4.65%	9.42%	13.90%
49	6.43%	9.41%	3.15%	4.73%	9.58%	14.14%
50	6.54%	9.57%	3.21%	4.82%	9.75%	14.39%
51	6.64%	9.73%	3.27%	4.90%	9.91%	14.63%
52	6.76%	9.90%	3.33%	4.99%	10.09%	14.89%
53	6.86%	10.06%	3.39%	5.08%	10.25%	15.14%
54	6.94%	10.18%	3.43%	5.14%	10.37%	15.32%
55	7.04%	10.32%	3.47%	5.21%	10.51%	15.53%
56	7.09%	10.40%	3.50%	5.25%	10.59%	15.65%
57	7.08%	10.39%	3.50%	5.25%	10.58%	15.64%
58	7.02%	10.29%	3.47%	5.20%	10.49%	15.49%
59	6.84%	10.02%	3.37%	5.05%	10.21%	15.07%
60	6.84%	10.02%	3.37%	5.05%	10.21%	15.07%

Interest: 7.00%  
 Salary Increase: See Exhibit II.  
 Administrative Expense: 0.47% of payroll added to Basic rates  
 Leave Cashout: 1.25%  
 COLA Loading: 52.92% applied to Basic rates prior to adjustment for administrative expenses.  
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #2 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.40%	1.61%	2.41%	5.37%	7.81%
16	3.82%	5.49%	1.63%	2.45%	5.45%	7.94%
17	3.88%	5.58%	1.67%	2.50%	5.55%	8.08%
18	3.94%	5.67%	1.69%	2.54%	5.63%	8.21%
19	4.00%	5.76%	1.72%	2.58%	5.72%	8.34%
20	4.06%	5.85%	1.75%	2.63%	5.81%	8.48%
21	4.12%	5.94%	1.78%	2.67%	5.90%	8.61%
22	4.18%	6.04%	1.81%	2.72%	5.99%	8.76%
23	4.25%	6.14%	1.85%	2.77%	6.10%	8.91%
24	4.32%	6.24%	1.88%	2.82%	6.20%	9.06%
25	4.38%	6.34%	1.91%	2.87%	6.29%	9.21%
26	4.45%	6.44%	1.95%	2.92%	6.40%	9.36%
27	4.52%	6.54%	1.98%	2.97%	6.50%	9.51%
28	4.58%	6.64%	2.01%	3.01%	6.59%	9.65%
29	4.66%	6.75%	2.05%	3.07%	6.71%	9.82%
30	4.73%	6.86%	2.08%	3.12%	6.81%	9.98%
31	4.80%	6.97%	2.12%	3.18%	6.92%	10.15%
32	4.88%	7.08%	2.15%	3.23%	7.03%	10.31%
33	4.96%	7.20%	2.19%	3.29%	7.15%	10.49%
34	5.03%	7.31%	2.23%	3.34%	7.26%	10.65%
35	5.11%	7.43%	2.27%	3.40%	7.38%	10.83%
36	5.19%	7.55%	2.31%	3.46%	7.50%	11.01%
37	5.28%	7.68%	2.35%	3.52%	7.63%	11.20%
38	5.36%	7.80%	2.39%	3.58%	7.75%	11.38%
39	5.44%	7.93%	2.43%	3.64%	7.87%	11.57%
40	5.54%	8.07%	2.47%	3.71%	8.01%	11.78%
41	5.62%	8.20%	2.52%	3.78%	8.14%	11.98%
42	5.72%	8.34%	2.57%	3.85%	8.29%	12.19%
43	5.82%	8.49%	2.61%	3.92%	8.43%	12.41%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #2 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>		<b>COLA</b>		<b>Total</b>	
	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>
44	5.91%	8.63%	2.66%	3.99%	8.57%	12.62%
45	6.01%	8.78%	2.71%	4.06%	8.72%	12.84%
46	6.12%	8.94%	2.76%	4.14%	8.88%	13.08%
47	6.22%	9.09%	2.81%	4.21%	9.03%	13.30%
48	6.31%	9.23%	2.85%	4.28%	9.16%	13.51%
49	6.41%	9.38%	2.90%	4.35%	9.31%	13.73%
50	6.52%	9.54%	2.95%	4.43%	9.47%	13.97%
51	6.64%	9.72%	3.01%	4.52%	9.65%	14.24%
52	6.74%	9.88%	3.07%	4.60%	9.81%	14.48%
53	6.84%	10.03%	3.11%	4.67%	9.95%	14.70%
54	6.94%	10.18%	3.16%	4.74%	10.10%	14.92%
55	7.01%	10.28%	3.19%	4.79%	10.20%	15.07%
56	7.06%	10.35%	3.22%	4.83%	10.28%	15.18%
57	7.04%	10.32%	3.21%	4.81%	10.25%	15.13%
58	6.93%	10.16%	3.15%	4.73%	10.08%	14.89%
59	6.85%	10.04%	3.12%	4.68%	9.97%	14.72%
60	6.85%	10.04%	3.12%	4.68%	9.97%	14.72%

Interest: 7.00%  
 Salary Increase: See Exhibit II.  
 Administrative Expense: 0.47% of payroll added to Basic rates  
 Leave Cashout: 0.50% for Tier 2 and 1.00% for Tier 3  
 COLA Loading: 48.86% applied to Basic rates prior to adjustment for administrative expenses.  
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #3 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.90%	5.62%	1.85%	2.78%	5.75%	8.40%
16	3.96%	5.71%	1.89%	2.83%	5.85%	8.54%
17	4.02%	5.80%	1.92%	2.88%	5.94%	8.68%
18	4.09%	5.90%	1.95%	2.93%	6.04%	8.83%
19	4.15%	5.99%	1.99%	2.98%	6.14%	8.97%
20	4.22%	6.09%	2.02%	3.03%	6.24%	9.12%
21	4.28%	6.18%	2.05%	3.08%	6.33%	9.26%
22	4.34%	6.28%	2.09%	3.14%	6.43%	9.42%
23	4.42%	6.39%	2.13%	3.20%	6.55%	9.59%
24	4.48%	6.49%	2.17%	3.25%	6.65%	9.74%
25	4.55%	6.59%	2.20%	3.30%	6.75%	9.89%
26	4.62%	6.70%	2.24%	3.36%	6.86%	10.06%
27	4.70%	6.81%	2.28%	3.42%	6.98%	10.23%
28	4.76%	6.91%	2.32%	3.48%	7.08%	10.39%
29	4.84%	7.03%	2.36%	3.54%	7.20%	10.57%
30	4.92%	7.14%	2.40%	3.60%	7.32%	10.74%
31	4.99%	7.25%	2.44%	3.66%	7.43%	10.91%
32	5.07%	7.37%	2.48%	3.72%	7.55%	11.09%
33	5.15%	7.49%	2.53%	3.79%	7.68%	11.28%
34	5.23%	7.61%	2.57%	3.85%	7.80%	11.46%
35	5.31%	7.73%	2.61%	3.92%	7.92%	11.65%
36	5.40%	7.86%	2.66%	3.99%	8.06%	11.85%
37	5.48%	7.99%	2.71%	4.06%	8.19%	12.05%
38	5.57%	8.12%	2.75%	4.13%	8.32%	12.25%
39	5.66%	8.25%	2.80%	4.20%	8.46%	12.45%
40	5.75%	8.39%	2.85%	4.28%	8.60%	12.67%
41	5.84%	8.53%	2.90%	4.35%	8.74%	12.88%
42	5.94%	8.68%	2.95%	4.43%	8.89%	13.11%
43	6.04%	8.82%	3.01%	4.51%	9.05%	13.33%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #3 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>		<b>COLA</b>		<b>Total</b>	
	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>
44	6.14%	8.98%	3.06%	4.59%	9.20%	13.57%
45	6.24%	9.13%	3.11%	4.67%	9.35%	13.80%
46	6.34%	9.28%	3.17%	4.76%	9.51%	14.04%
47	6.45%	9.44%	3.23%	4.84%	9.68%	14.28%
48	6.56%	9.60%	3.29%	4.93%	9.85%	14.53%
49	6.65%	9.74%	3.33%	5.00%	9.98%	14.74%
50	6.76%	9.91%	3.40%	5.10%	10.16%	15.01%
51	6.87%	10.07%	3.45%	5.18%	10.32%	15.25%
52	6.98%	10.24%	3.51%	5.27%	10.49%	15.51%
53	7.09%	10.40%	3.57%	5.36%	10.66%	15.76%
54	7.18%	10.54%	3.63%	5.44%	10.81%	15.98%
55	7.24%	10.62%	3.65%	5.48%	10.89%	16.10%
56	7.28%	10.69%	3.68%	5.52%	10.96%	16.21%
57	7.26%	10.66%	3.67%	5.50%	10.93%	16.16%
58	7.14%	10.48%	3.60%	5.40%	10.74%	15.88%
59	6.77%	9.92%	3.40%	5.10%	10.17%	15.02%
60	6.77%	9.92%	3.40%	5.10%	10.17%	15.02%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 5.50%

COLA Loading: 53.98% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #4 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.74%	5.38%	1.72%	2.58%	5.46%	7.96%
16	3.80%	5.46%	1.75%	2.62%	5.55%	8.08%
17	3.86%	5.55%	1.78%	2.67%	5.64%	8.22%
18	3.92%	5.64%	1.81%	2.72%	5.73%	8.36%
19	3.98%	5.73%	1.85%	2.77%	5.83%	8.50%
20	4.04%	5.82%	1.87%	2.81%	5.91%	8.63%
21	4.10%	5.92%	1.91%	2.87%	6.01%	8.79%
22	4.16%	6.01%	1.94%	2.91%	6.10%	8.92%
23	4.23%	6.11%	1.98%	2.97%	6.21%	9.08%
24	4.30%	6.21%	2.01%	3.02%	6.31%	9.23%
25	4.36%	6.31%	2.05%	3.07%	6.41%	9.38%
26	4.43%	6.41%	2.08%	3.12%	6.51%	9.53%
27	4.50%	6.51%	2.12%	3.18%	6.62%	9.69%
28	4.57%	6.62%	2.15%	3.23%	6.72%	9.85%
29	4.64%	6.72%	2.19%	3.29%	6.83%	10.01%
30	4.71%	6.83%	2.23%	3.34%	6.94%	10.17%
31	4.78%	6.94%	2.27%	3.40%	7.05%	10.34%
32	4.86%	7.05%	2.31%	3.46%	7.17%	10.51%
33	4.94%	7.17%	2.35%	3.52%	7.29%	10.69%
34	5.01%	7.28%	2.39%	3.58%	7.40%	10.86%
35	5.09%	7.40%	2.43%	3.64%	7.52%	11.04%
36	5.17%	7.52%	2.47%	3.71%	7.64%	11.23%
37	5.25%	7.64%	2.51%	3.77%	7.76%	11.41%
38	5.34%	7.77%	2.56%	3.84%	7.90%	11.61%
39	5.42%	7.90%	2.61%	3.91%	8.03%	11.81%
40	5.51%	8.03%	2.65%	3.98%	8.16%	12.01%
41	5.60%	8.16%	2.69%	4.04%	8.29%	12.20%
42	5.69%	8.30%	2.75%	4.12%	8.44%	12.42%
43	5.79%	8.45%	2.80%	4.20%	8.59%	12.65%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #4 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
44	5.88%	8.59%	2.85%	4.27%	8.73%	12.86%
45	5.99%	8.75%	2.90%	4.35%	8.89%	13.10%
46	6.09%	8.90%	2.95%	4.43%	9.04%	13.33%
47	6.19%	9.05%	3.01%	4.51%	9.20%	13.56%
48	6.28%	9.19%	3.05%	4.58%	9.33%	13.77%
49	6.39%	9.35%	3.11%	4.67%	9.50%	14.02%
50	6.49%	9.50%	3.17%	4.75%	9.66%	14.25%
51	6.60%	9.67%	3.23%	4.84%	9.83%	14.51%
52	6.72%	9.84%	3.29%	4.93%	10.01%	14.77%
53	6.82%	9.99%	3.34%	5.01%	10.16%	15.00%
54	6.91%	10.13%	3.39%	5.08%	10.30%	15.21%
55	6.99%	10.25%	3.43%	5.14%	10.42%	15.39%
56	7.06%	10.36%	3.47%	5.20%	10.53%	15.56%
57	7.05%	10.34%	3.46%	5.19%	10.51%	15.53%
58	6.95%	10.19%	3.41%	5.11%	10.36%	15.30%
59	6.68%	9.79%	3.27%	4.90%	9.95%	14.69%
60	6.68%	9.79%	3.27%	4.90%	9.95%	14.69%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 0.50%

COLA Loading: 52.58% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #5 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.76%	5.40%	1.71%	2.56%	5.47%	7.96%
16	3.82%	5.49%	1.73%	2.60%	5.55%	8.09%
17	3.88%	5.58%	1.77%	2.65%	5.65%	8.23%
18	3.94%	5.67%	1.80%	2.70%	5.74%	8.37%
19	4.00%	5.76%	1.83%	2.74%	5.83%	8.50%
20	4.06%	5.85%	1.86%	2.79%	5.92%	8.64%
21	4.12%	5.94%	1.89%	2.84%	6.01%	8.78%
22	4.18%	6.04%	1.93%	2.89%	6.11%	8.93%
23	4.25%	6.14%	1.96%	2.94%	6.21%	9.08%
24	4.32%	6.24%	1.99%	2.99%	6.31%	9.23%
25	4.38%	6.34%	2.03%	3.04%	6.41%	9.38%
26	4.45%	6.44%	2.07%	3.10%	6.52%	9.54%
27	4.52%	6.54%	2.10%	3.15%	6.62%	9.69%
28	4.58%	6.64%	2.13%	3.20%	6.71%	9.84%
29	4.66%	6.75%	2.17%	3.26%	6.83%	10.01%
30	4.73%	6.86%	2.21%	3.31%	6.94%	10.17%
31	4.80%	6.97%	2.25%	3.37%	7.05%	10.34%
32	4.88%	7.08%	2.29%	3.43%	7.17%	10.51%
33	4.96%	7.20%	2.33%	3.49%	7.29%	10.69%
34	5.03%	7.31%	2.37%	3.55%	7.40%	10.86%
35	5.11%	7.43%	2.41%	3.61%	7.52%	11.04%
36	5.19%	7.55%	2.45%	3.67%	7.64%	11.22%
37	5.28%	7.68%	2.49%	3.74%	7.77%	11.42%
38	5.36%	7.80%	2.53%	3.80%	7.89%	11.60%
39	5.44%	7.93%	2.58%	3.87%	8.02%	11.80%
40	5.54%	8.07%	2.63%	3.94%	8.17%	12.01%
41	5.62%	8.20%	2.67%	4.01%	8.29%	12.21%
42	5.72%	8.34%	2.72%	4.08%	8.44%	12.42%
43	5.82%	8.49%	2.77%	4.16%	8.59%	12.65%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #5 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>		<b>COLA</b>		<b>Total</b>	
	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>
44	5.91%	8.63%	2.82%	4.23%	8.73%	12.86%
45	6.01%	8.78%	2.87%	4.31%	8.88%	13.09%
46	6.12%	8.94%	2.93%	4.39%	9.05%	13.33%
47	6.22%	9.09%	2.98%	4.47%	9.20%	13.56%
48	6.31%	9.23%	3.03%	4.54%	9.34%	13.77%
49	6.41%	9.38%	3.08%	4.62%	9.49%	14.00%
50	6.52%	9.54%	3.13%	4.70%	9.65%	14.24%
51	6.64%	9.72%	3.20%	4.80%	9.84%	14.52%
52	6.74%	9.88%	3.25%	4.88%	9.99%	14.76%
53	6.84%	10.03%	3.31%	4.96%	10.15%	14.99%
54	6.94%	10.18%	3.36%	5.04%	10.30%	15.22%
55	7.01%	10.28%	3.39%	5.09%	10.40%	15.37%
56	7.06%	10.35%	3.41%	5.12%	10.47%	15.47%
57	7.04%	10.32%	3.41%	5.11%	10.45%	15.43%
58	6.93%	10.16%	3.35%	5.03%	10.28%	15.19%
59	6.85%	10.04%	3.31%	4.96%	10.16%	15.00%
60	6.85%	10.04%	3.31%	4.96%	10.16%	15.00%

Interest: 7.00%  
 Salary Increase: See Exhibit II.  
 Administrative Expense: 0.47% of payroll added to Basic rates  
 Leave Cashout: 1.00%  
 COLA Loading: 51.87% applied to Basic rates prior to adjustment for administrative expenses.  
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #6 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>		<b>COLA</b>		<b>Total</b>	
	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>	<b>First \$350</b>	<b>Over \$350</b>
15	4.24%	6.13%	1.71%	2.57%	5.95%	8.70%
16	4.31%	6.23%	1.75%	2.62%	6.06%	8.85%
17	4.38%	6.33%	1.77%	2.66%	6.15%	8.99%
18	4.44%	6.43%	1.81%	2.71%	6.25%	9.14%
19	4.52%	6.54%	1.84%	2.76%	6.36%	9.30%
20	4.58%	6.64%	1.87%	2.80%	6.45%	9.44%
21	4.66%	6.75%	1.90%	2.85%	6.56%	9.60%
22	4.73%	6.86%	1.93%	2.90%	6.66%	9.76%
23	4.80%	6.97%	1.97%	2.95%	6.77%	9.92%
24	4.88%	7.08%	2.00%	3.00%	6.88%	10.08%
25	4.96%	7.20%	2.04%	3.06%	7.00%	10.26%
26	5.03%	7.31%	2.07%	3.11%	7.10%	10.42%
27	5.11%	7.43%	2.11%	3.16%	7.22%	10.59%
28	5.19%	7.55%	2.15%	3.22%	7.34%	10.77%
29	5.27%	7.67%	2.18%	3.27%	7.45%	10.94%
30	5.36%	7.80%	2.22%	3.33%	7.58%	11.13%
31	5.44%	7.93%	2.26%	3.39%	7.70%	11.32%
32	5.53%	8.06%	2.30%	3.45%	7.83%	11.51%
33	5.62%	8.19%	2.34%	3.51%	7.96%	11.70%
34	5.70%	8.32%	2.37%	3.56%	8.07%	11.88%
35	5.80%	8.46%	2.42%	3.63%	8.22%	12.09%
36	5.90%	8.61%	2.47%	3.70%	8.37%	12.31%
37	5.99%	8.75%	2.51%	3.76%	8.50%	12.51%
38	6.09%	8.90%	2.55%	3.83%	8.64%	12.73%
39	6.20%	9.06%	2.60%	3.90%	8.80%	12.96%
40	6.31%	9.23%	2.65%	3.98%	8.96%	13.21%
41	6.41%	9.38%	2.70%	4.05%	9.11%	13.43%
42	6.52%	9.54%	2.75%	4.12%	9.27%	13.66%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**General Cost Group #6 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
43	6.62%	9.69%	2.79%	4.19%	9.41%	13.88%
44	6.73%	9.86%	2.84%	4.26%	9.57%	14.12%
45	6.84%	10.02%	2.89%	4.34%	9.73%	14.36%
46	6.95%	10.19%	2.94%	4.41%	9.89%	14.60%
47	7.08%	10.38%	3.00%	4.50%	10.08%	14.88%
48	7.18%	10.53%	3.05%	4.57%	10.23%	15.10%
49	7.28%	10.69%	3.09%	4.64%	10.37%	15.33%
50	7.38%	10.83%	3.13%	4.70%	10.51%	15.53%
51	7.42%	10.90%	3.16%	4.74%	10.58%	15.64%
52	7.40%	10.87%	3.15%	4.72%	10.55%	15.59%
53	7.30%	10.71%	3.10%	4.65%	10.40%	15.36%
54	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
55	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
56	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
57	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
58	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
59	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%
60	7.01%	10.28%	2.97%	4.45%	9.98%	14.73%

Interest: 7.00%  
 Salary Increase: See Exhibit II.  
 Administrative Expense: 0.47% of payroll added to Basic rates  
 Leave Cashout: 0.75%  
 COLA Loading: 45.41% applied to Basic rates prior to adjustment for administrative expenses.  
 Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 30% male and 70% female.



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #7 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	9.05%	6.33%	15.38%
16	9.05%	6.33%	15.38%
17	9.05%	6.33%	15.38%
18	9.05%	6.33%	15.38%
19	9.05%	6.33%	15.38%
20	9.05%	6.33%	15.38%
21	9.05%	6.33%	15.38%
22	9.19%	6.43%	15.62%
23	9.34%	6.54%	15.88%
24	9.50%	6.66%	16.16%
25	9.65%	6.77%	16.42%
26	9.81%	6.89%	16.70%
27	9.97%	7.01%	16.98%
28	10.14%	7.13%	17.27%
29	10.31%	7.26%	17.57%
30	10.48%	7.38%	17.86%
31	10.65%	7.51%	18.16%
32	10.84%	7.65%	18.49%
33	11.03%	7.79%	18.82%
34	11.22%	7.93%	19.15%
35	11.42%	8.08%	19.50%
36	11.62%	8.22%	19.84%
37	11.81%	8.36%	20.17%
38	12.01%	8.51%	20.52%
39	12.22%	8.67%	20.89%
40	12.44%	8.83%	21.27%
41	12.67%	9.00%	21.67%
42	12.90%	9.17%	22.07%
43	13.19%	9.38%	22.57%
44	13.42%	9.55%	22.97%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #7 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	13.62%	9.70%	23.32%
46	13.66%	9.73%	23.39%
47	13.60%	9.68%	23.28%
48	13.39%	9.53%	22.92%
49	13.01%	9.25%	22.26%
50	13.01%	9.25%	22.26%
51	13.01%	9.25%	22.26%
52	13.01%	9.25%	22.26%
53	13.01%	9.25%	22.26%
54	13.01%	9.25%	22.26%
55	13.01%	9.25%	22.26%
56	13.01%	9.25%	22.26%
57	13.01%	9.25%	22.26%
58	13.01%	9.25%	22.26%
59	13.01%	9.25%	22.26%
60	13.01%	9.25%	22.26%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 1.00%

COLA Loading: 73.76% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Safety Cost Group #8 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	9.03%	6.31%	15.34%
16	9.03%	6.31%	15.34%
17	9.03%	6.31%	15.34%
18	9.03%	6.31%	15.34%
19	9.03%	6.31%	15.34%
20	9.03%	6.31%	15.34%
21	9.03%	6.31%	15.34%
22	9.17%	6.41%	15.58%
23	9.32%	6.53%	15.85%
24	9.48%	6.64%	16.12%
25	9.63%	6.75%	16.38%
26	9.79%	6.87%	16.66%
27	9.95%	6.99%	16.94%
28	10.12%	7.11%	17.23%
29	10.28%	7.23%	17.51%
30	10.46%	7.37%	17.83%
31	10.64%	7.50%	18.14%
32	10.82%	7.63%	18.45%
33	11.00%	7.76%	18.76%
34	11.20%	7.91%	19.11%
35	11.39%	8.05%	19.44%
36	11.59%	8.20%	19.79%
37	11.79%	8.35%	20.14%
38	11.99%	8.49%	20.48%
39	12.20%	8.65%	20.85%
40	12.41%	8.80%	21.21%
41	12.63%	8.97%	21.60%
42	12.88%	9.15%	22.03%
43	13.16%	9.36%	22.52%
44	13.42%	9.55%	22.97%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #8 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	13.58%	9.67%	23.25%
46	13.61%	9.69%	23.30%
47	13.52%	9.62%	23.14%
48	13.41%	9.54%	22.95%
49	13.04%	9.27%	22.31%
50	13.04%	9.27%	22.31%
51	13.04%	9.27%	22.31%
52	13.04%	9.27%	22.31%
53	13.04%	9.27%	22.31%
54	13.04%	9.27%	22.31%
55	13.04%	9.27%	22.31%
56	13.04%	9.27%	22.31%
57	13.04%	9.27%	22.31%
58	13.04%	9.27%	22.31%
59	13.04%	9.27%	22.31%
60	13.04%	9.27%	22.31%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 0.75%

COLA Loading: 73.73% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #9 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	8.64%	3.88%	12.52%
16	8.64%	3.88%	12.52%
17	8.64%	3.88%	12.52%
18	8.64%	3.88%	12.52%
19	8.64%	3.88%	12.52%
20	8.64%	3.88%	12.52%
21	8.64%	3.88%	12.52%
22	8.78%	3.95%	12.73%
23	8.92%	4.02%	12.94%
24	9.07%	4.09%	13.16%
25	9.22%	4.16%	13.38%
26	9.37%	4.23%	13.60%
27	9.52%	4.30%	13.82%
28	9.68%	4.38%	14.06%
29	9.84%	4.45%	14.29%
30	10.01%	4.53%	14.54%
31	10.18%	4.61%	14.79%
32	10.35%	4.69%	15.04%
33	10.53%	4.78%	15.31%
34	10.71%	4.87%	15.58%
35	10.89%	4.95%	15.84%
36	11.07%	5.04%	16.11%
37	11.25%	5.12%	16.37%
38	11.45%	5.22%	16.67%
39	11.64%	5.31%	16.95%
40	11.83%	5.40%	17.23%
41	12.05%	5.50%	17.55%
42	12.27%	5.61%	17.88%
43	12.45%	5.69%	18.14%
44	12.53%	5.73%	18.26%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #9 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	12.51%	5.72%	18.23%
46	12.43%	5.68%	18.11%
47	12.17%	5.56%	17.73%
48	12.55%	5.74%	18.29%
49	13.14%	6.02%	19.16%
50	13.14%	6.02%	19.16%
51	13.14%	6.02%	19.16%
52	13.14%	6.02%	19.16%
53	13.14%	6.02%	19.16%
54	13.14%	6.02%	19.16%
55	13.14%	6.02%	19.16%
56	13.14%	6.02%	19.16%
57	13.14%	6.02%	19.16%
58	13.14%	6.02%	19.16%
59	13.14%	6.02%	19.16%
60	13.14%	6.02%	19.16%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 0.00%

COLA Loading: 47.52% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #10 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	9.05%	6.25%	15.30%
16	9.05%	6.25%	15.30%
17	9.05%	6.25%	15.30%
18	9.05%	6.25%	15.30%
19	9.05%	6.25%	15.30%
20	9.05%	6.25%	15.30%
21	9.05%	6.25%	15.30%
22	9.19%	6.36%	15.55%
23	9.34%	6.47%	15.81%
24	9.50%	6.58%	16.08%
25	9.65%	6.69%	16.34%
26	9.81%	6.81%	16.62%
27	9.97%	6.92%	16.89%
28	10.14%	7.05%	17.19%
29	10.31%	7.17%	17.48%
30	10.48%	7.30%	17.78%
31	10.65%	7.42%	18.07%
32	10.84%	7.56%	18.40%
33	11.03%	7.70%	18.73%
34	11.22%	7.84%	19.06%
35	11.42%	7.98%	19.40%
36	11.62%	8.13%	19.75%
37	11.81%	8.27%	20.08%
38	12.01%	8.41%	20.42%
39	12.22%	8.56%	20.78%
40	12.44%	8.72%	21.16%
41	12.67%	8.89%	21.56%
42	12.90%	9.06%	21.96%
43	13.19%	9.27%	22.46%
44	13.42%	9.44%	22.86%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #10 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	13.62%	9.59%	23.21%
46	13.66%	9.61%	23.27%
47	13.60%	9.57%	23.17%
48	13.39%	9.42%	22.81%
49	13.01%	9.14%	22.15%
50	13.01%	9.14%	22.15%
51	13.01%	9.14%	22.15%
52	13.01%	9.14%	22.15%
53	13.01%	9.14%	22.15%
54	13.01%	9.14%	22.15%
55	13.01%	9.14%	22.15%
56	13.01%	9.14%	22.15%
57	13.01%	9.14%	22.15%
58	13.01%	9.14%	22.15%
59	13.01%	9.14%	22.15%
60	13.01%	9.14%	22.15%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 1.00%

COLA Loading: 72.89% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.



**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #11 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	9.17%	6.45%	15.62%
16	9.17%	6.45%	15.62%
17	9.17%	6.45%	15.62%
18	9.17%	6.45%	15.62%
19	9.17%	6.45%	15.62%
20	9.17%	6.45%	15.62%
21	9.17%	6.45%	15.62%
22	9.32%	6.56%	15.88%
23	9.47%	6.67%	16.14%
24	9.63%	6.79%	16.42%
25	9.78%	6.90%	16.68%
26	9.94%	7.02%	16.96%
27	10.11%	7.15%	17.26%
28	10.28%	7.27%	17.55%
29	10.45%	7.40%	17.85%
30	10.62%	7.53%	18.15%
31	10.80%	7.66%	18.46%
32	10.99%	7.80%	18.79%
33	11.17%	7.93%	19.10%
34	11.37%	8.08%	19.45%
35	11.57%	8.23%	19.80%
36	11.77%	8.38%	20.15%
37	11.97%	8.53%	20.50%
38	12.17%	8.68%	20.85%
39	12.38%	8.83%	21.21%
40	12.59%	8.99%	21.58%
41	12.83%	9.16%	21.99%
42	13.07%	9.34%	22.41%
43	13.34%	9.54%	22.88%
44	13.60%	9.74%	23.34%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #11 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	13.76%	9.85%	23.61%
46	13.80%	9.88%	23.68%
47	13.71%	9.82%	23.53%
48	13.44%	9.62%	23.06%
49	12.83%	9.16%	21.99%
50	12.83%	9.16%	21.99%
51	12.83%	9.16%	21.99%
52	12.83%	9.16%	21.99%
53	12.83%	9.16%	21.99%
54	12.83%	9.16%	21.99%
55	12.83%	9.16%	21.99%
56	12.83%	9.16%	21.99%
57	12.83%	9.16%	21.99%
58	12.83%	9.16%	21.99%
59	12.83%	9.16%	21.99%
60	12.83%	9.16%	21.99%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 2.50%

COLA Loading: 74.15% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #12 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
15	9.17%	5.07%	14.24%
16	9.17%	5.07%	14.24%
17	9.17%	5.07%	14.24%
18	9.17%	5.07%	14.24%
19	9.17%	5.07%	14.24%
20	9.17%	5.07%	14.24%
21	9.17%	5.07%	14.24%
22	9.32%	5.16%	14.48%
23	9.47%	5.24%	14.71%
24	9.63%	5.34%	14.97%
25	9.78%	5.42%	15.20%
26	9.94%	5.52%	15.46%
27	10.11%	5.62%	15.73%
28	10.28%	5.72%	16.00%
29	10.45%	5.82%	16.27%
30	10.62%	5.91%	16.53%
31	10.80%	6.02%	16.82%
32	10.99%	6.13%	17.12%
33	11.17%	6.23%	17.40%
34	11.37%	6.35%	17.72%
35	11.57%	6.47%	18.04%
36	11.77%	6.58%	18.35%
37	11.97%	6.70%	18.67%
38	12.17%	6.82%	18.99%
39	12.38%	6.94%	19.32%
40	12.59%	7.06%	19.65%
41	12.83%	7.20%	20.03%
42	13.07%	7.34%	20.41%
43	13.34%	7.50%	20.84%
44	13.60%	7.65%	21.25%

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Safety Cost Group #12 Members' Contribution Rates (Expressed as a Percentage of Monthly Payroll)  
For Members with Membership Dates before January 1, 2013**

**Calculated Under Recommended Assumptions**

<b>Entry Age</b>	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
45	13.76%	7.74%	21.50%
46	13.80%	7.77%	21.57%
47	13.71%	7.71%	21.42%
48	13.44%	7.56%	21.00%
49	12.83%	7.20%	20.03%
50	12.83%	7.20%	20.03%
51	12.83%	7.20%	20.03%
52	12.83%	7.20%	20.03%
53	12.83%	7.20%	20.03%
54	12.83%	7.20%	20.03%
55	12.83%	7.20%	20.03%
56	12.83%	7.20%	20.03%
57	12.83%	7.20%	20.03%
58	12.83%	7.20%	20.03%
59	12.83%	7.20%	20.03%
60	12.83%	7.20%	20.03%

Interest: 7.00%

Salary Increase: See Exhibit II.

Administrative Expense: 0.47% of payroll added to Basic rates

Leave Cashout: 2.50%

COLA Loading: 58.27% applied to Basic rates prior to adjustment for administrative expenses.

Mortality: Headcount-Weighted RP 2014 Healthy Annuitant Mortality Table set back three years, projected to 2034 with the two-dimensional MP-2015 projection scale, weighted 85% male and 15% female.

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

**Appendix B**

**Member Contribution Rates for Members with Membership Dates on or after January 1, 2013**

**General Members' Contribution Rates for Members with Membership Dates on or after January 1, 2013  
(Expressed as a Percentage of Monthly Payroll)**

**Calculated Under Recommended Assumptions**

	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
Cost Group #1 – PEPRA Tier 4 (2% COLA)	8.84%	2.02%	10.86%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	9.14%	3.07%	12.21%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.11%	1.85%	9.96%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.28%	2.77%	11.05%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.71%	2.99%	11.70%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	8.82%	3.00%	11.82%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	9.54%	2.21%	11.75%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	10.97%	3.78%	14.75%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	9.46%	3.30%	12.76%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.47% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2016 is equal to the Social Security Taxable Wage Base or \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is \$140,424 or 120% of the Social Security Taxable Wage Base). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2015. (reference: Section 7522.10(d))

**SECTION 4: Reporting Information for the Contra Costa County Employees' Retirement Association**

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**Safety Members' Contribution Rates for Members with Membership Dates on or after January 1, 2013  
(Expressed as a Percentage of Monthly Payroll)**

**Calculated Under Recommended Assumptions**

	<b>Basic</b>	<b>COLA</b>	<b>Total</b>
Cost Group #7 - PEPRA Tier D	15.61%	6.34%	21.95%
Cost Group #8 - PEPRA Tier D	14.57%	6.10%	20.67%
Cost Group #8 - PEPRA Tier E	16.17%	4.40%	20.57%
Cost Group #9 - PEPRA Tier E	13.37%	3.71%	17.08%
Cost Group #10 - PEPRA Tier D	13.53%	5.71%	19.24%
Cost Group #11 - PEPRA Tier D	13.70%	5.79%	19.49%
Cost Group #12 - PEPRA Tier D	11.96%	5.10%	17.06%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.47% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the compensation that can be taken into account for 2016 is equal to the Social Security Taxable Wage Base or \$117,020. (For an employer that is not enrolled in Social Security, the maximum amount is \$140,424 or 120% of the Social Security Taxable Wage Base). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2015. (reference: Section 7522.10(d))